SAFE-T

Jess Avery E.I.

What Is Safe-T?

Web interface for ODOT's collision database

Contains data on all reported traffic accidents on public roads in OK since 1998

1. Police submit collision reports to DPS
2. DPS enters data into their database
3. Database is regularly forwarded to ODOT
4. Coders at ODOT process the data for use by ODOT
5. Processed collision data is uploaded to a server at OU
6. OU also maintains SAFE-T
7. Authorized users query the database using the interface

Logging into SAFE-T

https://oksafe-t.org/

SAFE-T: Statewide Analysis for Engineering & Technology

User Name: _____

Password: _____

[Login]

Forgot User Name/Password?

Contact: Matt Warren
mwarren@odot.org

NOTE: USERNAME IS CASE SENSITIVE!

First Time Login…

SAFE-T SYSTEM USE AGREEMENT

By clicking the **YES** button, below, I agree to the following:

- Use of this system is subject to the restrictions of 23 U.S.C $409.

- I will only use this data in the normal course of my work assignments.

- I will not use data from this system for litigation nor release it to others for litigation.

- Any breach of this agreement will result in immediate termination of my access to these programs and data.

☐ I have read and understood the User Policy. **Open the SAFE-T User Policy**

[Yes] [No]

Restrictions

- **Accounts belong to persons,** and the person holding the account is responsible for its use, but:
- Eligibility is **conditional on your employment**
- **Employers share responsibility** for their employee's accounts.
- Collision data may only be queried, distributed, or used as required by **government agencies for transportation safety** related activities. It may not be used for private projects or shared with any unauthorized persons – this includes elected and appointed officials.
- A **watermark** is automatically printed on the reports indicating the restriction of use according to Title 23 of the United States Code in Chapter 4 on Highway Safety in Section 409. Exported data is subject to the same restriction and must not be distributed without this disclaimer being affixed.
- Private sector employees (only) are required to sign a **Permit**.
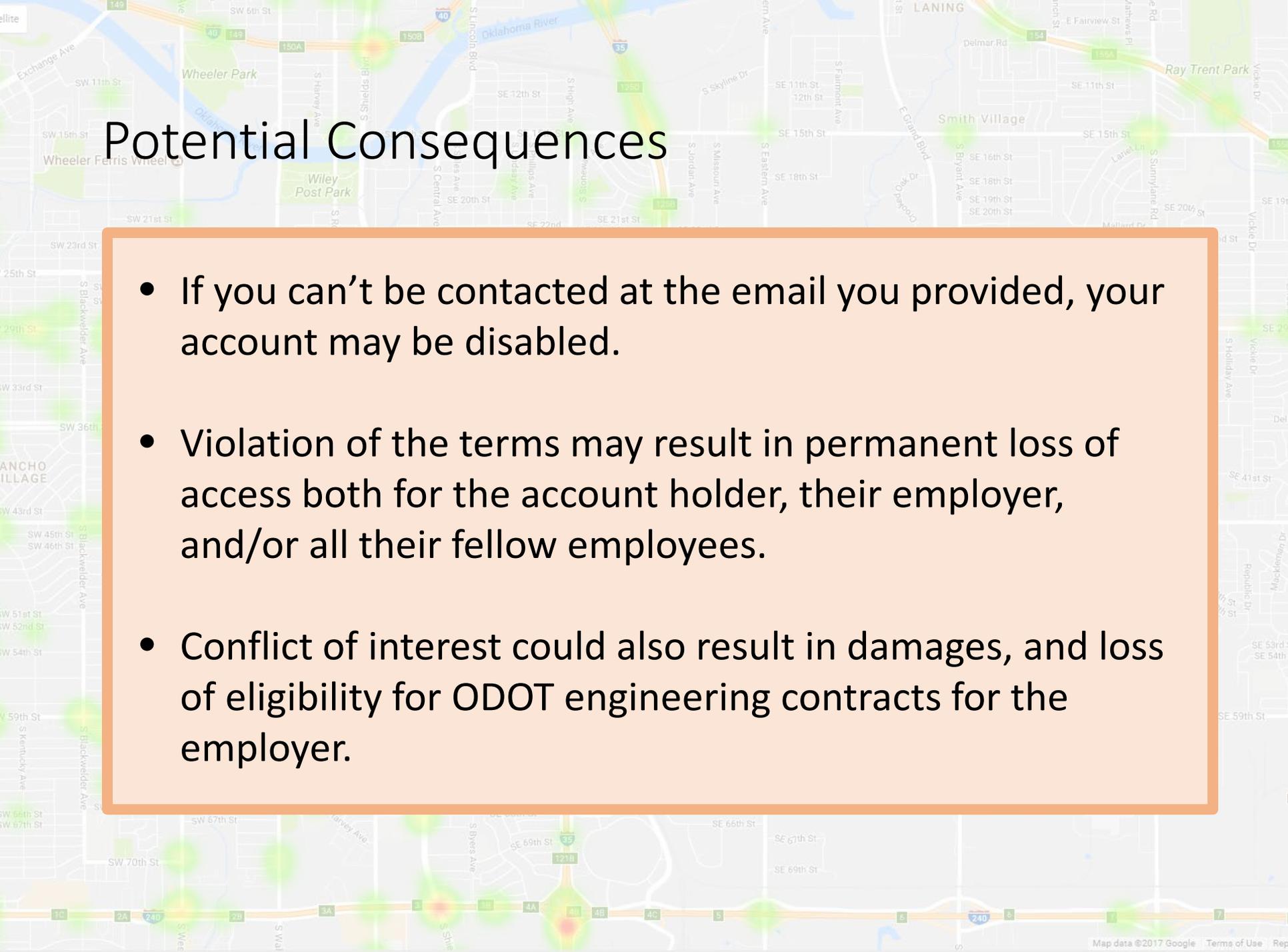
Potential Consequences

- If you can't be contacted at the email you provided, your account may be disabled.

- Violation of the terms may result in permanent loss of access both for the account holder, their employer, and/or all their fellow employees.

- Conflict of interest could also result in damages, and loss of eligibility for ODOT engineering contracts for the employer.

User Access Levels

- Standard Users have access to the large majority of options and capabilities.

- Advanced Users have access to some additional options, most of which are currently still in development or testing.

- Trusted Users (mostly ODOT, Oklahoma Highway Safety Office, and law enforcement) have the ability to produce reports without the watermark.

- ACOG and FARS users have special report options.

SAFE-T Main Menu

SAFE-T Main Menu

Select one of the links below to run a function

Collision Studies	A tool which queries collision data and generates PDF reports containing analysis of the data. Based on user selections, reports may contain maps, tabulations, and listings of collisions. Collisions contained in the reports may be filtered by user selected criteria.
Collision Explorer	A tool which plots all locatable collisions on a Google map. Collisions may be filtered, the map may be clicked for collision listings, and individual collisions within a listing may be selected for collision details.
User Manual	Opens the SAFE-T User Manual.
User Policy	Opens the SAFE-T User Policy.
Administrative Functions	Allows a user to view their profile information. Allows system administrators to add, remove, or edit user profiles.
Log Out	Logs out of the SAFE-T system.

Elements of a Collision Study

- **Roadway/Region** defines the geographic extent of the study

- **Date** study time period – usually 3 to 5 years

- **Report** define what items you want to see on the report.

- **Filter** (Optional) find only certain types of crashes

Roadway/Region Select

- Selects type of location
  - Remainder of the panel varies depending on selection

ROADWAY / REGION SELECT

Query Over:
- Entire State
- County
- City Street
- Division
- City
- County Road
- Troop
- Control Section
- Draw Area on Map
- Metro
- Hwy/Hwy Jct
- Tribe

County: 1 - Adair ▼ View County Map   Control Section: 02 - US-59 ▼

Control Section Options   Query On: Entire CS   Intersection/Point   Range

☐ Query over Multiple Roadways or Regions

Roadway/Region Selection

Options:

- A predefined area:
  - Entire State
  - County
  - City
  - OHP Troop
  - ODOT Field Division
  - Metro Area (OKC, Tulsa)
- A rectangular block of county roads or city streets
- A corridor on a highway, road, or street
- An intersection
- *Any combination of the above*
- An area drawn on a map

Date Select

- Collision studies are _usually_ three (3) to five (5) years. A whole number of years is usually best to avoid seasonal bias.

- Collision data is available back to 1998.

- It generally takes 2 weeks for OHP collisions to be received but up to 6 months or longer for some cities to submit their crash reports. The database may lag additional months behind.

Date Select

Choosing your date range:

- The main menu gives the date of the most recent data available. Data are *not* complete or final as of this date. A buffer of 3-6 months or more is suggested if accuracy is important.

- The starting date depends on how long conditions have remained substantially unchanged. Three to five years is the established standard, but sometimes needs to be modified.

- **Avoid this common mistake: 2014 July 01 to 2015 July 01**

	Year	**Month**	**Day**		**Year**	**Month**	**Day**	
FROM:	2014	July	01	**TO:**	2015	July	01	* **Denotes Partial Year**

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Report Sections

Report Preset Quick Links

Basic   Collision Analysis   Sliding Scale Analysis   Concentration Listing   All

- **Collision Map & Study Totals** yields a map and number of collisions by year
- **Collision Analysis Tables** show a breakdown of collisions by various categories
- **Collision Listings** gives summary including type, cause, lighting, etc
- **Query Criteria** echoes the user's selections, for future reference

Other options will be discussed in the advanced class

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Filter Collisions (Optional)

FILTER COLLISIONS

Roadway Type	● All Collision Data	○ Hwy. Data Only	○ City St. Data Only	○ County Rd. Data Only

Common Fields

Collision Severity	▼ *All Selected	Special Features	▼ *All Selected
Unsafe Unlawful (Any Units)	▼ *All Selected	Type of Collision	▼ *All Selected
Harmful Events for Collision	▼ *All Selected	Roadway Departure	▼ *All Selected
Number of Vehicles	▼ *All Selected		

General Options

☐ Intersection Related Only   ☐ Exclude Intersection Related

☐ CMV Collisions Only

☑ Include All Crashes Associated With Every Intersection and Interchange

- Apply filters to include only certain types of collisions

Filters

Roadway Type

Roadway Type		◉ All Collision Data	○ Hwy. Data Only	○ City St. Data Only	○ County Rd. Data Only

- Useful for filtering the data according to State, City, or County jurisdiction

- Collisions which are at intersections or interchanges of State roads with local roads are considered on the State road
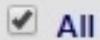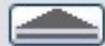
Filters
Common Fields
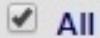
Collision Severity
All Selected

- 0 - Not Stated
- 1 - No Injury
- 2 - Possible Injury
- 3 - Non Incapacitating Injury
- 4 - Incapacitating Injury
- 5 - Fatality

☑ All

Unsafe Unlawful (Any Units)
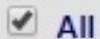*All Selected*

- ----------
- ALL - Failed to Yield
- 1 - From Stop Sign
- 2 - From Yield Sign
- 3 - From Private Drive
- 4 - From County Road at Thru Highway

☑ All

Harmful Events for Collision
All Selected

- 0 - Not Applicable
- 10 - Overturn/Rollover
- 11 - Fire/Explosion
- 12 - Immersion
- 13 - Jackknife
- 14 - Cargo/Equipment Loss or Shift

☑ All

- **Collision Severity** selects collisions based on the most severe injury involved. Filters by collisions, NOT by persons!

- **Unsafe/Unlawful** selects collisions with certain behavior of *any* of the drivers involved, or certain other conditions. Not the cause of collision!

- **Harmful Events for Collison** selects collisions that included any of the selected harmful events, for any vehicle, even if this was not the first or most harmful event.

Collision Severity

- Severity is only the most severe injury in the collision – often a collision will include other injuries of lesser severity

- Will change when MMUCC 5 criteria are implemented

- 5/K/Fatality: Victim died of injuries within 30 days of accident
- 4/A/Incapacitating Injury: Victim had to be transported from scene
- 3/B/Non-Incapacitating Injury: Injuries were visible but victim was able to leave scene without help
- 2/C/Possible Injury: Person complained of pain but was not visibly injured
- 1/O/Property Damage Only: $500 damage or more

Filters

Common Fields

Special Features ex: interchange ramps, driveways, median openings, work zone, median crossovers, etc. 2 per crash and the filter will match **either**

Type of Collision how vehicles approached each other or fixed-object impacts

Roadway Departure Fixed Object and Crossover only apply when neither Roadway Departure Left nor Right could be determined. **Derived field with additional error**

Special Features — *All Selected — ☑ All

0 - Not Stated
1 - Driveway (Influenced by driveway)
2 - Median Opening
3 - 2 Way Turn Bay (5th lane)
4 - Reversible Lane
5 - Construction Zone / Work Zone

Type of Collision — *All Selected — ☑ All

1 - Rear End (front-to-rear)
2 - Head-On (front-to-front)
3 - Right Angle (front-to-side)
4 - Angle Turning
5 - Other Angle
6 - Sideswipe, Same Direction

Roadway Departure — *All Selected — ☑ All

0 - No Roadway Departure
1 - Roadway Departure Right
2 - Roadway Departure Left
3 - Fixed Object
4 - Crossover Median

Filters

General Options Fields

General Options	☐ Intersection Related Only	☐ Exclude Intersection Related
	☐ CMV Collisions Only	
	☐ Include All Crashes Associated With Every Intersection and Interchange	

- **Intersection Related Only** intersections or in queues caused by intersections
- **Exclude Intersection Related** removes intersection related collisions
- **Include All Crashes Associated With Every Intersection and Interchange** includes collisions at every Hwy/Hwy Junction on the Control Section
  - Ex: ramps, overpasses, frontage roads, ramp terminal intersections, etc. Crucial factor when a query goes through a highway/highway interchange with a grade separation

Filters

Roadway Fields

Highway Class	?	▼	*All Selected
National Functional Class	?	▼	*All Selected
Access Control	?	▼	*All Selected
Median Width		▼	*All Selected
Outer Shoulder Width		▼	*All Selected
Road Grade (Any Units)		▼	*All Selected
Trafficway (Any Units)		▼	*All Selected
Speed Limit		▼	*All Selected
Terrain Area Type		▼	*All Selected

Roadway Fields ?

- **Highway Class** ex: county, city, US route, State highway, turnpike, etc. Collisions at intersections and interchanges of highways with local roads have the highway class

- Most other Roadway Filters only work for highways!

Filters

Unit Fields

Unit Fields	Unit Type (Any Units)	▼	*All Selected	Vehicle Type (Any Units)	▼	*All Selected
	Vehicle Condition (Any Units)	▼	*All Selected	Vehicle Action (Any Units)	▼	*All Selected
	Direction of Travel (Unit 1 Only)	▼	*All Selected	Direction of Travel (Unit 2 Only)	▼	*All Selected

- **Unit Fields** looks for *any* unit (vehicle) involved that matches the description

- **Direction of Travel** filters the approaching direction of the vehicle (unit 1 or unit 2). Using *both* Direction filters will *not* select all crashes related to the intersection approach of interest!

Filters

Person Fields

- **Person Fields** filters for any person involved or driver who matches the description

Filters

Environment Fields

Environment Fields

Manner of Collision	▼	*All Selected	**Agency**	▼	*All Selected
Road Conditions (Any Units)	▼	*All Selected	**Light**	▼	*All Selected
Weather	▼	*All Selected	**Relation Junction**	▼	*All Selected
Hour	▼	*All Selected	**Visibility Obscured by (Any Units)**	▼	*All Selected

- **Environment Fields** filters by environment factors such as weather

- **Relation Junction** (seldom used) if the collision was intersection-related or not or what cardinal direction it was from the intersection.

Filter Limitations

- Filters "stack" – a collision has to pass *every* filter to be included

- (Any Units) will match if 1 or more of the units (people or vehicles) in the crash meet the criteria

- Rate Analysis doesn't account for filters applied *except* for Exclude Intersection Related

Report Format Options (Optional)

REPORT FORMAT OPTIONS

Report Title: none

Remarks: none

- **Report Title** (optional) converts to uppercase

- **Remarks** (optional) for comments or notes about the report. Converts to uppercase and italics

- *Advanced account options should be used only as allowed and needed*

Generate Report or Export Data

| Preview Collision Count | Generate Report | Generate Excel Report | Export Collisions | View in Collision Explorer |

Save Criteria | Reset Criteria

- **Preview Collision Count Button** quickly shows the number of collisions without generating a report or opening a window
- **Generate Report** creates a PDF report in a new window
- **Generate Excel Report** creates an Excel version of the PDF report
- **Export Collisions** exports collision data to Excel or to .kml (Google Earth) (advanced)
- **View in Collision Explorer** plots latitudinal-longitudinal collisions on a Google Map

Reset/Save/Load Criteria

| Preview Collision Count | Generate Report | Generate Excel Report | Export Collisions | View in Collision Explorer |

| Save Criteria | Reset Criteria |

- **Reset Criteria** resets the options for an entire query. Use it between different queries (*like during this class*)

- **Save Criteria** saves a query for future use. Saved Criteria may be shared with other users that have the same affiliation

- **Load Criteria** at the **top of the page** may be used to load a previously saved query

Saving and Sharing Query Criteria

Save as new set of criteria:

○ Private: ○ Shared (within Other/Unknown):

○ Description:

[   ]

○ Overwrite existing set of Criteria:

[Save] [Cancel]

- **Save Criteria -** click "Save Criteria", select "*Description*" and enter a name for the query once you have entered all criteria
- **Modify an Existing Criteria –** click "Load Criteria" and edit the query, click "Save Criteria", select "*Overwrite existing set of Criteria*" and select the name of the criteria
- **Delete Criteria** - use the "*Load Criteria*" button, select the query to be deleted, and click "Delete"

Saving and Sharing Query Criteria

Load Criteria

Please select a previously saved set of criteria to load:

○ Private: ○ Shared (within Other/Unknown):

example ▾

Load   Delete   Cancel

- Private or shared
- Loadable by users with the same affiliation
- For consultant users affiliation is the company

Other affiliations may be created on request

Collisions on Highways/Control Sections

- State Highways
- U.S. Highways
- Interstates
- Turnpikes

- Control sections are uniquely numbered within each county and never cross county lines.
- Control Section Maps can be opened in SAFE-T and are available free on the ODOT web site (www.okladot.state.ok.us/traffic/cs_maps/)

Crashes at intersections of highways with local roads are **always** located on the highway control section, not the local road
This includes "intersection related" crashes that physically happened on the local road

Opening Maps Through SAFE-T

Select Query Over: **Control Section**

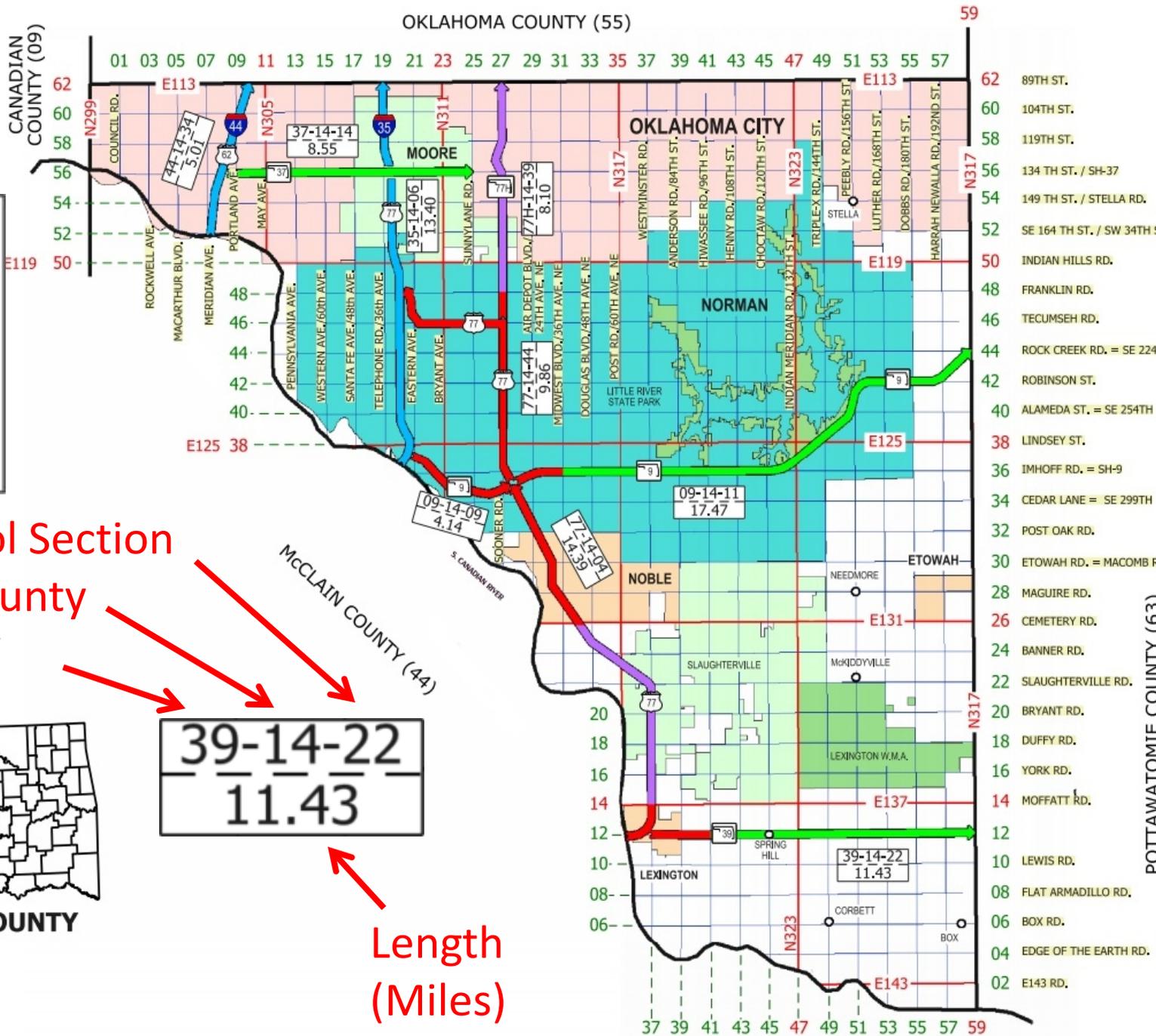| Query Over:	Entire State	Division	Troop	Metro
	County	City	● Control Section 🌐	Hwy/Hwy Jct 🌐
	City Street	County Road	Draw Area on Map	Tribe

County: **14 – Cleveland**

County: [14 - Cleveland ▼] [View County Map]

Click **View County Map**
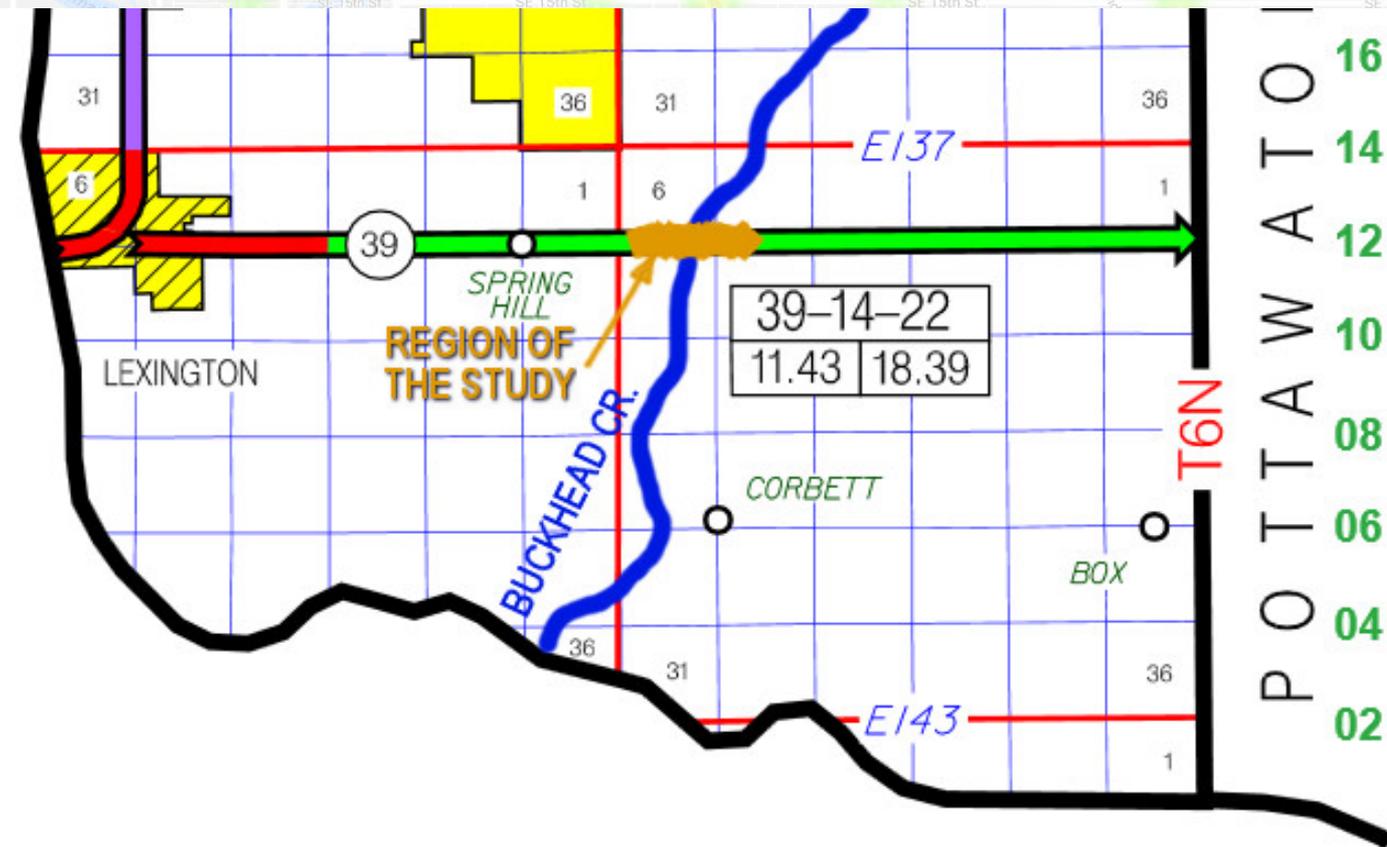
Make sure pop-ups are enabled!

FUNCTIONAL CLASS
- INTERSTATE
- FREEWAY
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- MAJOR COLLECTOR

PROPOSED HIGHWAY

14 - CLEVELAND COUNTY GRID MAP

Control Section
County
Highway

39-14-22
11.43

Length
(Miles)

OKLAHOMA COUNTY (55)

OKLAHOMA CITY

MOORE

NORMAN

NOBLE

ETOWAH

NEEDMORE

SLAUGHTERVILLE

McKIDDYVILLE

LEXINGTON W.M.A.

LEXINGTON

SPRING HILL

CORBETT

BOX

STELLA

LITTLE RIVER STATE PARK

CANADIAN COUNTY (09)

McCLAIN COUNTY (44)

POTTAWATOMIE COUNTY (63)

S. CANADIAN RIVER

44-14-34
5.01

37-14-14
8.55

35-14-06
13.40

77H-14-39
8.10

77-14-44
9.86

09-14-09
4.14

72-14-04
14.39

09-14-11
17.47

39-14-22
11.43

89TH ST.
104TH ST.
119TH ST.
134 TH ST. / SH-37
149 TH ST. / STELLA RD.
SE 164 TH ST. / SW 34TH ST.
INDIAN HILLS RD.
FRANKLIN RD.
TECUMSEH RD.
ROCK CREEK RD. = SE 224
ROBINSON ST.
ALAMEDA ST. = SE 254TH
LINDSEY ST.
IMHOFF RD. = SH-9
CEDAR LANE = SE 299TH
POST OAK RD.
ETOWAH RD. = MACOMB R
MAGUIRE RD.
CEMETERY RD.
BANNER RD.
SLAUGHTERVILLE RD.
BRYANT RD.
DUFFY RD.
YORK RD.
MOFFATT RD.
LEWIS RD.
FLAT ARMADILLO RD.
BOX RD.
EDGE OF THE EARTH RD.
E143 RD.

COUNCIL RD.
ROCKWELL AVE.
MACARTHUR BLVD.
MERIDIAN AVE.
PORTLAND AVE.
MAY AVE.
PENNSYLVANIA AVE.
WESTERN AVE./60th AVE.
SANTA FE AVE./48th AVE.
TELEPHONE RD./36th AVE.
EASTERN AVE.
BRYANT AVE.
AIR DEPOT BLVD./12th AVE. NE
24TH AVE. NE
MIDWEST BLVD./36TH AVE. NE
DOUGLAS BLVD./48TH AVE. NE
POST RD./60TH AVE. NE
INDIAN MERIDIAN RD./132TH ST.
WESTMINSTER RD.
ANDERSON RD./84TH ST.
HIWASSEE RD./96TH ST.
HENRY RD./108TH ST.
CHOCTAW RD./120TH ST.
TRIPLE-X RD./144TH ST.
PEEBLY RD./156TH ST.
LUTHER RD./168TH ST.
DOBBS RD./180TH ST.
HARRAH NEWALLA RD./192ND ST.
SUNNYLANE RD.
SOONER RD.

MAY, 2015

Example 1

Conduct a collision study in Cleveland County on State Hwy. 39 (SH-39) over Buckhill Creek commencing ½ mile west and extending ½ mile east of the creek for the period of Jan. 1, 2012 to Dec. 31, 2014.

Example 1

Conduct a collision study in Cleveland County on State Hwy. 39 (SH-39) over Buckhill Creek starting ½ mile west and ending ½ mile east of the creek

Step 1: Determine what to query over, define the County and Control Section, and what to query on

Control Section, 14 – Cleveland, 22 –SH-39, Range

Example 1

Step 2: Determine the mile points within the control section
Buckhead Creek is at mile **06.12** but study extents are **½ mile west** of the creek to **½ mile east**!

Example 1

1. Use the drop down to find the mileage of the creek (**06.12**)

2. Type the starting mile (06.12 – 0.50 = **05.62**) in the "Start:" field

3. Type the ending mile (06.12 + 0.50 = **6.62**) in the "End:" field

Query On:		○ Entire CS	○ Intersection/Point	⦿ Range

Control Section Options

Start:	Mile: 05.62	Intersection:	▼
End:	Mile: 06.62	Intersection:	▼

After manually entering a milepoint, the description in the dropdown list will no longer be accurate. This will not affect the study.

Example 1

Conduct a collision study in Cleveland County on State Hwy. 39 (SH-39) over Buckhill Creek commencing ½ mile west and extending ½ mile east of the creek for the period of **Jan. 1, 2012 to Dec. 31, 2014**.

Step 3: Select the date range

Use the drop down to define the FROM date **2012 January 01** and the TO date **2014 December 31**

DATE SELECT

	Year	Month	Day		Year	Month	Day	
FROM:	2012 ▼	January ▼	01 ▼	**TO:**	2014 ▼	December ▼	31 ▼	* Denotes Partial Year

Step 4: Set the report outputs in REPORT SECTIONS

Example 1

REPORT SECTIONS

Report Preset Quick Links

Basic   **Collision Analysis**   **Sliding Scale Analysis**   **Concentration Listing**   **All**

Include in Report

☑ **Collision Map & Study Totals**

Map Options | ☐ **Show Entire County on Map**

☐ **Sliding Scale Analysis**
(Highway Data only)

☐ **Collision Analysis Tables**

☐ **Concentration Listing**

☐ **Collision Diagrams**
(Control Section Intersections, Hwy/Hwy Jct's, and City Street Intersections)

☐ **Rate Analysis**
(Control Sections, Hwy/Hwy Jct's only)

☐ **Collision Listings**

☑ **Query Criteria**

For this example leave REPORT SECTIONS alone

Example 1

Step 5: (Optional) Create a report title with remarks

REPORT FORMAT OPTIONS

Report Title:	Buckhill Creek on SH-39 East of Lexington
Remarks:	Prepared for Jethro Bodine

Step 6: Generate the Report!

Click the Generate Report button at the bottom of the page

Preview Collision Count   Generate Report   Generate Excel Report   Export Collisions   View in Collision Explorer

Save Criteria   Reset Criteria

Example 1

Program Provided by:
Traffic Engineering Division
Collision Analysis and Safety Branch
(405) 522-0985
Created: 10/30/2017
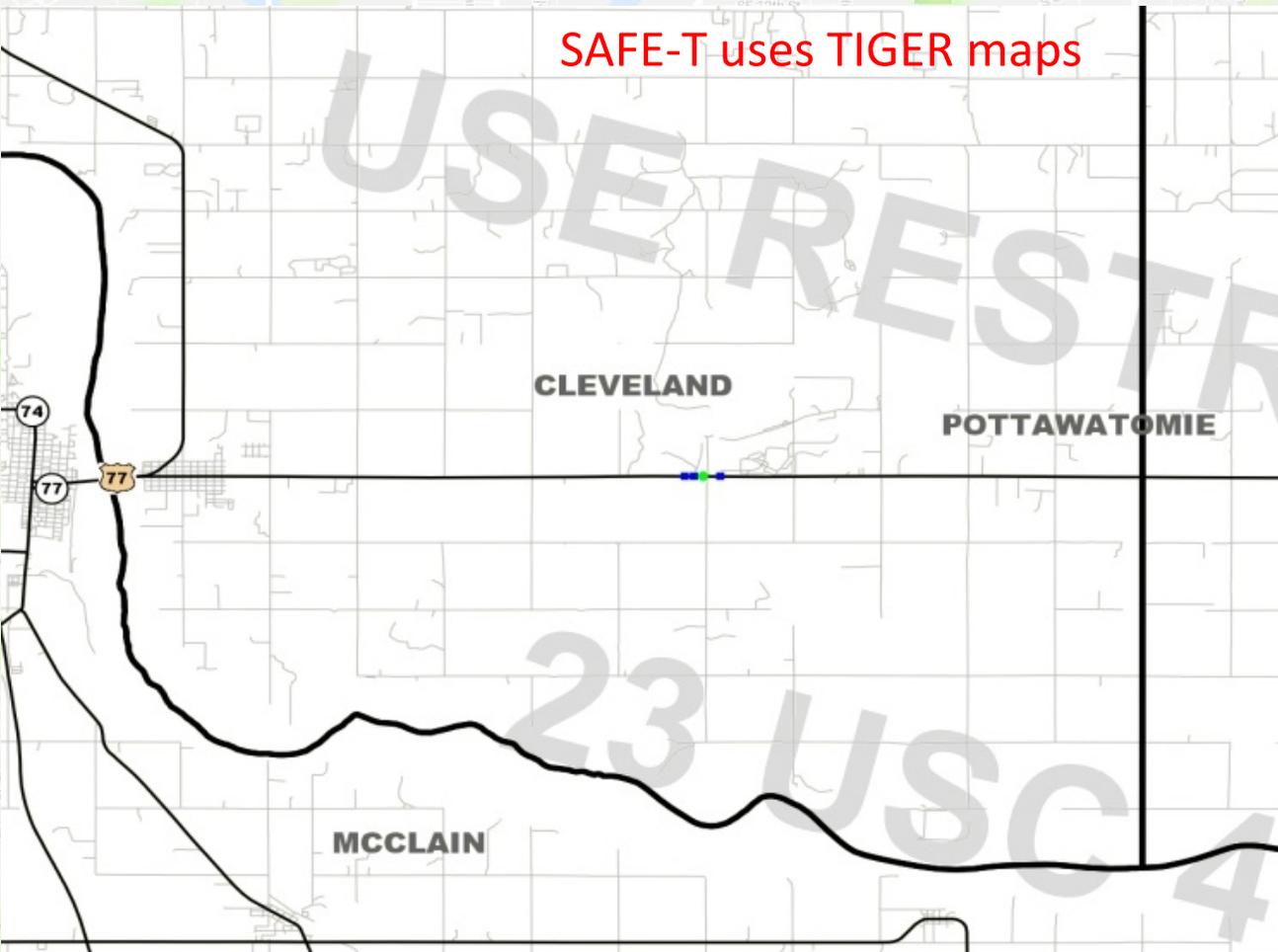 by Standard User

Study Map & Totals

Legend

▲ Fatality

■ Injury

● Property Damage

Remarks:
*PREPARED FOR JETHRO BODINE*

BUCKHILL CREEK ON SH-39 EAST OF LEXINGTON

Date Range: 01-01-2012 thru 12-31-2014

	2012						2013						2014					
	Fat	Incap Inj	Non-Incap Inj	Poss Inj	PD	Tot	Fat	Incap Inj	Non-Incap Inj	Poss Inj	PD	Tot	Fat	Incap Inj	Non-Incap Inj	Poss Inj	PD	Tot
Collisions				2		2						0			1		2	3
Persons				2		2						0			1	1		2

	Study Total					
	Fatality	Incapacitating Injury	Non-Incapacitating Injury	Possible Injury	Property Damage	Total
Collisions			1	2	2	5
Persons			1	3		4

Example 2

Perform a collision study in the City of Duncan (Stephens County) on Beech Ave. from Alice Dr. to N. 7th St. for the period of Jan. 1, 2010 to Dec. 31, 2014 and give the type of collision (Rear-End, Pedestrian, etc.)
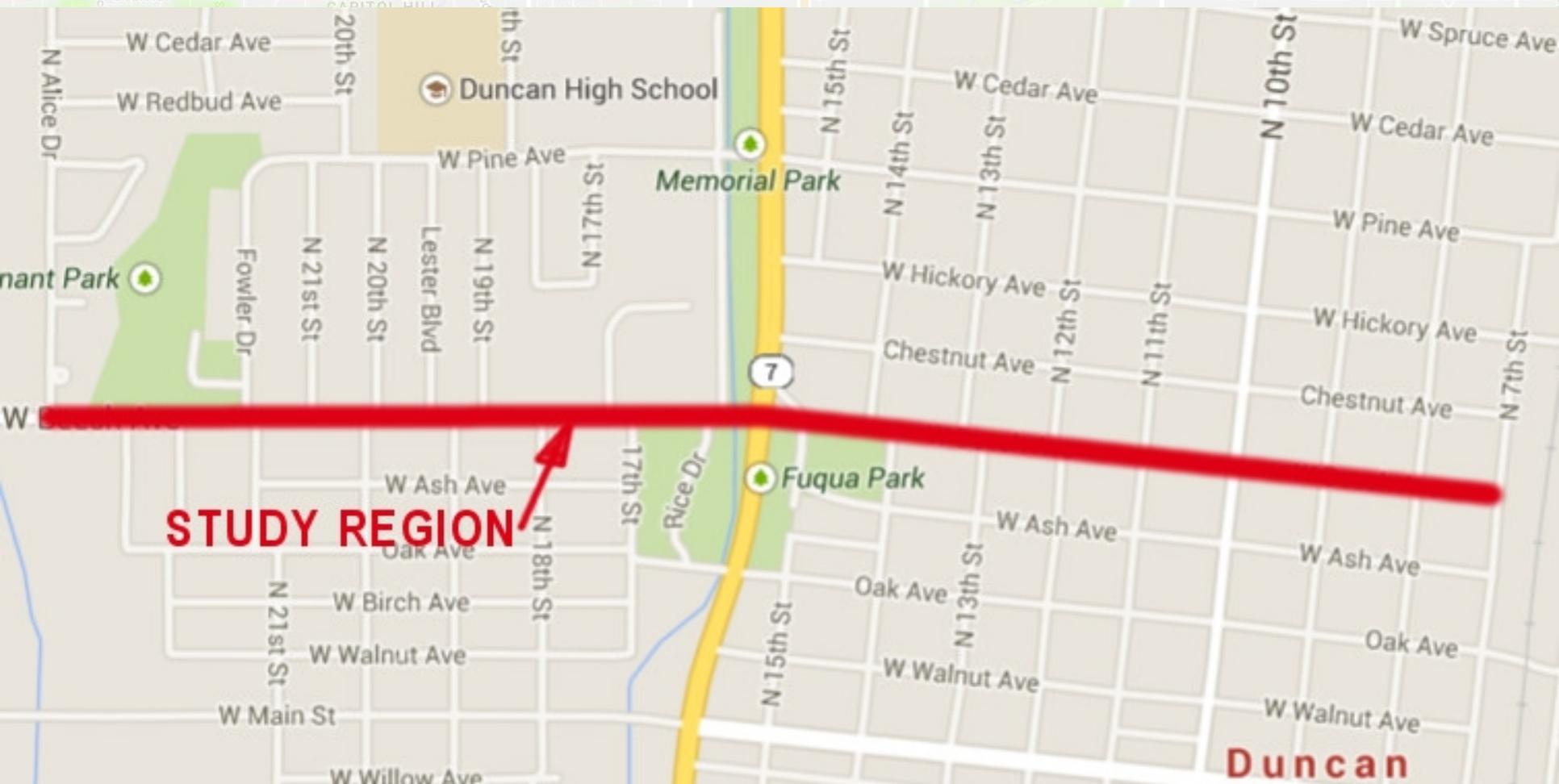
City Street Collisions Example 2

Perform a collision study in the City of Duncan (Stephens County) on Beech Ave. from Alice Dr. to N. 7th St.

Query Over:
- ○ Entire State
- ○ County
- ● City Street
- ○ Division
- ○ City
- ○ County Road
- ○ Troop
- ○ Control Section 🌐
- ○ Draw Area on Map
- ○ Metro
- ○ Hwy/Hwy Jct 🌐
- ○ Tribe

County: 69 - Stephens ▼   View County Map   City: 10 - DUNCAN ▼

City Street Options

Query On: ○ All Streets ● Single Street ○ Range of Streets

- ○ North-South Streets ○ East-West Streets
- 2120 - 1 ST. ▼

- ● On Entire Street
- ○ At Intersection
- ○ On Range of Cross-streets

* Collisions Filtered by Intersection Relation 🌐

Select **City Street**, County (**69 - Stephens**), City (**10 - Duncan**), and **Single Street**

City Street Collisions Example 2

Beech Ave. is East-West so select **East-West Streets** and then pick **3000 -Beech Ave.** *The left hand side is for the street you want to query on.*

Select **On Range of Cross-streets**

Alice Dr. and 7th St. run North-South, **North-South Streets** is preselected

From Cross-Street is **1740 – ALICE DR.** and To Cross-street is **1950 -7 ST.**
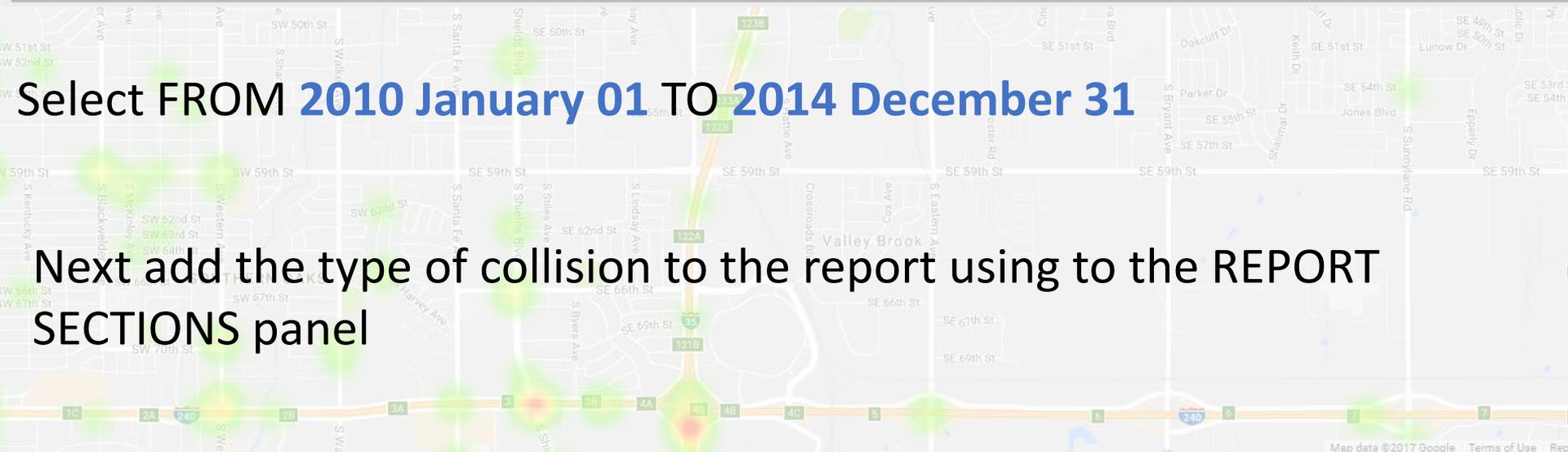
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DATE SELECT

	Year	Month	Day		Year	Month	Day	
FROM:	2010 ▼	January ▼	01 ▼	TO:	2014 ▼	December ▼	31 ▼	* Denotes Partial Year

Select FROM **2010 January 01** TO **2014 December 31**

Next add the type of collision to the report using to the REPORT SECTIONS panel

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City Street Collisions Example 2

In REPORT SECTIONS check **Collision Analysis Tables** and **General Analysis Tables**

Make sure **Collision Map & Study Totals** and **Query Criteria** are checked

Alternatively, just click **Basic** under the Report Preset Quick Links

☑ **Collision Map & Study Totals**

Map Options | ☐ Show Entire County on Map

☐ **Sliding Scale Analysis**
(Highway Data only)

→ ☑ **Collision Analysis Tables**

Options | ☐ Collision Totals By City, Highway Class
☐ Collision Totals By Fiscal Year
→ ☑ General Analysis Tables

☐ **Concentration Listing**

☐ **Collision Diagrams**
(Control Section Intersections, Hwy/Hwy Jct's, and City Street Intersections)

☐ **Rate Analysis**
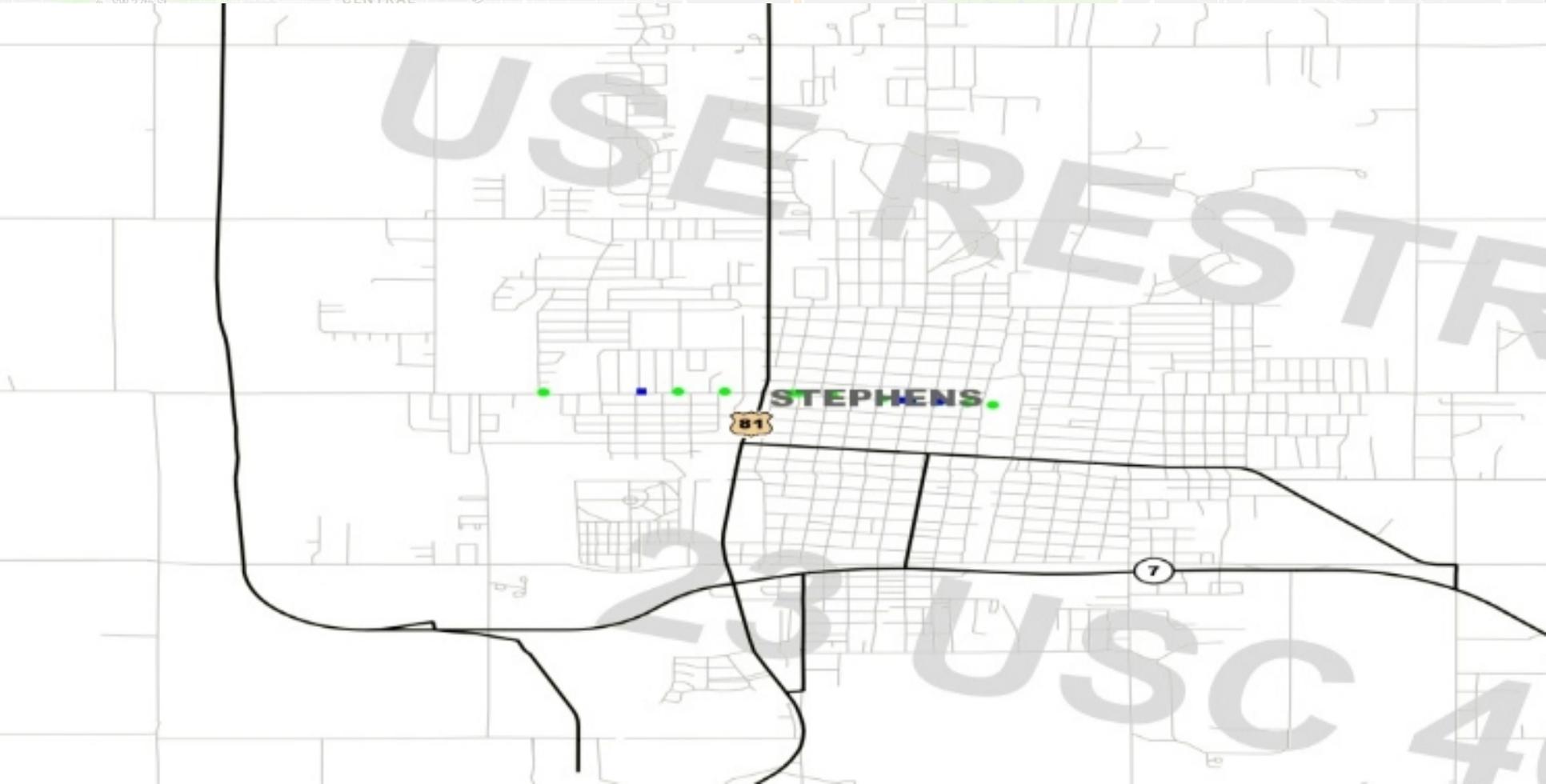(Control Sections, Hwy/Hwy Jct's only)

☐ **Collision Listings**

☑ **Query Criteria**

City Street Collisions Example 2

Optional: enter the report title and remarks

Generate the Report!

City Street Limitations

- City street queries don't always work correctly because streets aren't always numbered in sequence

- Mid block collisions are plotted 100' from the nearest intersection, not at the actual location

- Some city streets used to be highways, and old collisions may not have been recoded

- Crashes on boundaries between cities could be coded in either city

Collisions on County Roads
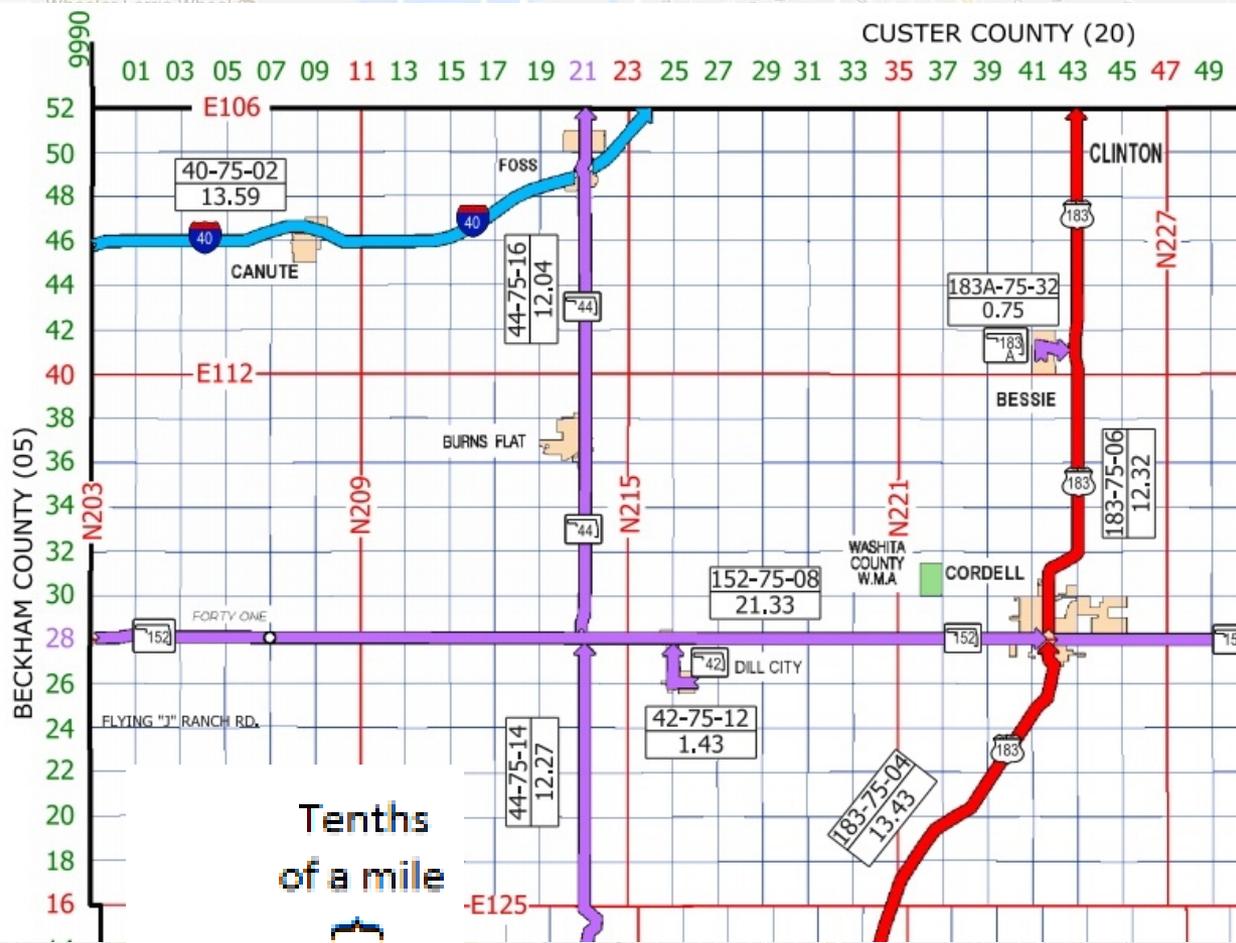
County roads are by grid number, shown on the control section maps.
Grid numbers follow survey lines, not roads!
North-South grid lines often start at 9990 instead of 0010. The last digit is tenths of a mile north or east of the gridline.

Opening County Maps in SAFE-T

Query Over:

- ○ Entire State
- ○ County
- ○ City Street
- ○ Division
- ○ City
- ● County Road
- ○ Troop
- ○ Control Section 🌐
- ○ Draw Area on Map
- ○ Metro
- ○ Hwy/Hwy Jct 🌐
- ○ Tribe

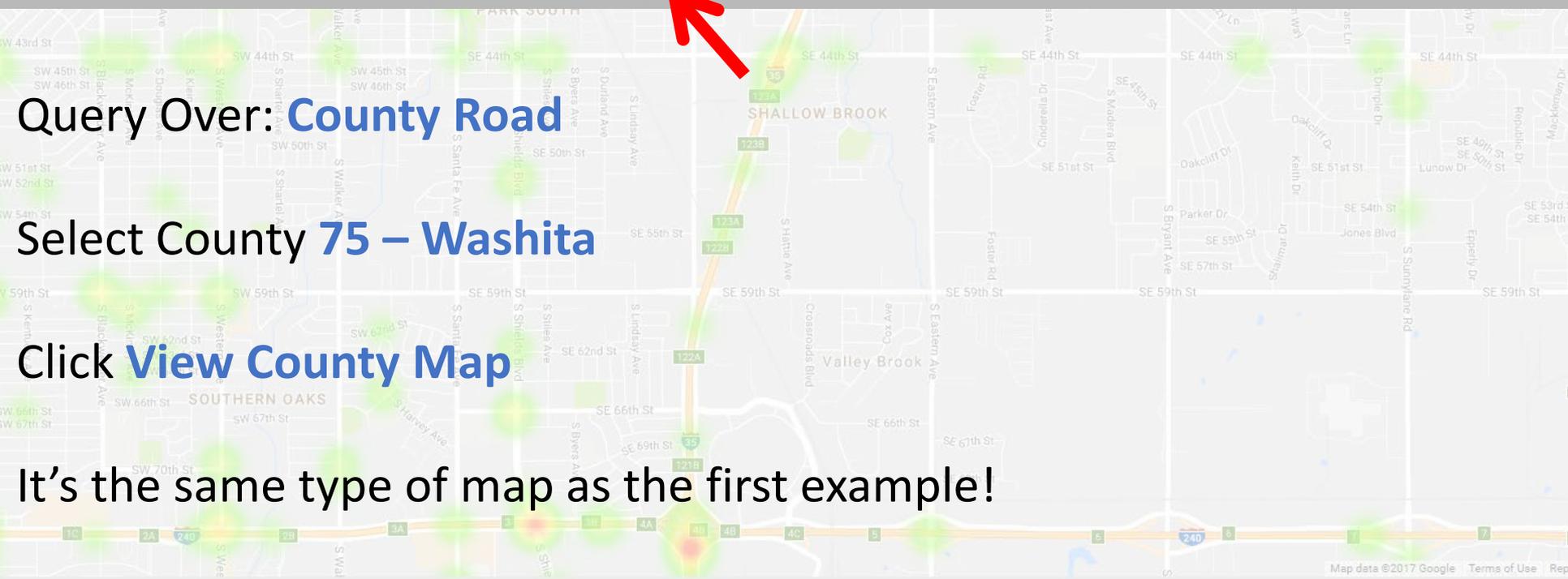County: [75 - Washita ▾] [View County Map]

Query Over: **County Road**

Select County **75 – Washita**

Click **View County Map**

It's the same type of map as the first example!

Reading County Grids

40-75-02
13.59

FOSS

44-75-16
12.04

0290 NS
0480 EW

0050 NS
0360 EW

At what grid intersection is the yellow star at?
At what grid intersection is the red star at?

County Road Collisions Example 3

Perform a collision study in Washita County for a 5 square mile area in the Northwest corner of the county from Jan. 1, 2004 to Dec. 31, 2014 and give a collision analysis report.
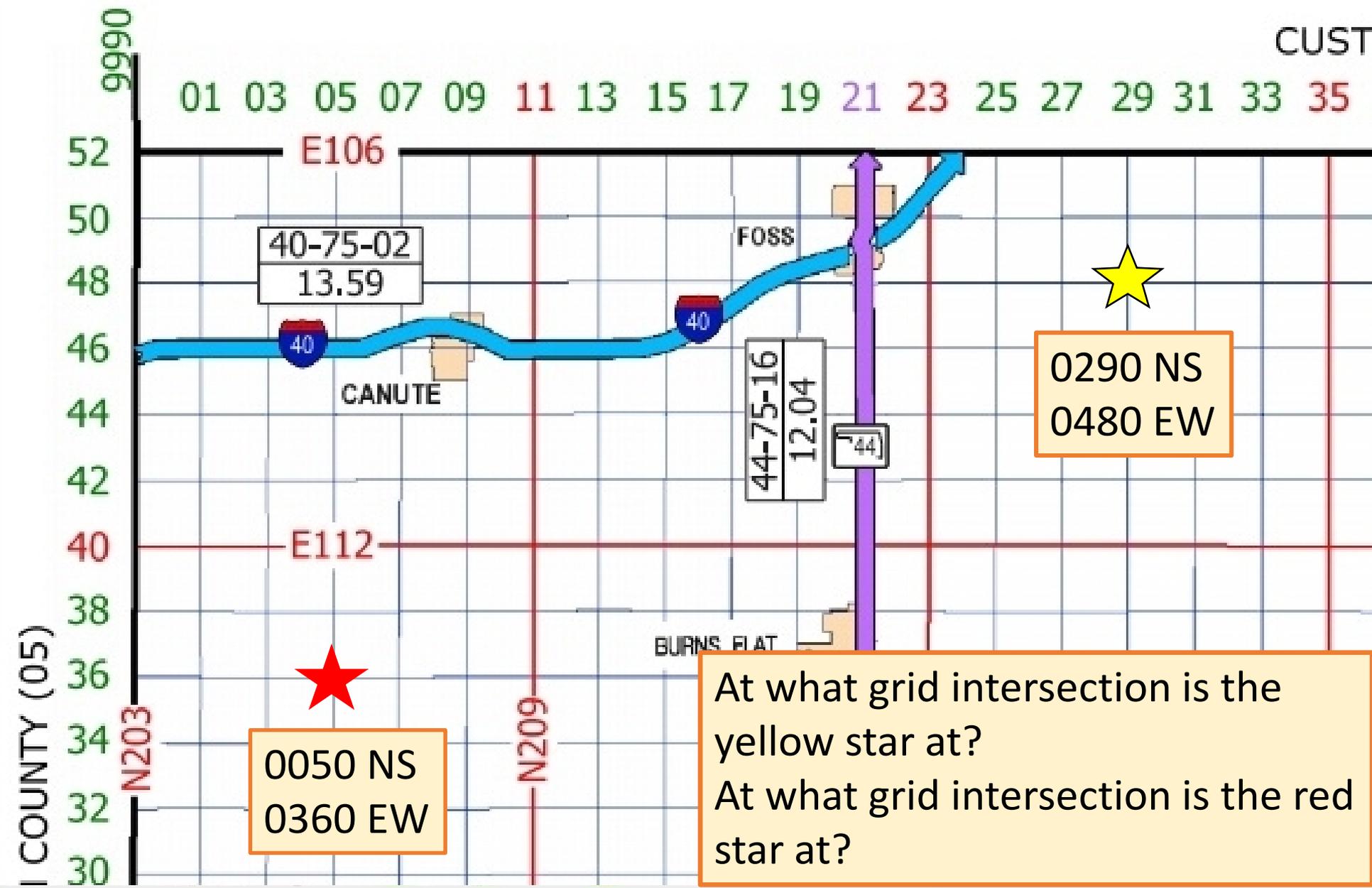
County Road Collisions Example 3

Query Over:

- ○ Entire State
- ○ Division
- ○ Troop
- ○ Metro
- ○ County
- ○ City
- ○ Control Section
- ○ Hwy/Hwy Jct
- ○ City Street
- ● County Road
- ○ Draw Area on Map
- ○ Tribe

County: [75 - Washita ▼] [View County Map]

County Road Grid Coordinates

North-South Lines:
- ○ All
- ○ Single Line
- ● Range

[0000] to [9999]
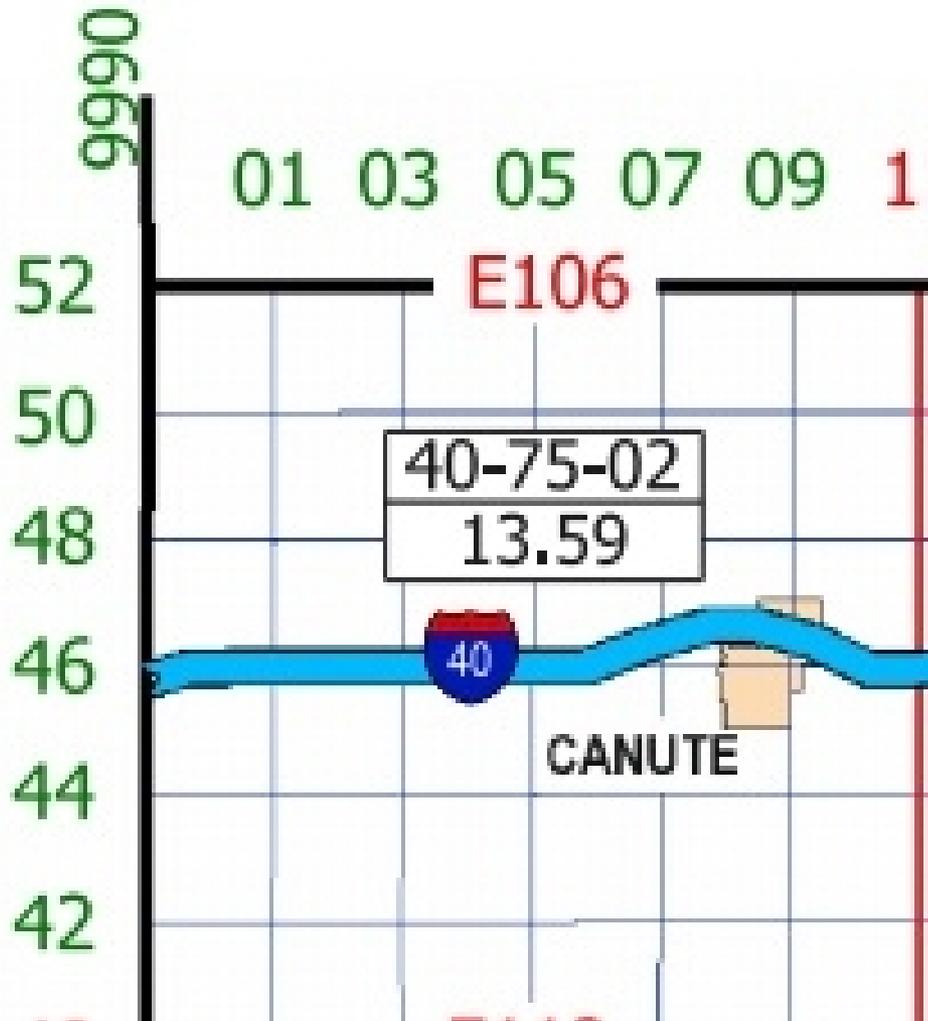
East-West Lines:
- ○ All
- ○ Single Line
- ● Range

[0020] to [9989]

☐ Query over Multiple Roadways or Regions

Select **County Road**, County **75 – Washita**, and **Range** for North-South and East-West Lines.

County Road Collisions Example 3

- If you enter the north-south grid lines from 9990 to 0090 as a single query SAFE-T will run it from 0090 to 9990

- 0090 to 9990 misses all of 9991-9999, and includes 0100-9989!

- **Query over Multiple Roadways or Regions** must be used

County Road Collisions Example 3
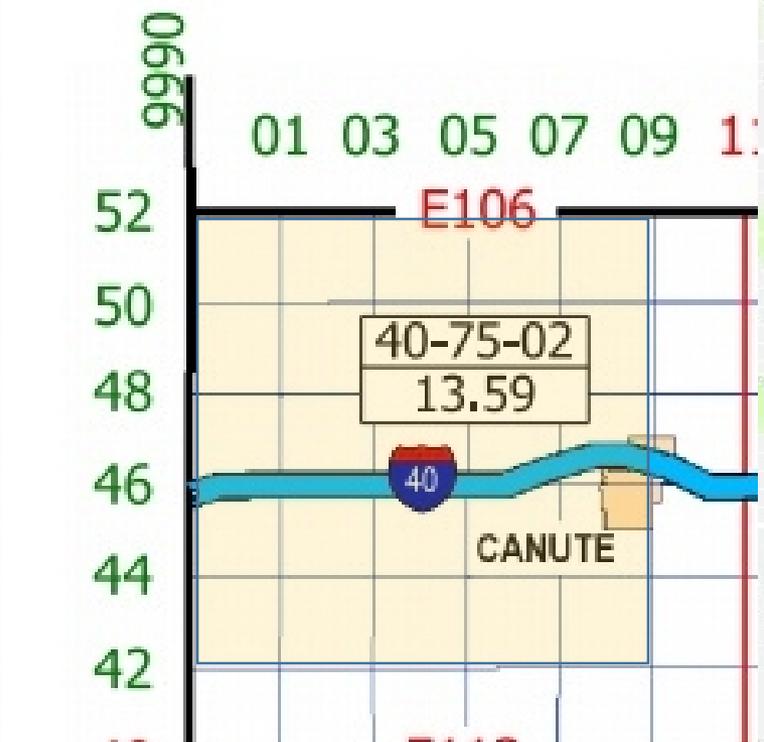
This block must be done in multiple parts because it goes from 9990 to 0090!

Enter the North-South Lines from **9990** to **9999**

Enter the East-West Lines from **0420** to **0520**

Click **Query over Multiple Roadways or Regions**

Select **Add Selected Roadway/Region**

01 03 05 07 09 11

E106

52
50
48
46
44
42

40-75-02
13.59

40

CANUTE

9990

County Road Grid Coordinates	North-South Lines:			East-West Lines:		
	○ All	○ Single Line	◉ Range	○ All	○ Single Line	◉ Range
			9990 to 9999			0420 to 0520

Add Selected Roadway/Region

☑ Query over Multiple Roadways or Regions

County Road Collisions Example 3

- Enter the North-South Lines from **0010** to **0090**

- Enter the East-West Lines from **0420** to **0520**

- Select **Add Selected Roadway/Region**

County Road Grid Coordinates	North-South Lines:			East-West Lines:		
	○ All	○ Single Line	◉ Range	○ All	○ Single Line	◉ Range
		0010 to 0090			0420 to 0520	

Add Selected Roadway/Region

☑ Query over Multiple Roadways or Regions

SELECTED ROADWAYS / REGIONS

	Query Over	Selections	
1	County Road	County: 75, N-S Query On: range, From: 9990, To: 9999, E-W Query On: range, From: 0420, To: 0520	Remove
2	County Road	County: 75, N-S Query On: range, From: 0010, To: 0090, E-W Query On: range, From: 0420, To: 0520	Remove

County Road Collisions Example 3

Perform a collision study in Washita County for a 5 square mile area in the Northwest corner of the county from **Jan. 1, 2004 to Dec. 31, 2014** and give a collision analysis report.

DATE SELECT

	Year	Month	Day		Year	Month	Day	
FROM:	2004 ▼	January ▼	01 ▼	TO:	2014 ▼	December ▼	31 ▼	* Denotes Partial Year

- The range is FROM **2004 January 01** TO **2014 December 31**

- The range is exactly 11 years

- **Was that intentional?**

County Road Collisions Example 3

- In REPORT SECTIONS select **Collision Analysis** under the Report Preset Quick Links

- Double check that **County Road Collision Listing** has been checked under Collision Listings

Report Preset Quick Links

Basic   Collision Analysis   Sliding Scale Analysis   Concentration Listing

Include in Report

☑ Collision Map & Study Totals

| Map Options | ☐ Show Entire County on Map |

☐ Sliding Scale Analysis
(Highway Data only)

☑ Collision Analysis Tables

Options	☐ Collision Totals By City, Highway Class
	☐ Collision Totals By Fiscal Year
	☑ General Analysis Tables

☐ Concentration Listing

☐ Collision Diagrams
(Control Section Intersections, Hwy/Hwy Jct's, and City Street Intersections)

☐ Rate Analysis
(Control Sections, Hwy/Hwy Jct's only)

☑ Collision Listings

Options	☑ Highway Collision Listing
	● By Control Section ○ By City, with Sev Index
	☐ City Street Collision Listing
	☑ County Road Collision Listing

☑ Query Criteria

County Road Collisions Example 3

Optional: Enter the **Report Title** and **Remarks**

REPORT FORMAT OPTIONS

Report Title:	Washita County Collision Report - NW Corner 5 sq miles
Remarks:	Generated for Groucho

Generate the Report

| Preview Collision Count | Generate Report | Generate Excel Report | Export Collisions | View in Collision Explorer |

Save Criteria | Reset Criteria

County Road Collisions Example 3

CUSTER

BECKHAM

WASHITA

Program Provided by:
Traffic Engineering Division
Collision Analysis and Safety Branch
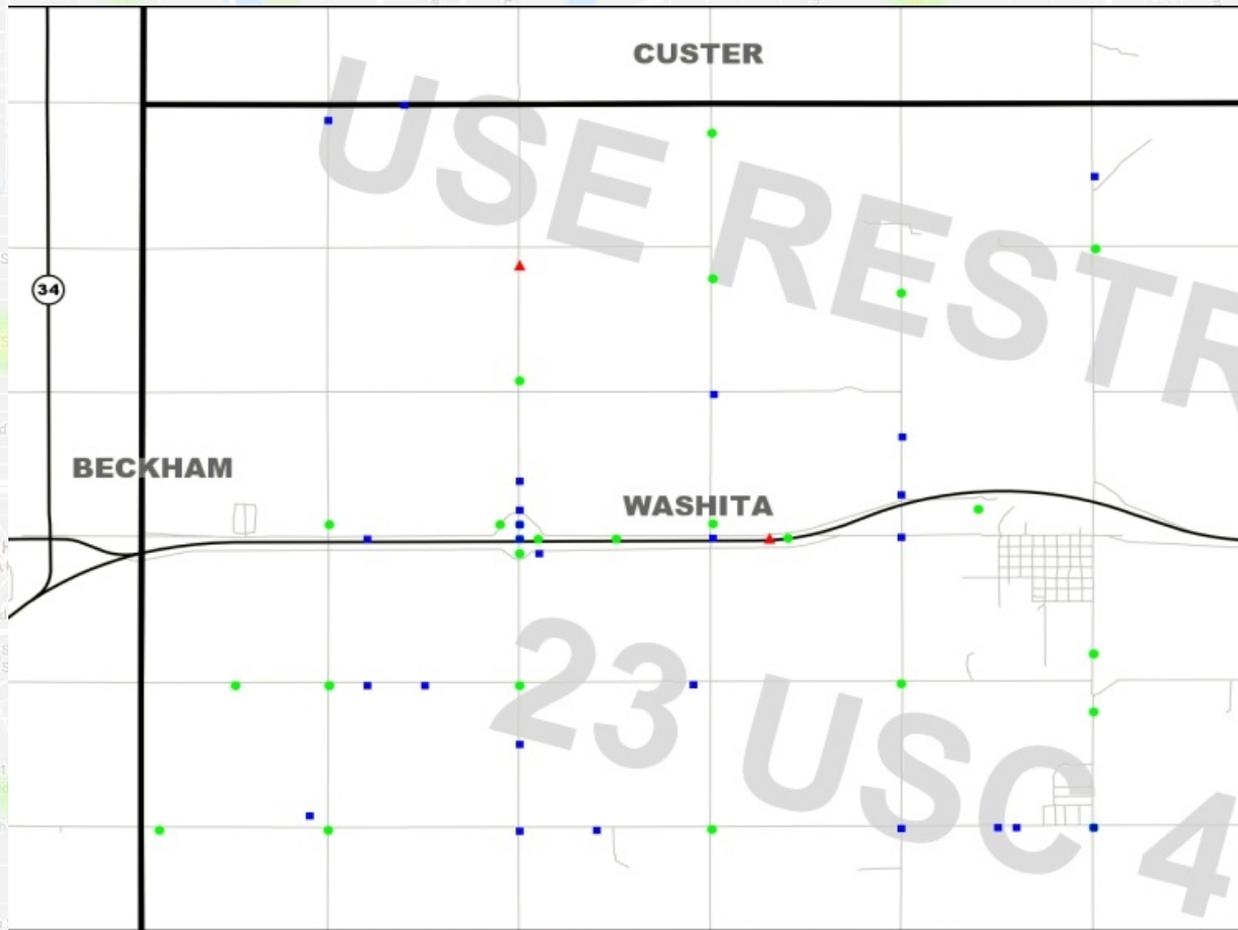(405) 522-0985
Created: 10/31/2017
by Standard User

Study Map & Totals

Legend

▲ Fatality
■ Injury
● Property Damage

Remarks:
GENERATED FOR GROUCHO

WASHITA COUNTY COLLISION REPORT - NW CORNER 5 SQ MILES

Date Range: 01-01-2004 thru 12-31-2014

	2004						2005						2006					
	Fat	Incap Inj	Non-Incap Inj	Poss Inj	PD	Tot	Fat	Incap Inj	Non-Incap Inj	Poss Inj	PD	Tot	Fat	Incap Inj	Non-Incap Inj	Poss Inj	PD	Tot
Collisions			1	1	3	5			2	2		4			2	1	1	4
Persons			1	1		2		1	3	3		7			4	1		5

	Study Total					
	Fatality	Incapacitating Injury	Non-Incapacitating Injury	Possible Injury	Property Damage	Total
Collisions	2	8	13	7	29	59
Persons	2	11	21	14		48

Driver by Driver Conditions Table

Alcohol Involved columns are split into **Ability Impaired** and **Odor Detected**.

Unsafe/Unlawful	Apparently Normal Fat	Apparently Normal Inj*	Apparently Normal PD	Ability Impaired Fat	Ability Impaired Inj*	Ability Impaired PD	Odor Detected Fat	Odor Detected Inj*	Odor Detected PD	Sleep Suspected Fat	Sleep Suspected Inj*	Sleep Suspected PD
Failed to Yield			2								1	
Failed to Stop	1	257	470		1	2		1	1			
Failed to Signal		118	152		2	2		1			1	
Improper Turn								1				
Improper Start		71	145		1	1		1			1	
Improper Stop		1	14									
Improper Backing		2	10									
Improper Parking		4	73									
Improper Passing			4									
Improper Lane Change		7	15									
Left of Center		27	100									1
Following Too Close		12	19		2	1		1			1	2
Unsafe Speed		186	394			1		1				3
DWI	6	77	131		1	2		2	2			2
Inattention		1	1		26	42		4	9		1	
Negligent Driving	1	99	200		2			2	4		9	23
Defective Vehicle		3	10									
Wrong Way		16	43					1				
No Improper Action		1	1		1							
Other	8	980	1745		4	1		1	1		1	
Total	18	1909	3629		41	55		15	19		15	32
Percent	0.3	31.8	60.4		0.7	0.9		0.2	0.3		0.2	0.5

> NOT a table of crash causes! It contains 1 point for each driver regardless of the number of mistakes.

County Road Limitations

- Accuracy is 0.10 mile at best

- Crashes on boundaries between counties could be coded in either county
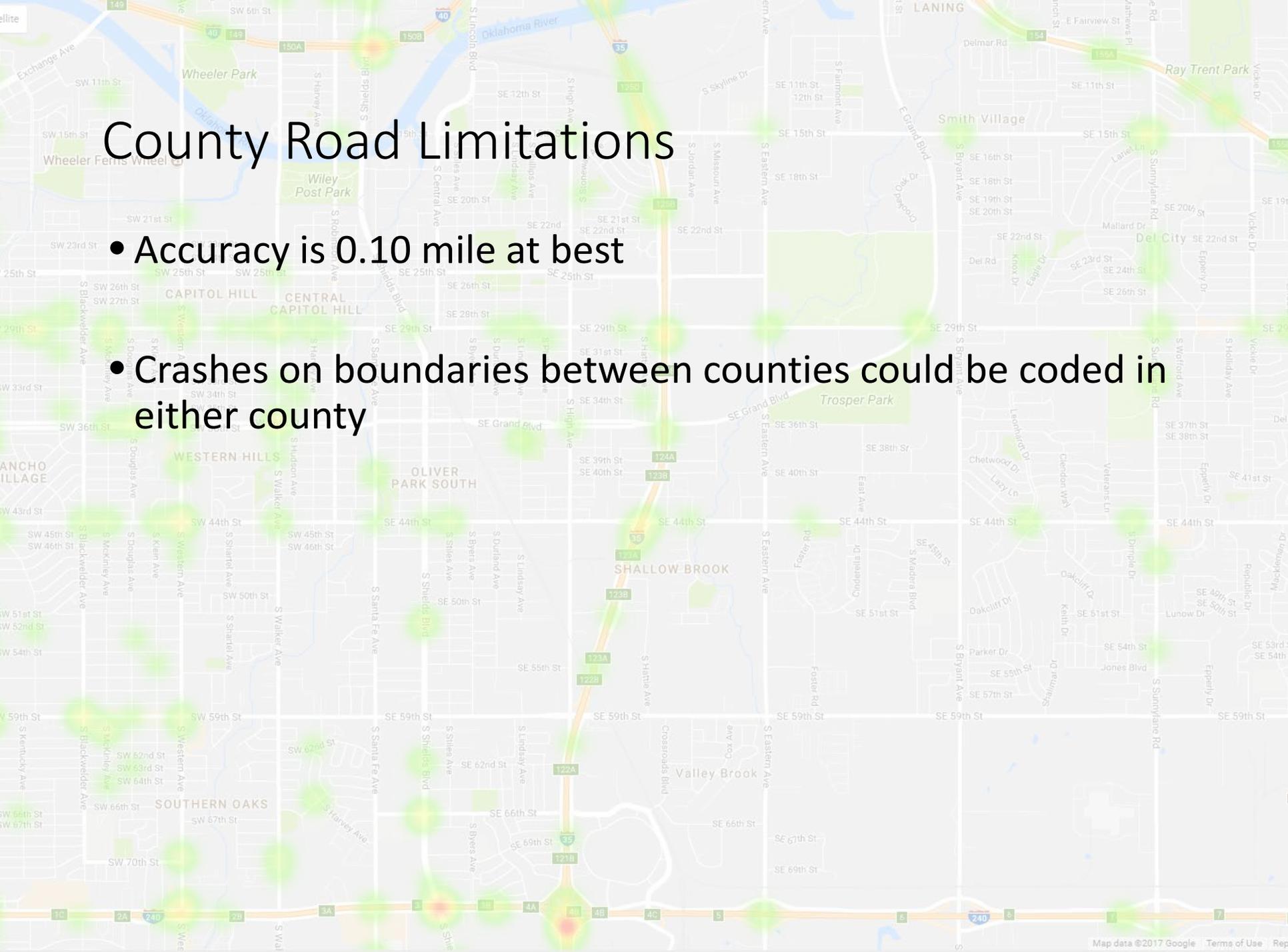
Interchange Sketches

- Locations within interchanges can be isolated by using interchange sketches

- Milepoints within interchanges give View Intersection Sketch button

Query On:		Entire CS	○ Intersection/Point	○ Range

Control Section Options

Mile: 04.80   Intersection: 04.80 - CANUTE EB EX47*1* ▼   View Intersection Sketch

- Sketches may also be found at http://www.okladot.state.ok.us/traffic/intersections/

- Every location within the interchange is assigned a control section and mile point, and most also have a Special Feature to designate them.
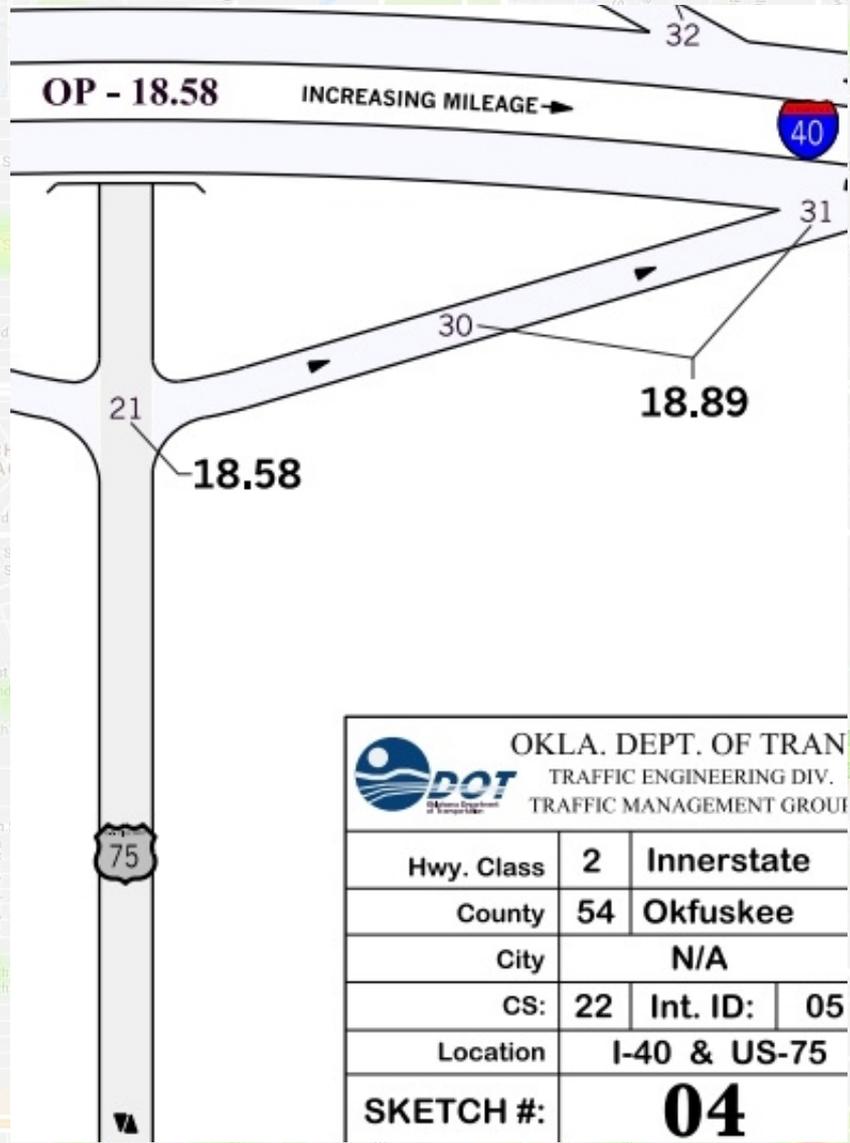
Interchange Sketches

Mile point

Special Features

Hwy. Class	2	Innerstate
County	54	Okfuskee
City		N/A
CS:	22	Int. ID: 05
Location		I-40 & US-75
SKETCH #:		**04**
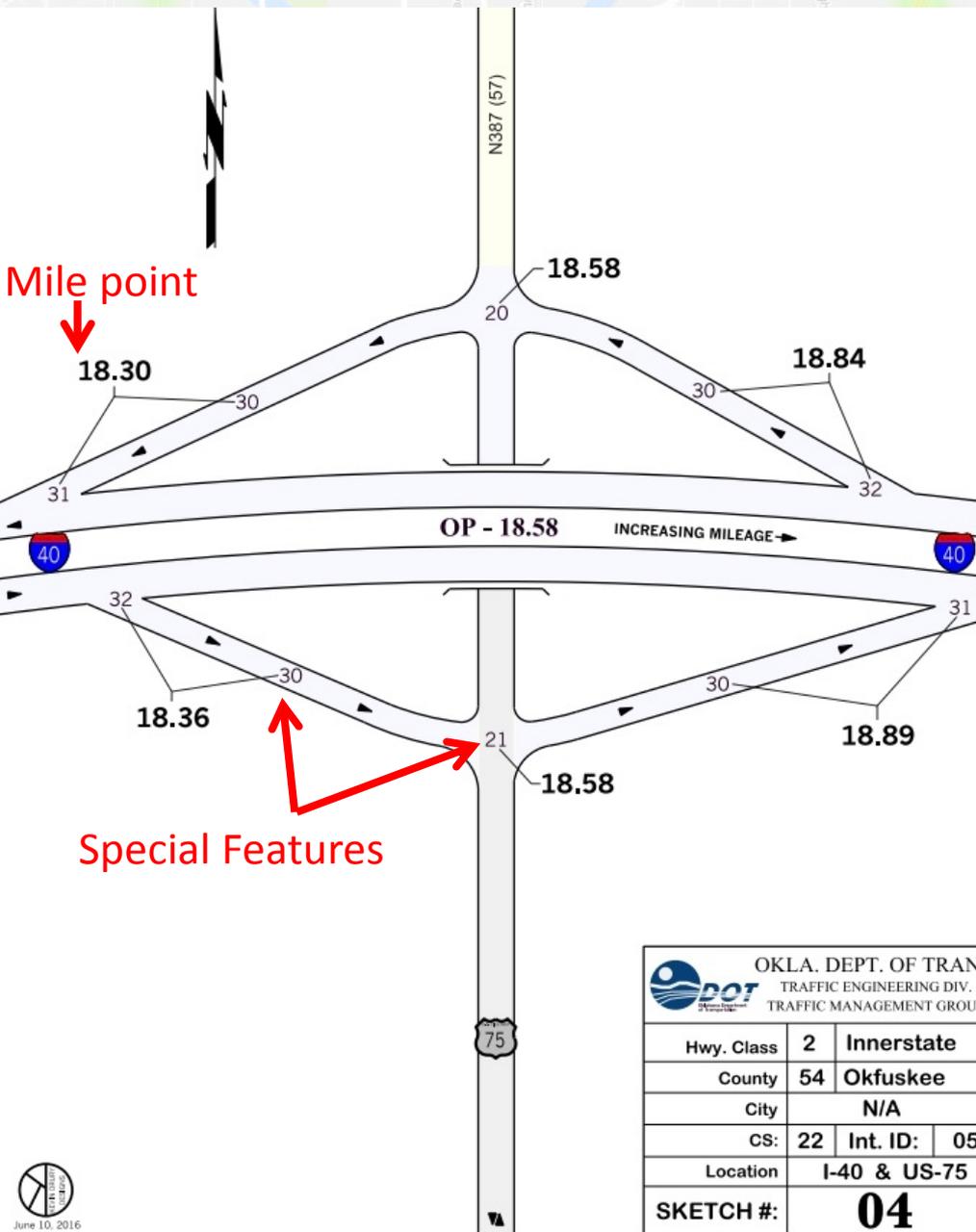
- Only **1** control section (the mainline) per interchange. Not always the highway the crash actually happened on
- Special Features are given as numbers on the sketches. Ex: Special Feature 31 is always the merge point of a ramp onto the mainline
- Can filter by Special Features
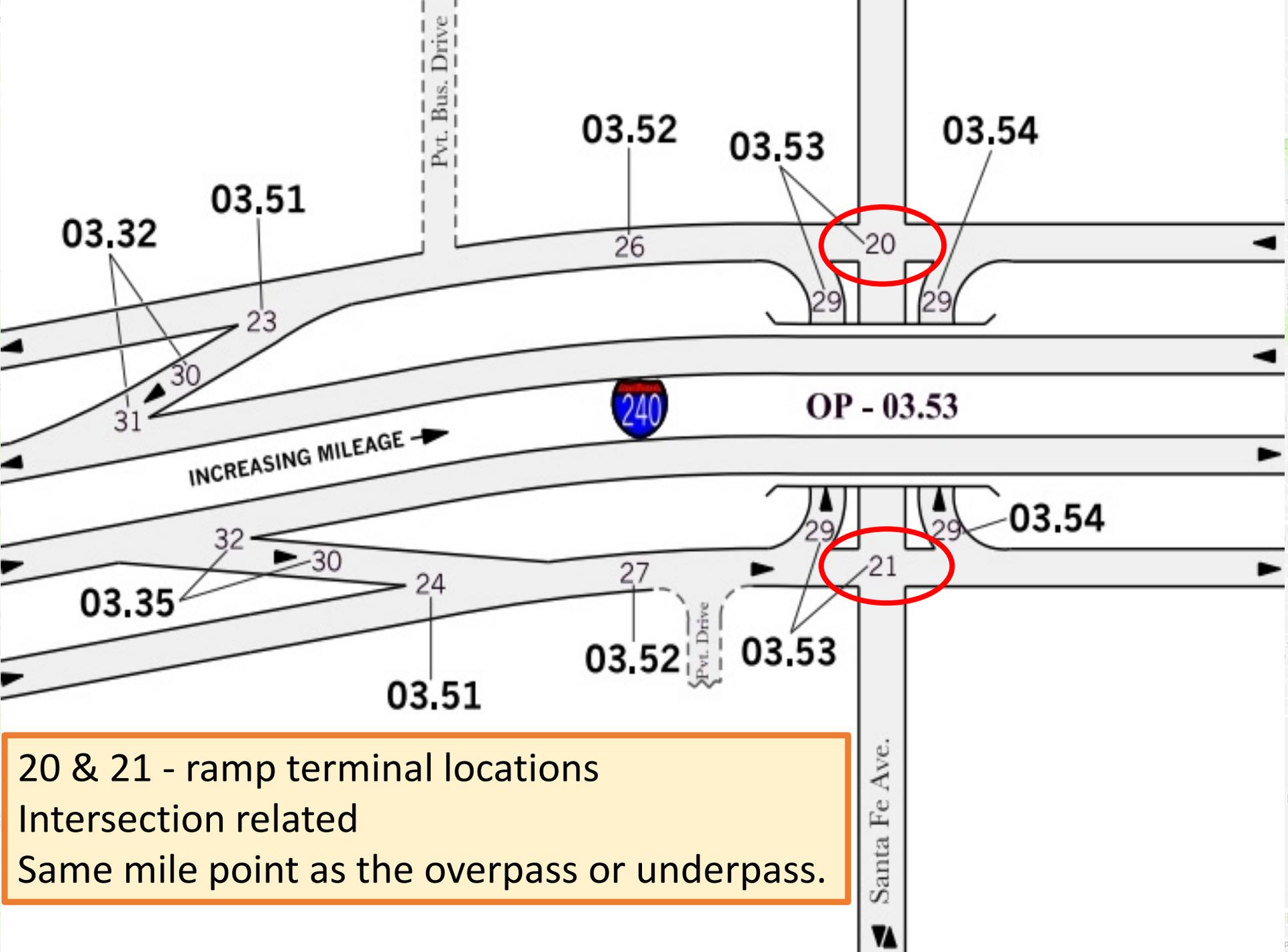- Can export Special Features in the Collision Listing portion of a report
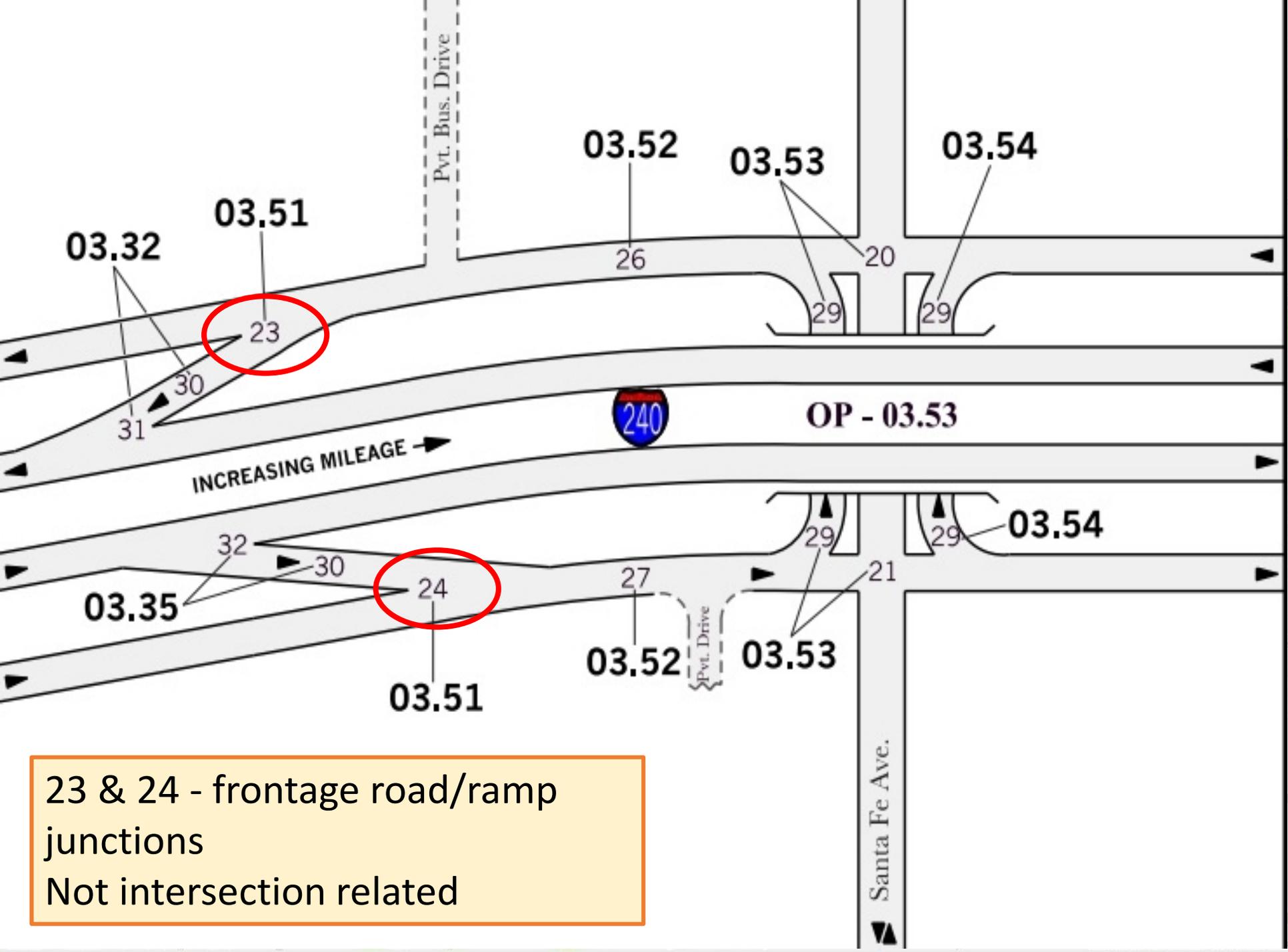
Interchange Sketches

- Special features always have a corresponding mile point
  - Ex: every crash at the eastbound ramp has mile point 18.89 regardless of where it happened on the ramp
- Every HWY-HWY interchange has an "Int ID" number to identify it within the county. All crashes in the interchange will be connected to this Int ID.

20 & 21 - ramp terminal locations
Intersection related
Same mile point as the overpass or underpass.

03.32   03.51   03.52   03.53   03.54

Pvt. Bus. Drive

26   20

29   29

I-240   OP – 03.53

INCREASING MILEAGE →

23
30
31

32   30   27
03.35   24   03.52   03.53
03.51

29   29   03.54
21

Pvt. Drive

Santa Fe Ave.

23 & 24 - frontage road/ramp junctions
Not intersection related

Interchange Special Features
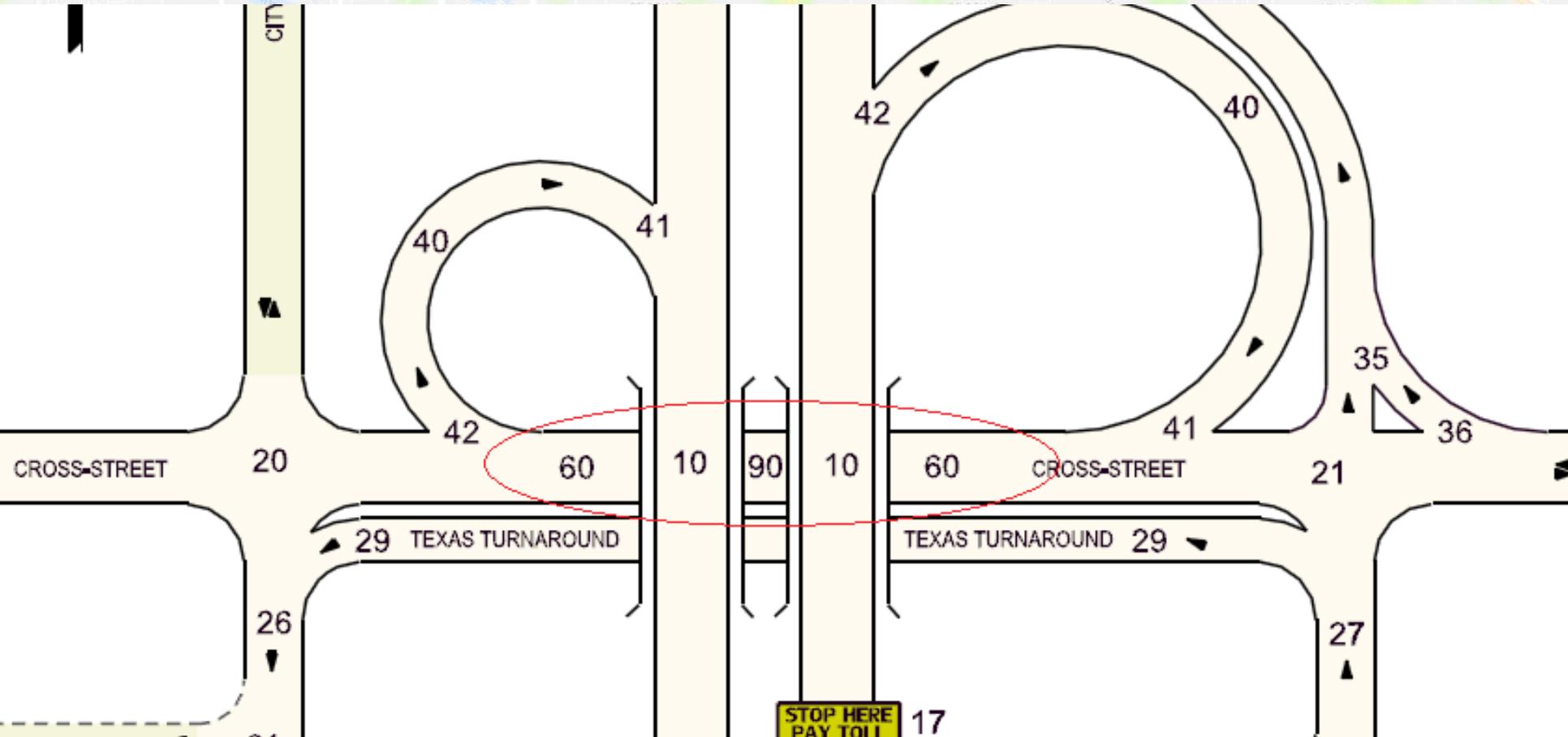
- 10 is mainline, on or under a bridge. 90 is the cross route, on or under a bridge.
- 60 is *non-highway* crossroad between ramp terminals. Uses its own mile points

Labels do not consistently appear! Some special features can be used outside of interchanges

Interchange Sketch Example
I-44, US-412 & Creek Turnpike, County 66, CS 30
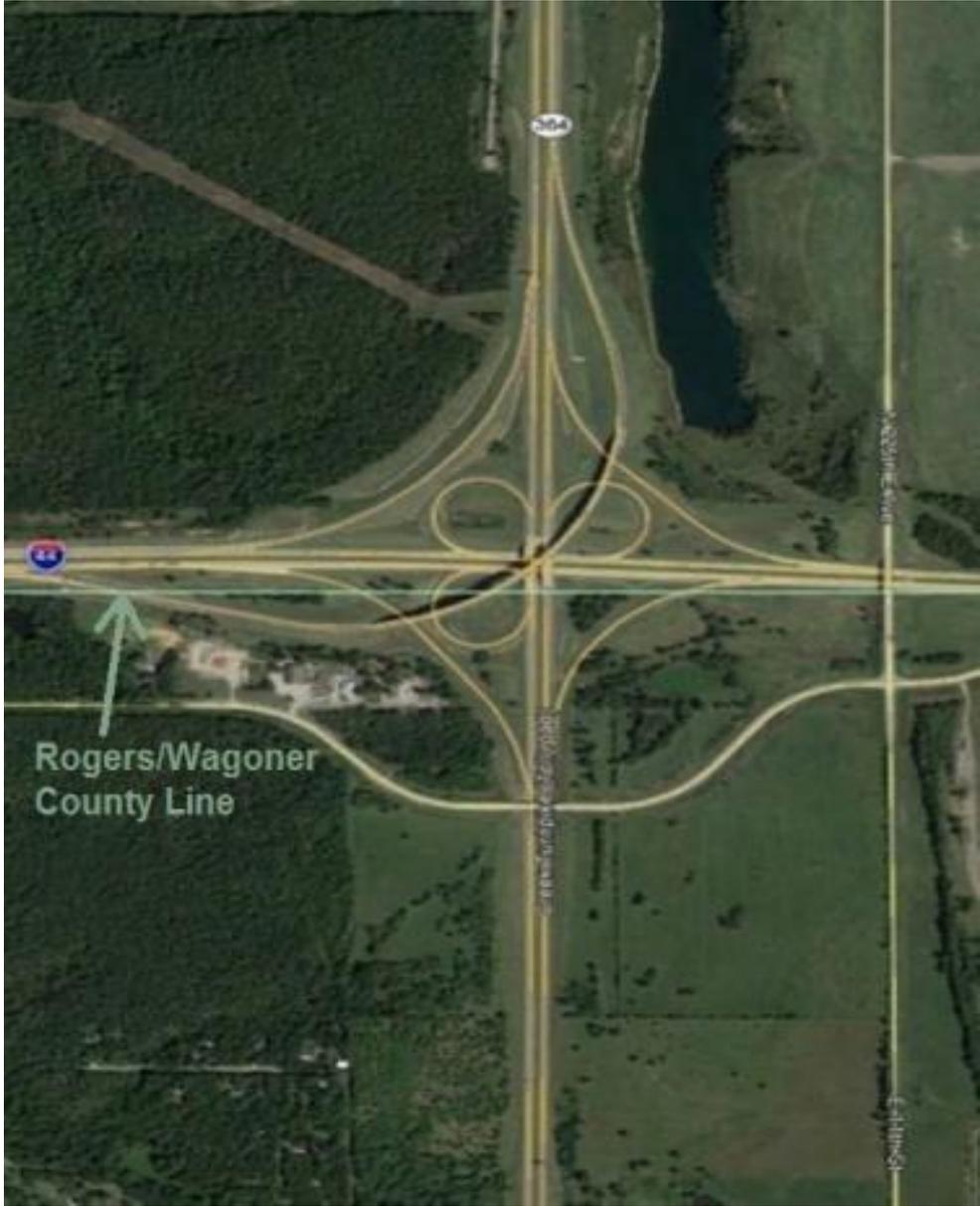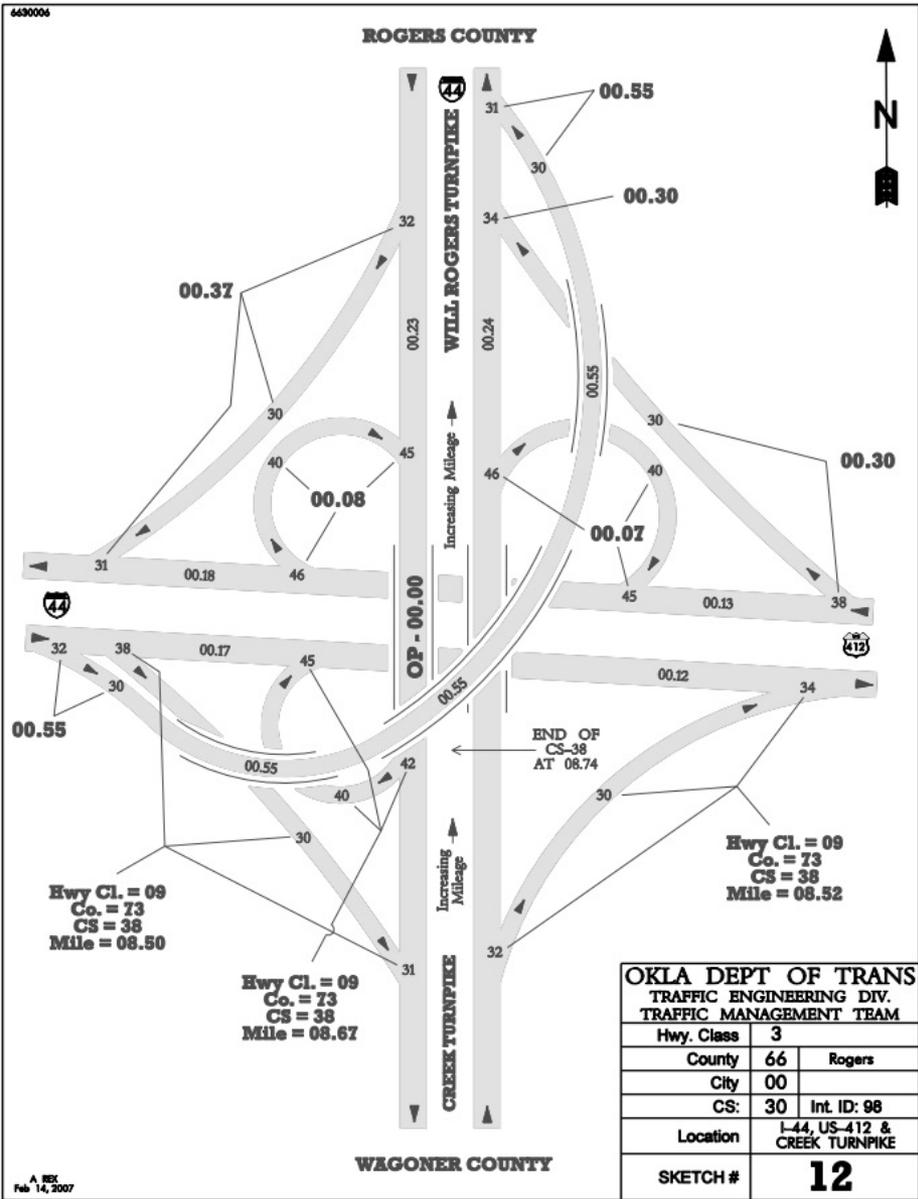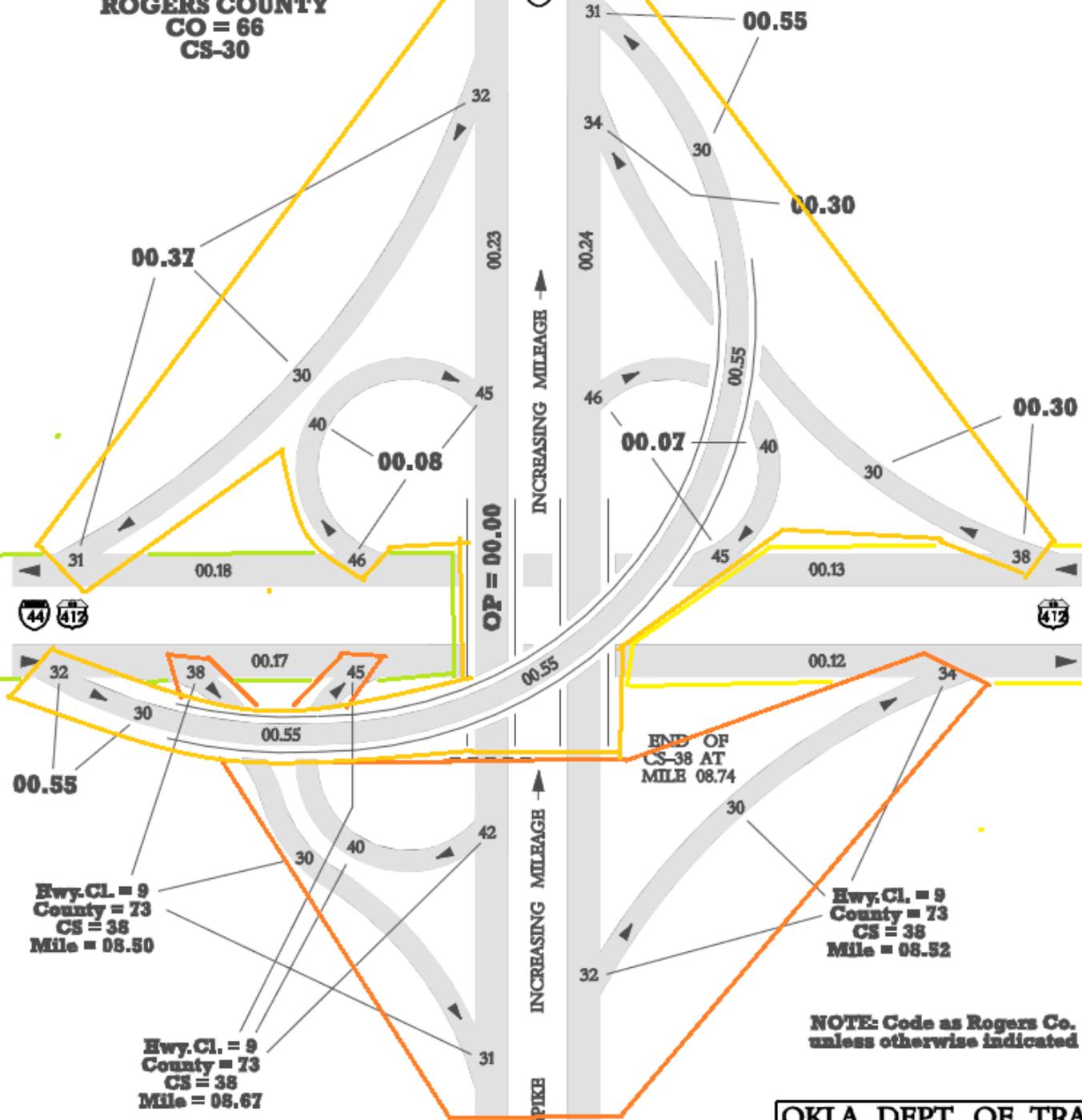
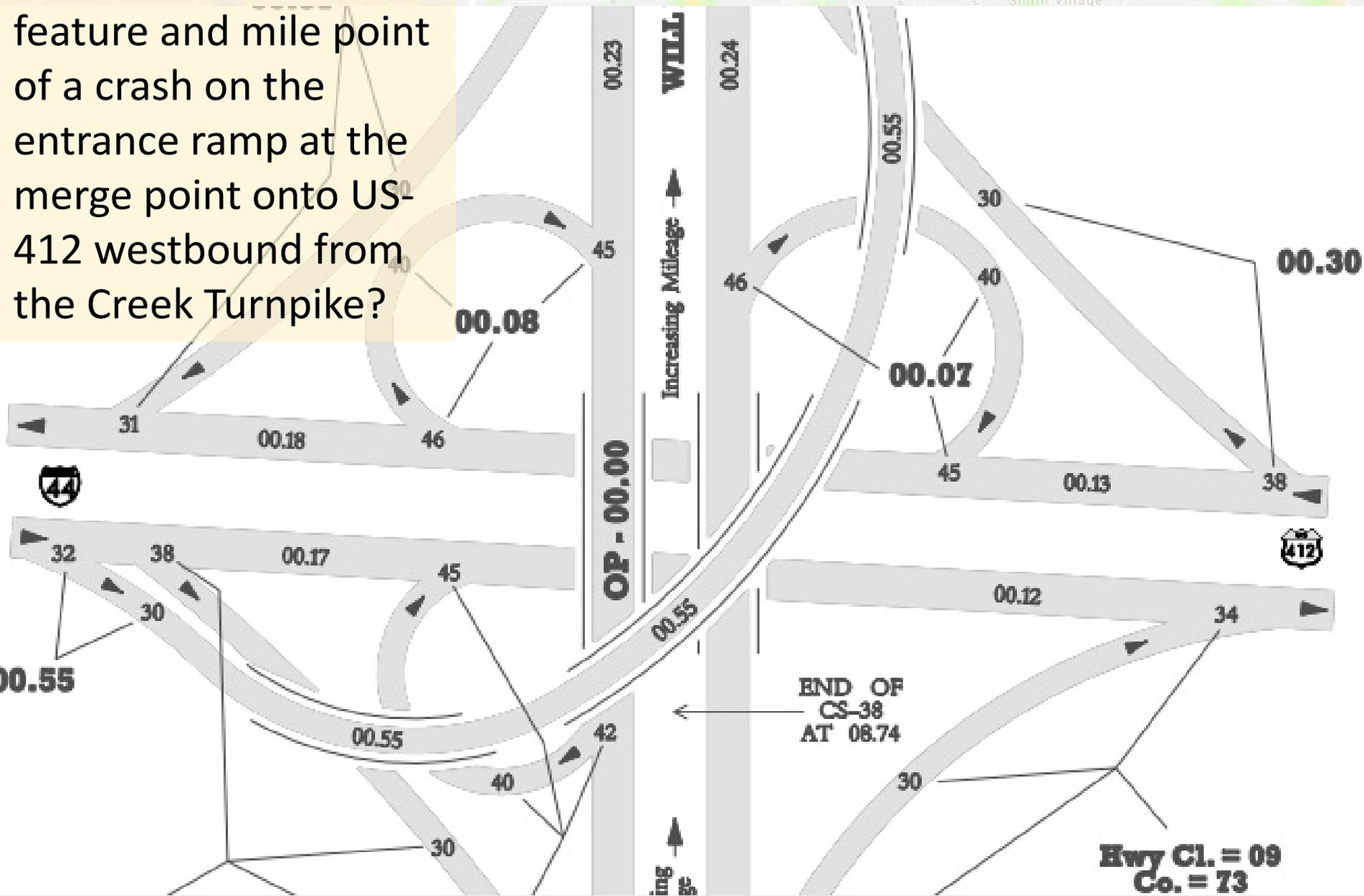**Mainline:**
- I-44: Rogers County (66) Control Section 30 (Dominant)
- Creek TP: Wagoner County (73) Control Section 38

Crossroad (on county line):
- I-44: Rogers County (66) Control Section 36
- US-412: Rogers County (66) Control Section 18

What is the special feature and mile point of a crash on the entrance ramp at the merge point onto US-412 westbound from the Creek Turnpike?

Interchange Sketch Example
I-44, US-412 & Creek Turnpike, County 66, CS 30

- The special feature would be **45** for Crossroad Loop Merge and mile point **00.07**.

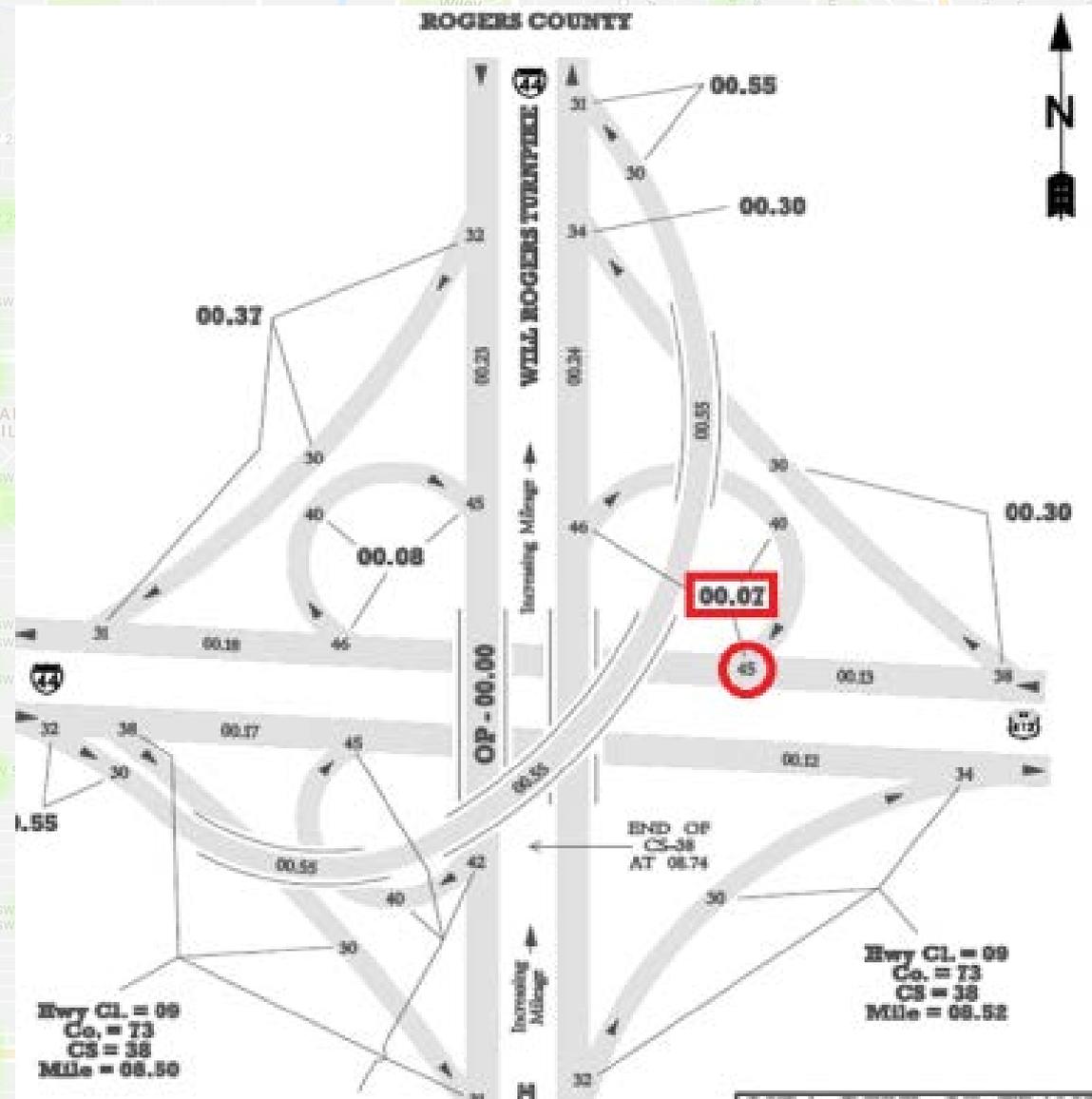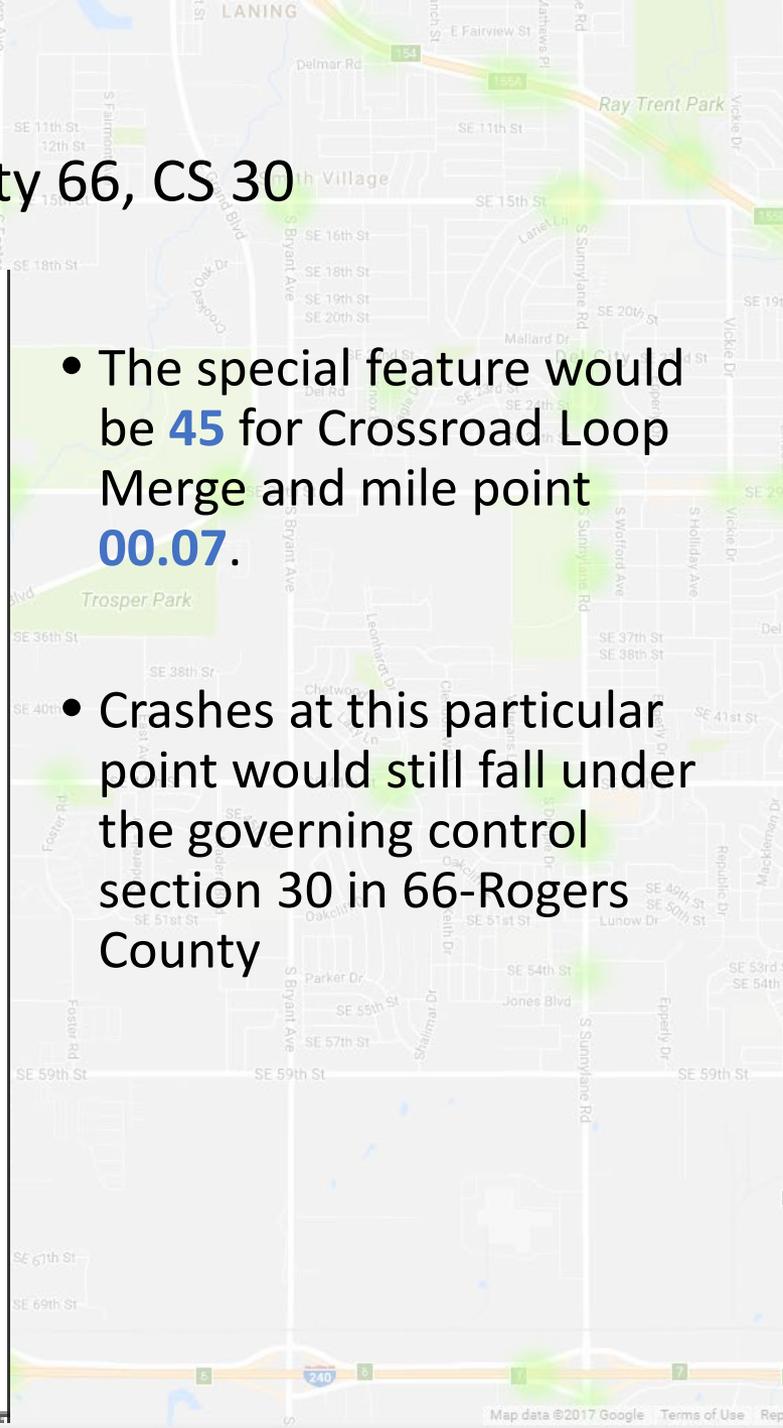- Crashes at this particular point would still fall under the governing control section 30 in 66-Rogers County

I-44, US-412 & Creek Turnpike, County 66, CS 30

What is the special feature and mile point for a crash on the gore of the exit ramp on the Creek Turnpike to get on US-412 going eastbound?

44

OP - 00.00

Increasing Mileage

Increasing Mileage

CREEK TURNPIKE

412

00.08

00.30

00.07

00.13

38

00.17

45

00.12

34

00.55

00.55

40

42

30

30

32

38

30

45

46

45

46

40

30

31

32

END OF
CS-38
AT 08.74

Hwy Cl. = 09
Co. = 73
CS = 38
Mile = 08.52

Hwy Cl. = 09
Co. = 73
CS = 38
Mile = 08.50

Hwy Cl. = 09
Co. = 73
CS = 38
Mile = 08.67

OKLA DEPT OF TRAN		
TRAFFIC ENGINEERING DIV.		
TRAFFIC MANAGEMENT TEAM		
Hwy. Class	3	
County	66	Rogers
City	00	
CS:	30	Int. ID: 98

Interchange Sketch Example
I-44, US-412 & Creek Turnpike, County 66, CS 30

- The special feature is **32**. The control section is **38** in County **73-Wagoner**. The milepoint is **08.52**.

The milepoint is not on the governing control section for this sketch!

You must use control section 38 to query collisions for this location

Interchange Sketch Limitations

- Milepoints on sketches may not match milepoints in SAFE-T.

- Rates of coding errors are sometimes high due to complexity of the system.

- Crashes within an interchange, but only involving through movements, may lack the highway/highway junction code.

- Crashes at highway/local interchanges *never* have a highway/highway junction code.

Query by Map Polygon
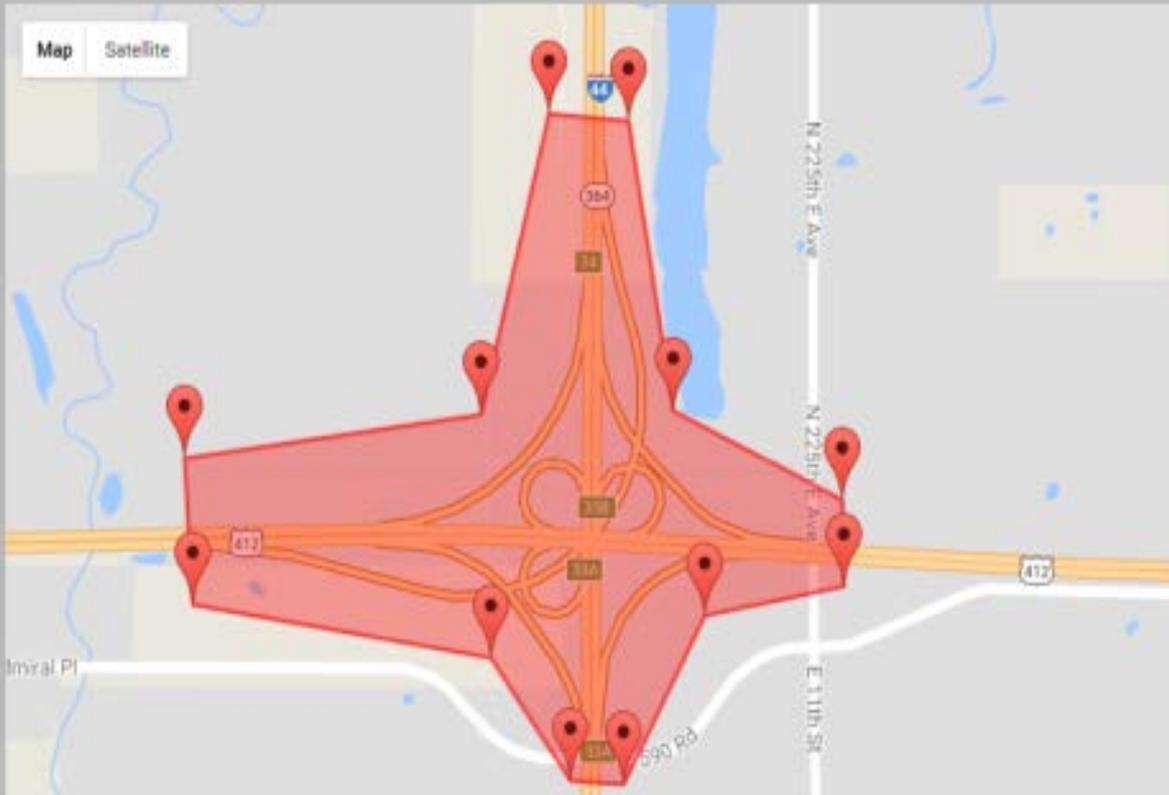
- Select **Draw Area on Map** in Roadway/Region Select.
- Click on the map to create a new vertex. Vertices can be moved by clicking and dragging.
- Will not work with multiple areas.

Limitations of the Polygon Tool

- **Draw Area on Map** will only find collisions that have latitude and longitude data!
  - Most highway and county road collisions will be found.
  - Some city street collisions will be found.
  - Sometimes additional crashes will be incorrectly found.
  - Not all crashes found will be plotted at the correct location.

Include All Example

Perform a collision study in Tulsa County on SH-20 from Cincinnati Ave. to Yale Ave. for the period of Jan. 1, 2015 to Dec. 31, 2016. We only want crashes on the mainline (SH-20).
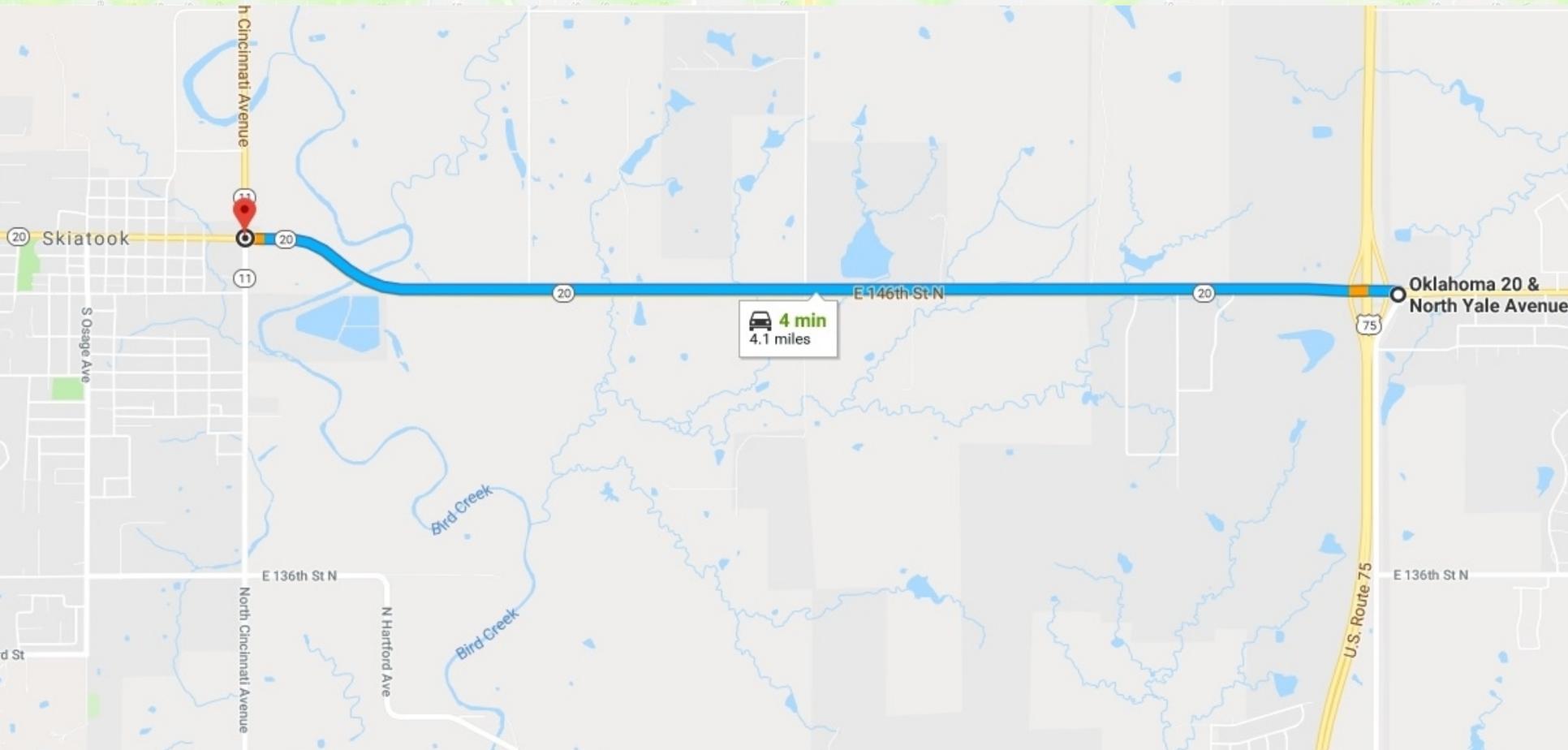
Include All Example

Remember: Perform a collision study in Tulsa County on SH-20 from Cincinnati Ave. to Yale Ave. for the period of Jan. 1, 2015 to Dec. 31, 2016. We only want crashes on the mainline (SH-20).

Query Over:
- ○ Entire State
- ○ County
- ○ City Street
- ○ Division
- ○ City
- ○ County Road
- ● Control Section 🐢
- ○ Draw Area on Map
- ○ Troop
- ○ Metro
- ○ Hwy/Hwy Jct 🐢
- ○ Tribe

County: 72 - Tulsa ▼   View County Map   Control Section: 50 - SH-20 ▼

Query On: ○ Entire CS   ○ Intersection/Point   ● Range

Control Section Options

Start: Mile: 00.00   Intersection: 00.00 - (Skiatook) SH-11 - CINCINNATI AVE. ▼
End: Mile: 04.20   Intersection: 04.20 - (Collinsville) YALE AVE. ▼

Click **Control Section**, County **72-Tulsa**, Control Section **46 – SH-20**. Select **Range**, start mile **00.00** and end mile **04.20**

Include All Example

	Year	Month	Day		Year	Month	Day	
FROM:	2015 ▾	January ▾	01 ▾	**TO:**	2016* ▾	December ▾	31 ▾	*** Denotes Partial Year**

Choose FROM **2015 January 01** TO **2016 December 31** in the Date Select Panel

Choose the options you want to see in the report in the Report Sections Panel. For this example **Collision Analysis** will do.

Include All Example

- In Filter Collisions **UNCHECK** the box **Include All Crashes Associated With Every Intersection and Interchange** since we only want crashes on the mainline. It is checked by default.

Roadway Type	⦿ All Collision Data	○ Hwy. Data Only	○ City St. Data Only	○ County Rd. Data Only

Common Fields					
Collision Severity	▼	*All Selected	Special Features	▼	*All Selected
Unsafe Unlawful (Any Units)	▼	*All Selected	Type of Collision	▼	*All Selected
Harmful Events for Collision	▼	*All Selected	Roadway Departure	▼	*All Selected
Number of Vehicles	▼	*All Selected			

General Options	☐ Intersection Related Only	☐ Exclude Intersection Related
	☐ CMV Collisions Only	
	☐ Include All Crashes Associated With Every Intersection and Interchange	

Include All Junctions Example

- When you generate the report the total number of collisions is **24**, or 49 if Include All Crashes… was checked
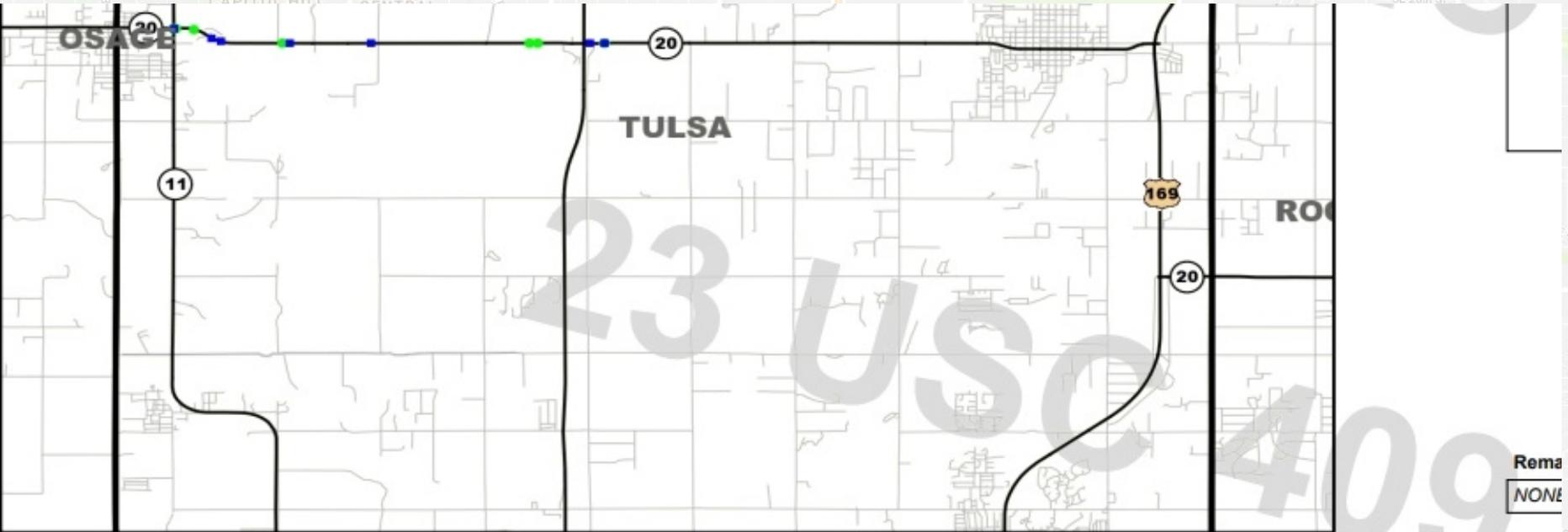
Date Range: 01-01-2015 thru 12-31-2016

	2015						2016					
	Fat	Incap Inj	Non-Incap Inj	Poss Inj	PD	Tot	Fat	Incap Inj	Non-Incap Inj	Poss Inj	PD	Tot
Collisions		1	2	3	6	12		1	1	3	7	12
Persons		1	4	4		9		1	2	5		8

	Study Total					
	Fatality	Incapacitating Injury	Non-Incapacitating Injury	Possible Injury	Property Damage	Total
Collisions		2	3	6	13	24
Persons		2	6	9		17

Include All Example

Unchecked
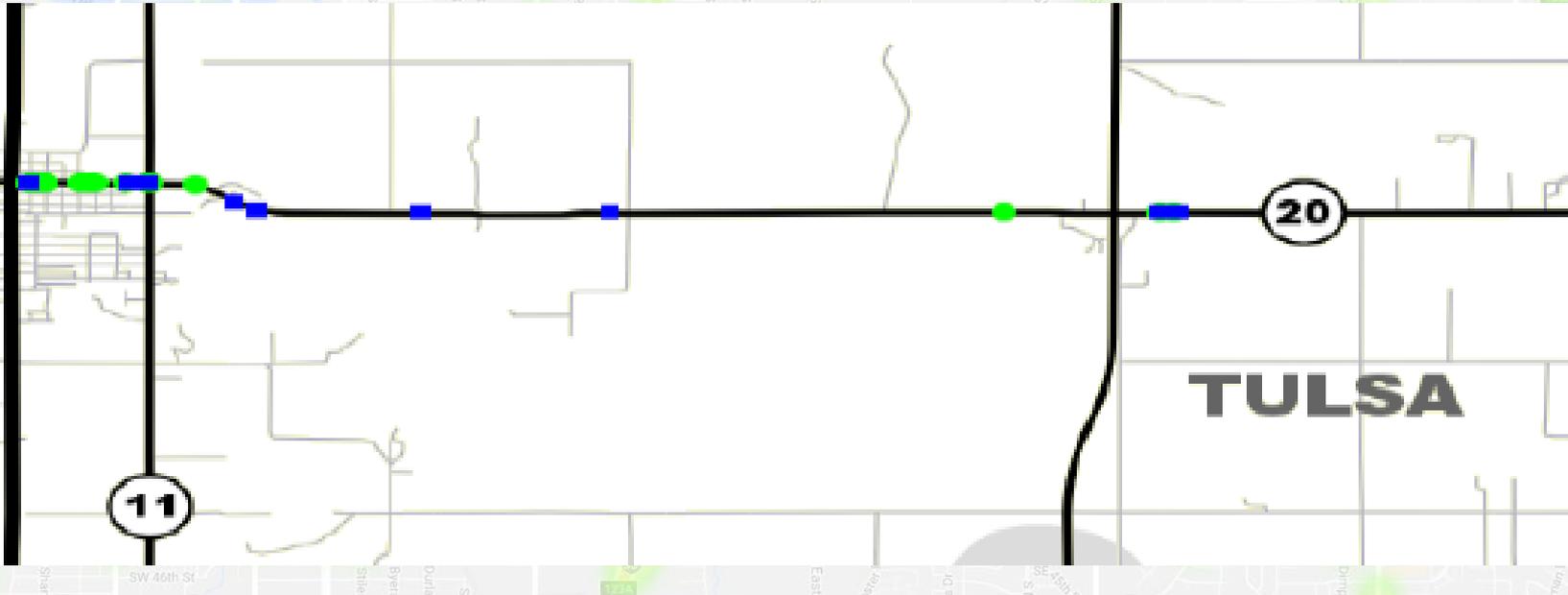
Checked
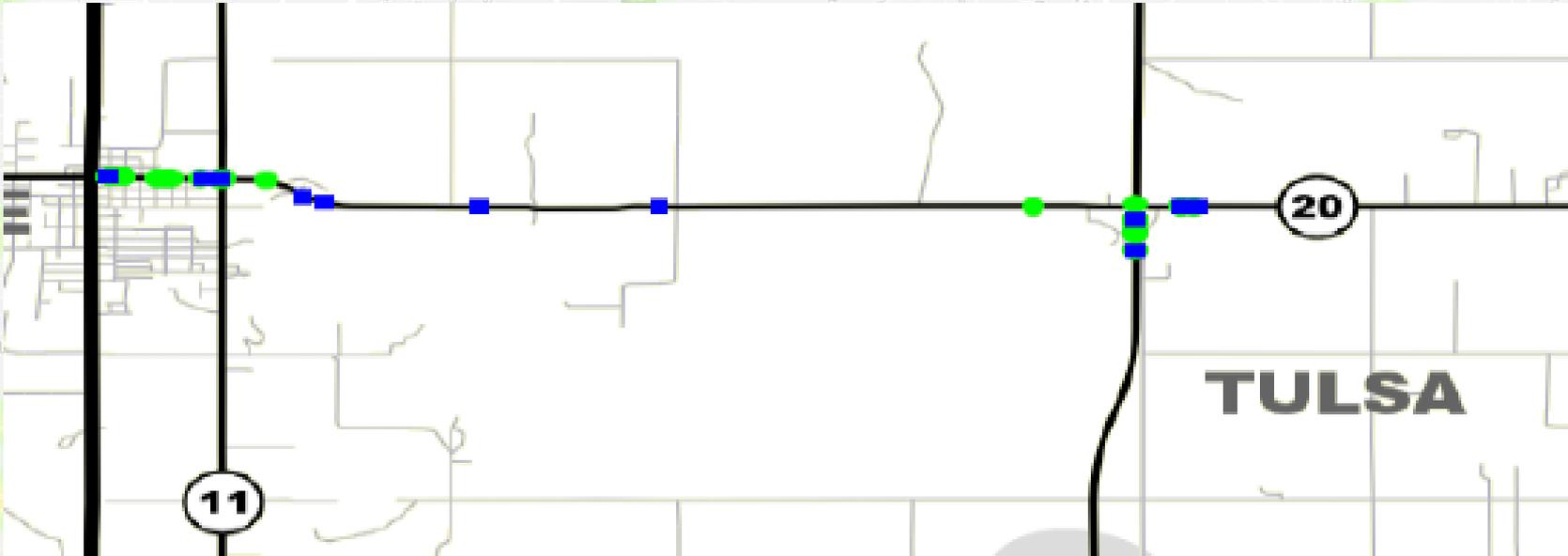
Include All Hwy/Hwy Junctions Example

- Even though the map did not appear to show that it included anything on SH-11, upon closer inspection in the collision listings, you can see it did include a crash on SH-11 when that box was left checked.

Unchecked

Cnty	City	CS #	Int. #	Mile Post	Location	Features	Int. Related
(72) TULSA				(70) SKIATOOK	HWY: SH-20, ROGERS BLVD.		
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
(72) TULSA				(15) COLLINSVILLE	HWY: SH-20, BROADWAY ST.		
72	15	50	03	04.06	US-75 UP	TERM LOC RIT	YES
(72) TULSA				(70) SKIATOOK	HWY: SH-20, ROGERS BLVD.		
72	70	50		00.02	BEG 45 MPH		NO
(72) TULSA				(70) SKIATOOK	HWY: SH-20, ROGERS BLVD.		
72	70	50		00.20		X-MEDIAN	NO
(72) TULSA				(70) SKIATOOK	HWY: SH-20, ROGERS BLVD.		
72	70	50		00.40			NO

Include All Hwy/Hwy Junctions Example

Include All Checked

Cnty	City	CS #	Int. #	Mile Post	Location	Features	Int. Related
(72) TULSA				(70) SKIATOOK	HWY: SH-11, CINCINNATI AVE.		
72	70	36	02	03.82	ROGERS BLVD/MAIN		YES
72	70	36	02	03.82	ROGERS BLVD/MAIN		YES
(72) TULSA				(70) SKIATOOK	HWY: SH-20, ROGERS BLVD.		
72	70	46	02	00.55	SH-11		YES
(72) TULSA				(70) SKIATOOK	HWY: SH-20, ROGERS BLVD.		
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
72	70	50	02	00.00	CINCINNATI AVE.		YES
(72) TULSA				(15) COLLINSVILLE	HWY: SH-20, BROADWAY ST.		
72	15	50	03	04.06	US-75 UP	TERM LOC RIT	YES
(72) TULSA				(15) COLLINSVILLE	HWY: US-75, CHEROKEE EXPY.		
72	15	93	03	15.14	SH-20 NB EXIT	RAMP	NO

Interchange Example

US-169

SH-266

Produce a report for SH-266 at the US-169 northbound intersection including the turn lane in Tulsa County from 2012 to 2016. Do not include ramp collisions.

**2 Separate Queries & Need a Special Feature Filter!**

Interchange Example

Query Over:			
○ Entire State	○ Division	○ Troop	○ Metro
○ County	○ City	● Control Section 🌀	○ Hwy/Hwy Jct 🌀
○ City Street	○ County Road	○ Draw Area on Map	○ Tribe

County: 72 - Tulsa ▼ | View County Map   Control Section: 31 - SH-266 ▼

Control Section Options

Query On: ○ Entire CS   ○ Intersection/Point   ● Range

Start: Mile: 00.00   Intersection: 00.00 - (Tulsa) US-169 - US-169 OP*65* ▼ | View Intersection Sketch

- Select **Control Section**, **72 – Tulsa**, and **31 – SH-266**
- Select **Range** and pick **00.00** and **01.00**
- **View Intersection Sketch**
- **This is the wrong control section for this intersection!**

Interchange Example

OKLA. DEPT. OF TRANS.		
TRAFFIC ENGINEERING DIV.		
TRAFFIC MANAGEMENT TEAM		
Hwy. Class	7	U.S. Urban
County	72	Tulsa
City	50	Tulsa
CS:	81	Int. ID: 41
Location		US-169 & SH-266, 46th St. N.
SKETCH #:		**65**

- Look at the sketch
- The intersection is coded for CS 81, **NOT 31**!
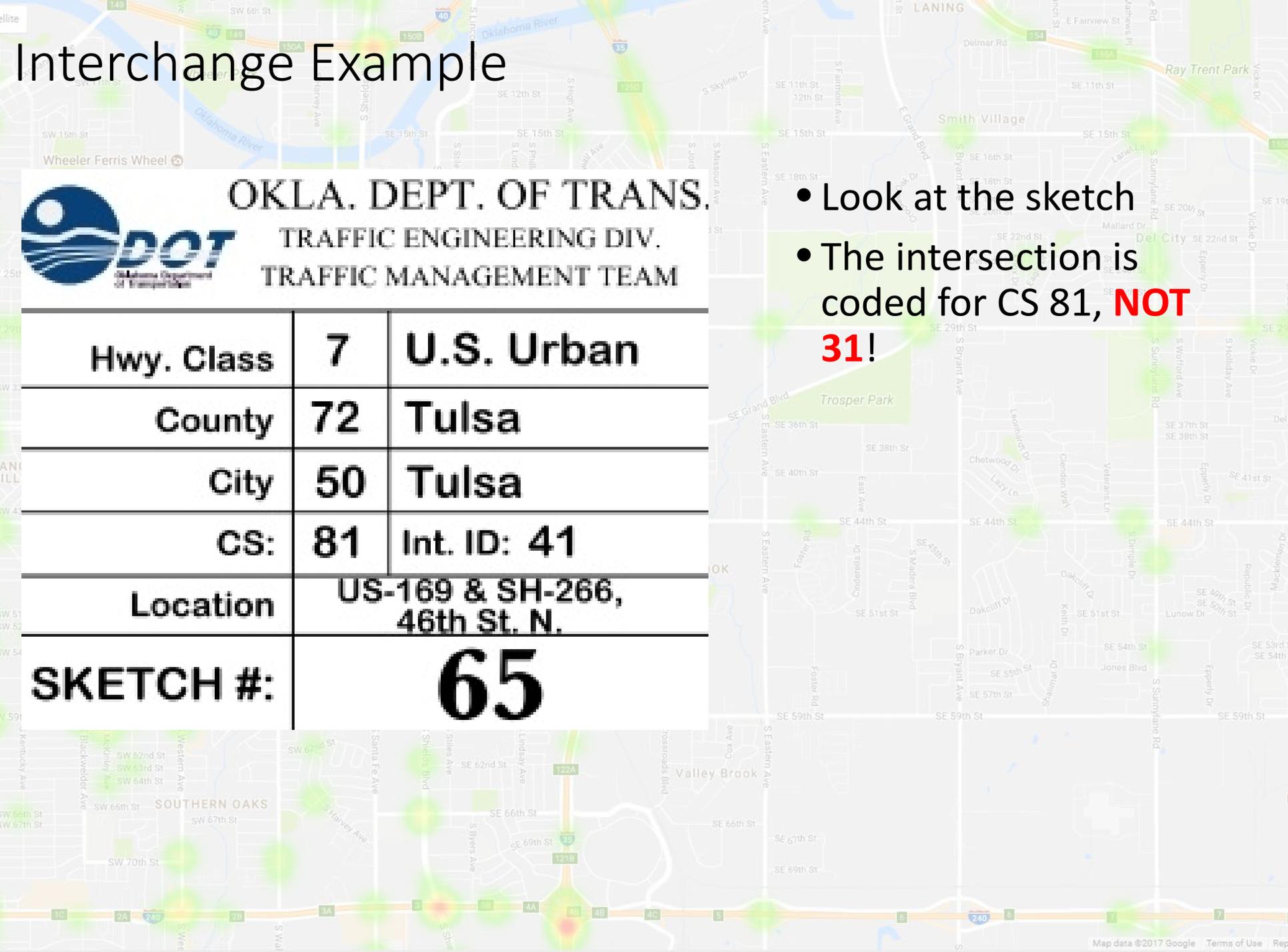
Interchange Example

County:	72 - Tulsa ▼	View County Map		Control Section:	81 - US-169 ▼

Query On: ○ Entire CS ○ Intersection/Point ● Range

Control Section Options

Start: Mile: 05.41 Intersection: 05.41 - (Tulsa) SH-266 - EB 46 SB ENT*65* ▼ [View Intersection Sketch]

- Use the sketch to navigate to the correct Control Section (**81 – US-169**) and Milepoint (**05.41 or 05.68 or 05.95**)
- Some of the milepoints in the sketch do not trigger View Intersection Sketch so try multiple

Interchange Example
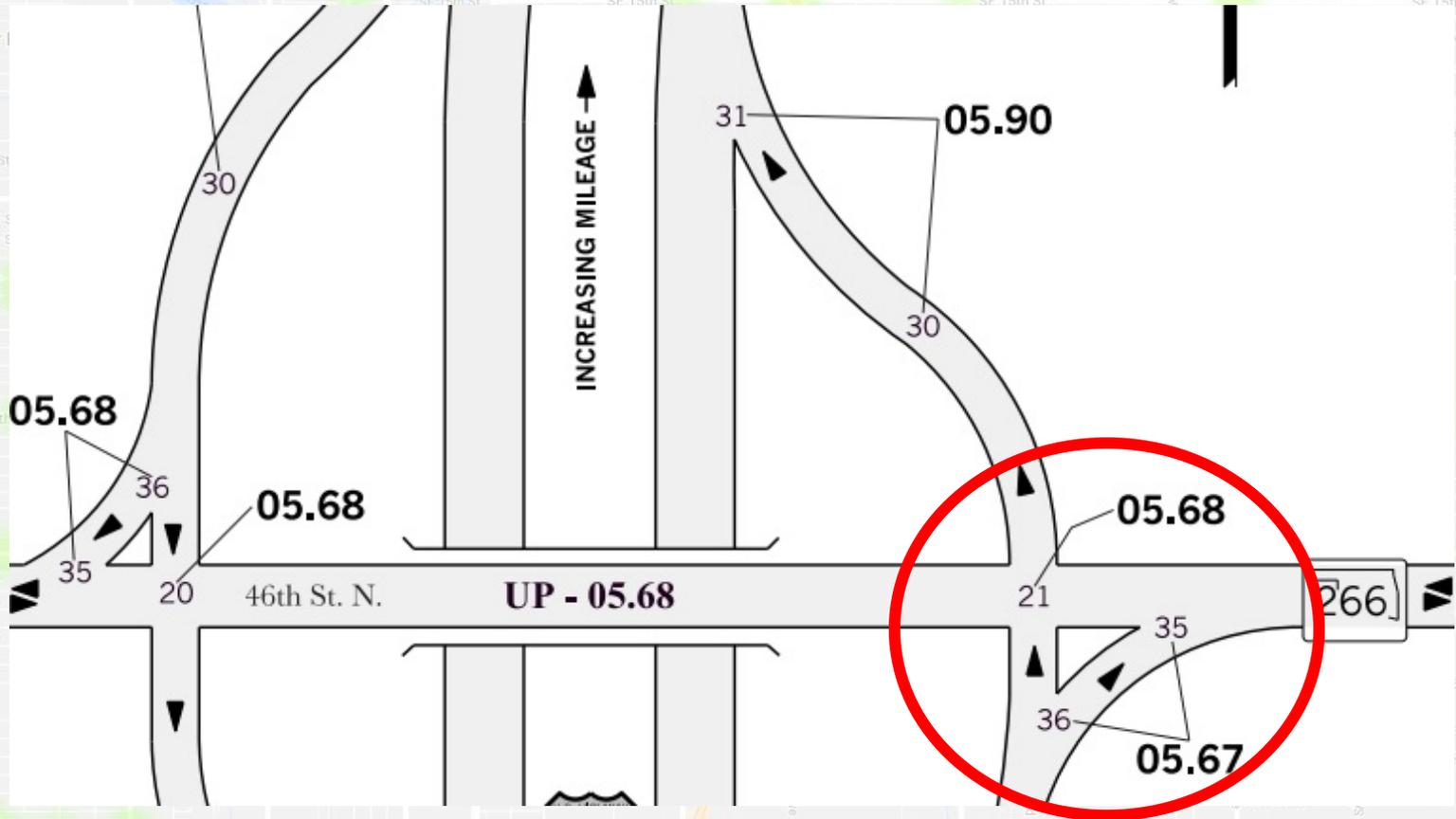
- We want **05.67 SF 35 and 36** and **05.68 SF 21**

Interchange Example

- If you pick 05.68 without a special feature it includes the southbound exit!

- We only want **Special Feature 21** at **05.68**

Interchange Example
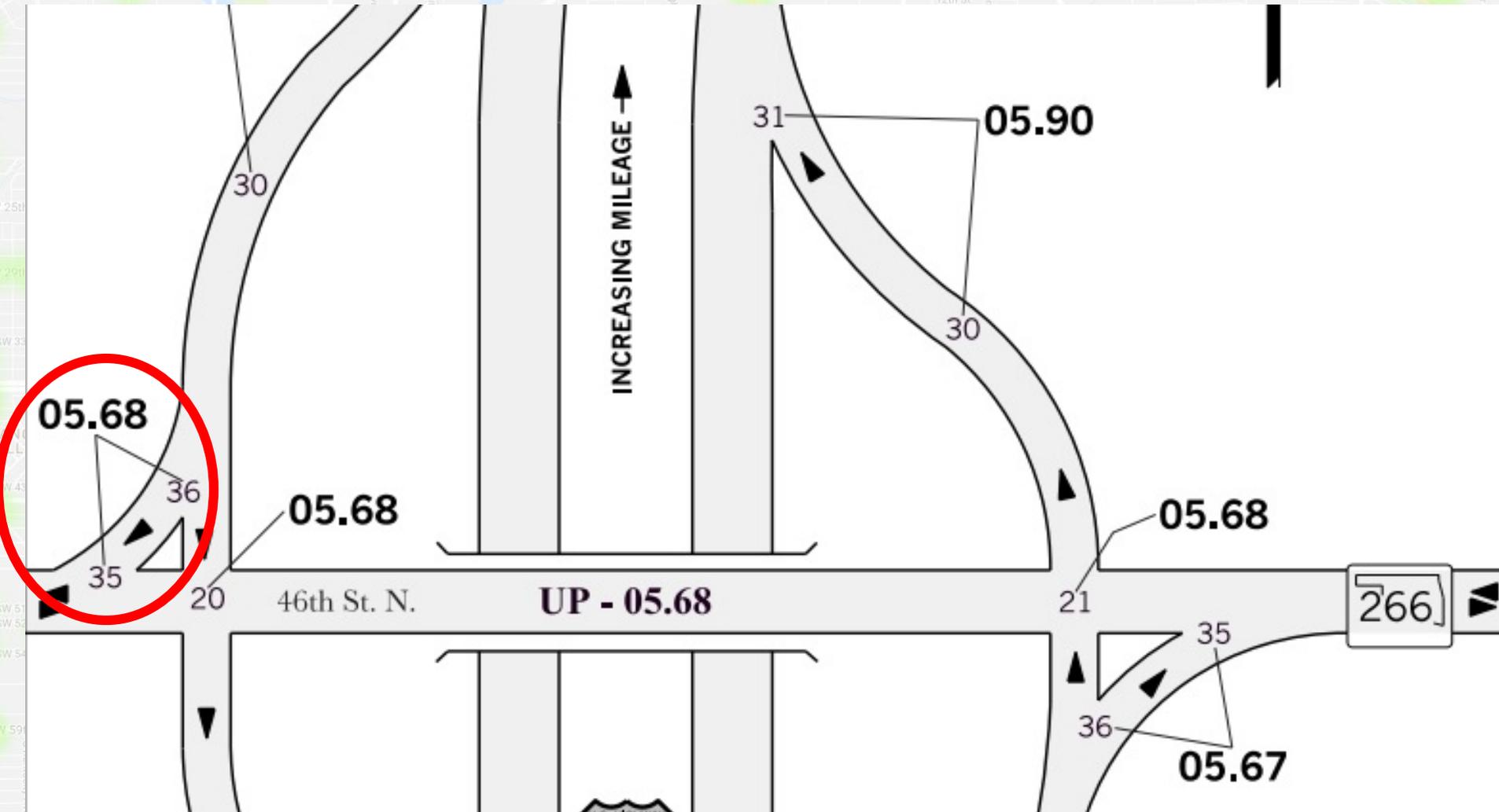
- If you filter by special features 21, 35, & 36 at 05.68 and 05.67 you also get collisions at 05.68 with special features 35 & 36

Interchange Example

- You must conduct two separate queries or export to excel to filter
- Enter **05.68** first, from **2012 January 01** to **2016 December 31**

Interchange Example

FILTER COLLISIONS

Roadway Type | ● All Collision Data | ○ Hwy. Data Only | ○ City St. Data Only | ○ County Rd. Data Only

Special Features

Collision Severity   *All Selected   □ All

20 - Terminal Location - Left side of Interstate
21 - Terminal Location - Right side of Interstate
22 - Terminal Location - Undetermined side
23 - Frontage Rd/Ramp Jct - Left side Interstate
24 - Frontage Rd/Ramp Jct.- Right side Interstate
25 - Frontage Rd/Ramp Jct. - Undetermined side

- Expand FILTER COLLISIONS and Special Features
- Select **21 – Terminal Location – Right side of Interstate**
- Generate the Report
- There should be 23 collisions

Interchange Example

- Scroll back to ROADWAY SELECT
- Enter **05.67**, the date is the same
- Make sure you remove the Special Feature filter by checking **All**
- **Generate the Report**, there should be 0 collisions
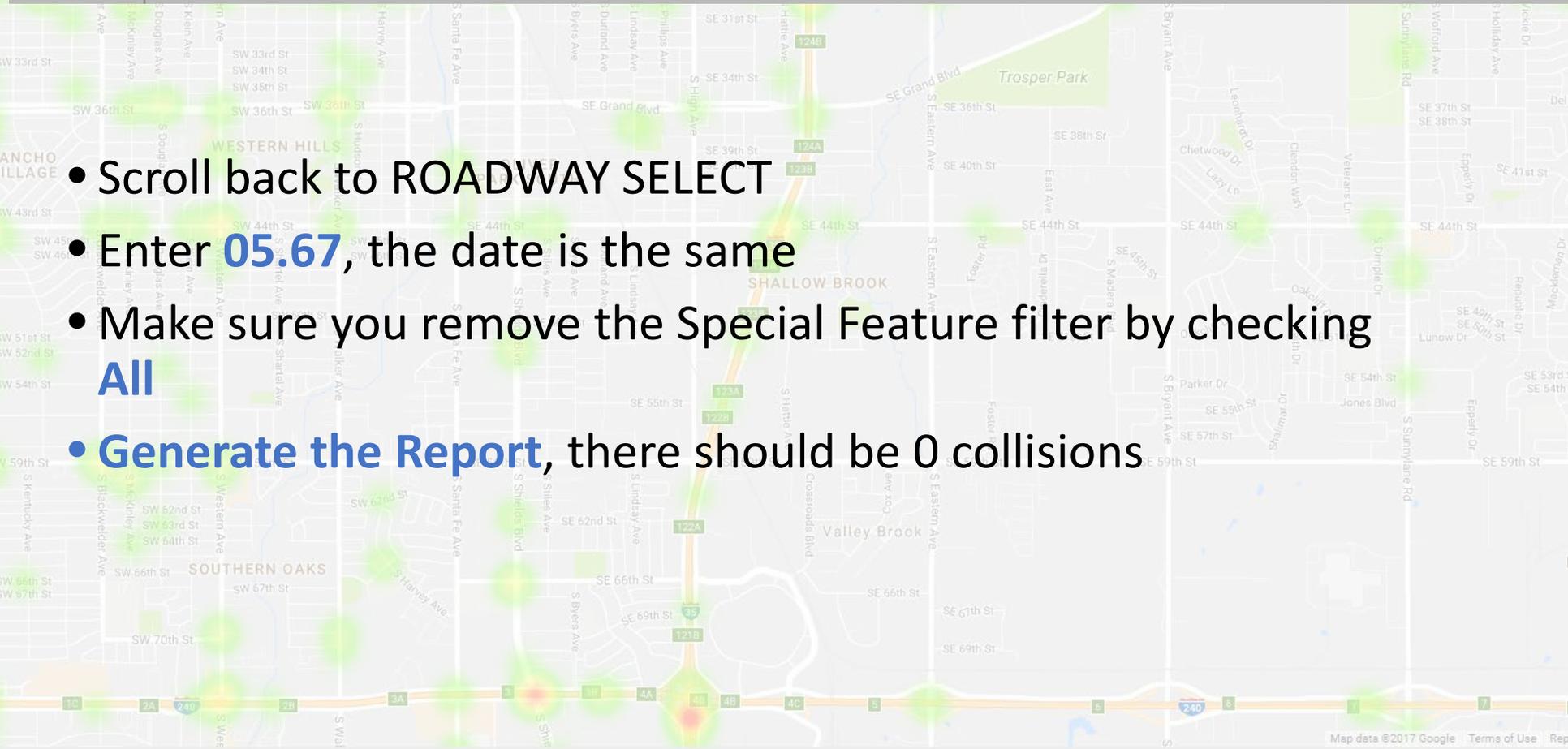
Collision Explorer

Access from main menu or after inputting a query

Collision Studies	A tool which queries collision data and generates PDF reports containing analysis of the data. Based on user selections, reports may contain maps, tabulations, and listings of collisions. Collisions contained in the reports may be filtered by user selected criteria.
Collision Explorer	A tool which plots all locatable collisions on a Google map. Collisions may be filtered, the map may be clicked for collision listings, and individual collisions within a listing may be selected for collision details.
User Manual	Opens the SAFE-T User Manual.
User Policy	Opens the SAFE-T User Policy.
Administrative Functions	Allows a user to view their profile information. Allows system administrators to add, remove, or edit user profiles.
Log Out	Logs out of the SAFE-T system.

Preview Collision Count   Generate Report   Generate Excel Report   Export Collisions   View in Collision Explorer

Save Criteria   Reset Criteria

Map data ©2017 Google   Terms of Use   Rep

Collision Explorer Example

- Make a heat map for collisions in Pottawatomie County for the city of Shawnee for five years using the most recent crash data.

ROADWAY / REGION SELECT

Query Over:
- ○ Entire State   ○ Division   ○ Troop   ○ Metro
- ○ County   ● City   ○ Control Section 🌐   ○ Hwy/Hwy Jct 🌐
- ○ City Street   ○ County Road   ○ Draw Area on Map   ○ Tribe

County: [63 - Pottawatomie ▼]   [View County Map]   City: [35 - SHAWNEE ▼]

☐ Query over Multiple Roadways or Regions 🌐

DATE SELECT

	Year	Month	Day		Year	Month	Day	
FROM:	2012 ▼	January ▼	01 ▼	TO:	2016 ▼	December ▼	31 ▼	* Denotes Partial Year

Collision Explorer Example

- Scroll to the bottom and click on View in Collision Explorer

REPORT FORMAT OPTIONS

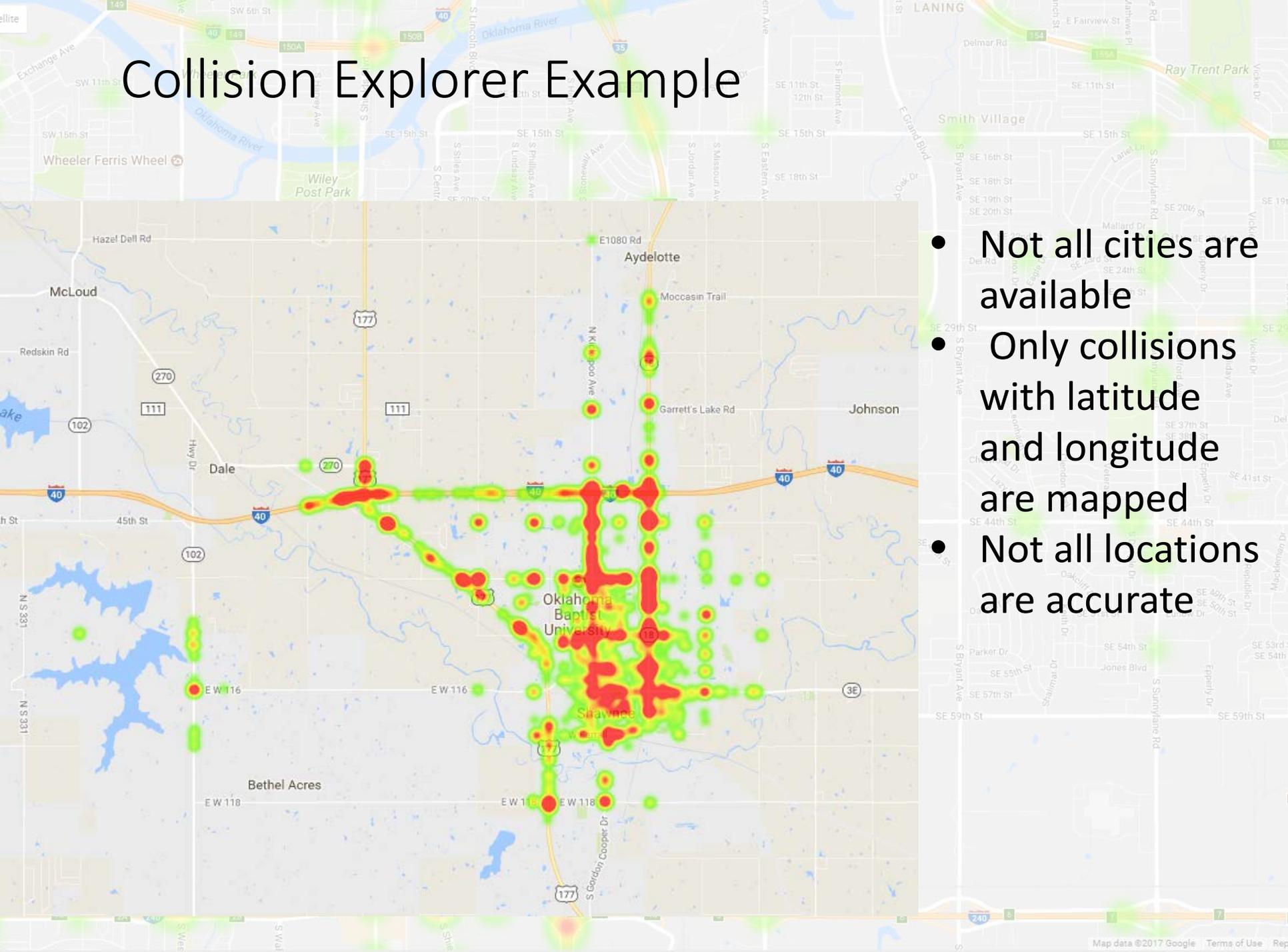|	
Report Title:	none
Remarks:	none

Hide Help Icons

Preview Collision Count   Generate Report   Generate Excel Report   Export Collisions   View in Collision Explorer

Save Criteria   Reset Criteria

Map data ©2017 Google   Terms of Use   Rep

Collision Explorer Example

- Not all cities are available
- Only collisions with latitude and longitude are mapped
- Not all locations are accurate

Showing Filtered Collisions
158 Nonmappable Collisions

- Zoom in to activate Collision Markers
- All city street collisions are plotted at or near intersections, even mid-block
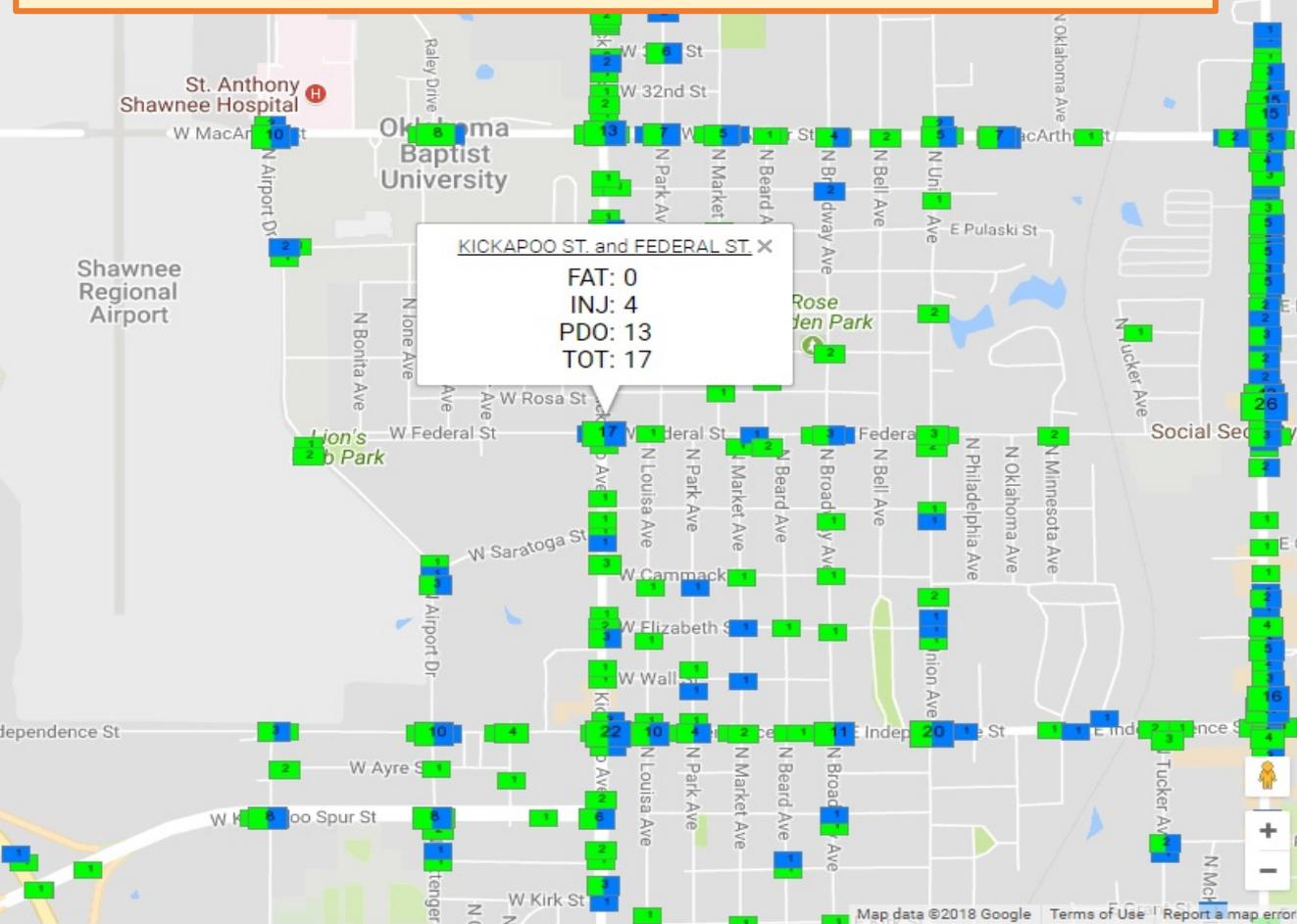- Intersection locations are the most reliable

Enter Location: [ ] Go

Quick Links: OKC Tulsa Lawton / Enid Stillwater Statewide

	Year	Month	Day
Start Date:	2012 ▼	January ▼	01 ▼

Length of Time: All ▼
Note: Selecting multiple years can cause map to load slowly

Sev: ☑ Fatal ☑ Injury ☑ Prop. Damage

Colls: ☑ Hwy ☑ City Street ☑ County Road

Map Type : ◉ Collision Markers ○ Heat Map

Type of Collision	Unsafe Unlawful	Sev.	Date
REAR-END	F-STOP	PDO	2012-07-13
ANGLE-TURNING	F-YIELD	PDO	2012-11-12
REAR-END	OTHER	PDO	2012-11-26
ANGLE-TURNING	IMP-TURN	PDO	2012-12-19
REAR-END	FOL-CLOSE	P INJ	2013-03-01
ANGLE-TURNING	F-YIELD	PDO	2013-03-14
REAR-END	DEF-VEH	PDO	2013-05-18
RIGHT-ANGLE	F-STOP	PDO	2013-05-30
REAR-END	FOL-CLOSE	P INJ	2013-09-30
REAR-END	FOL-CLOSE	PDO	2014-04-06
REAR-END	FOL-CLOSE	PDO	2014-11-03
HEAD-ON	SLEEPY	PDO	2015-01-14
REAR-END	FOL-CLOSE	PDO	2016-03-05
ANGLE-TURNING	IMP-TURN	PDO	2016-03-18
REAR-END	DEF-VEH	P INJ	2016-10-28
REAR-END	FOL-CLOSE	P INJ	2016-11-04
REAR-END	INATT	PDO	2016-11-18

KICKAPOO ST. and FEDERAL ST. ✕
FAT: 0
INJ: 4
PDO: 13
TOT: 17

On Screen Collisions

FAT: 0
INJ: 319
PDO: 703
TOT: 1022

Legend
🟥 Fatality
🟦 Injury
🟩 Prop. Damage Only

Icon size increases with collision count.

Map data ©2018 Google   Terms of Use   Report a map error
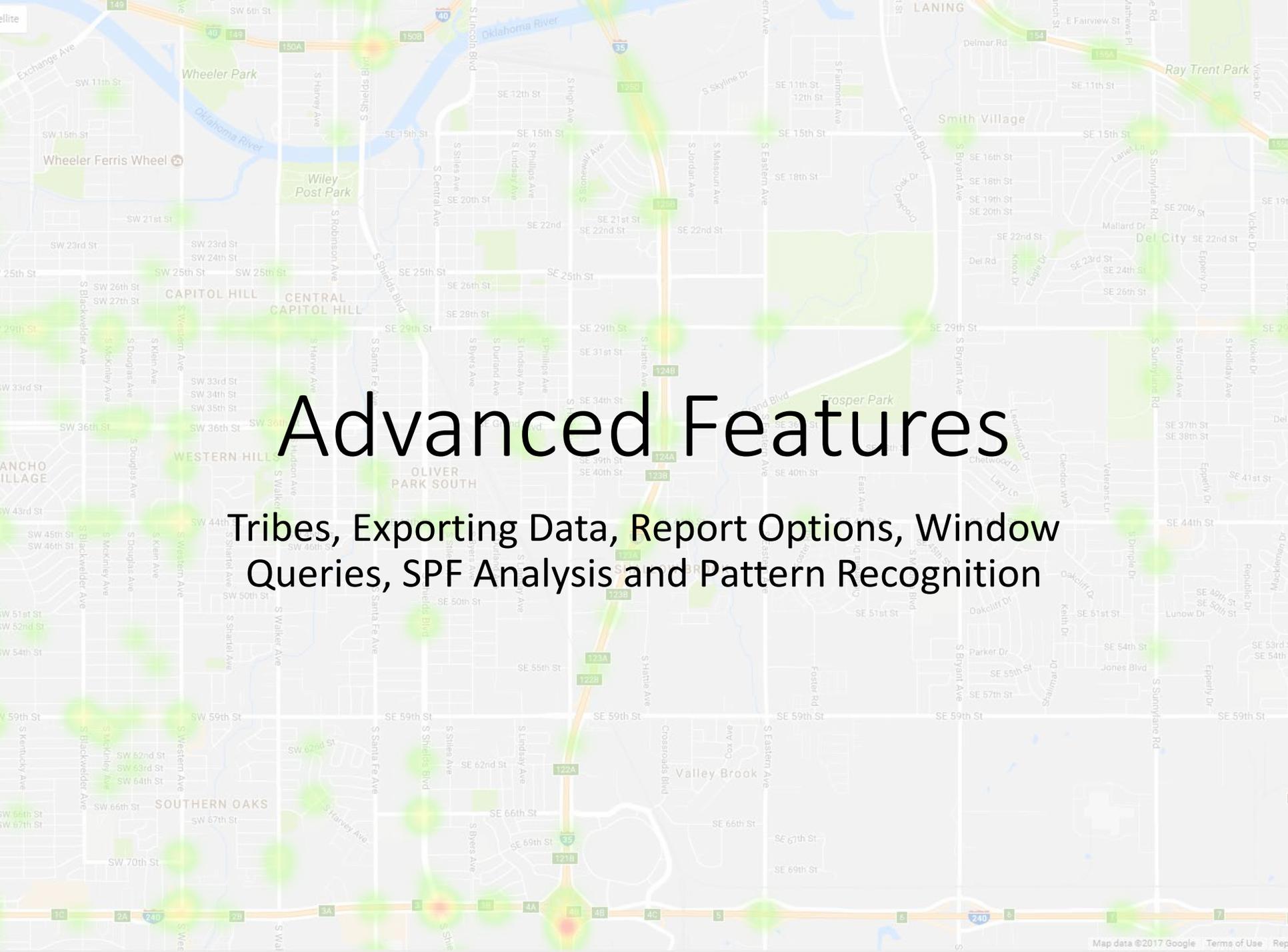
Advanced Features

Tribes, Exporting Data, Report Options, Window Queries, SPF Analysis and Pattern Recognition

Tribal Queries

ROADWAY / REGION SELECT

Query Over:

- ○ Entire State
- ○ County
- ○ City Street

- ○ Division
- ○ City
- ○ County Road

- ○ Troop
- ○ Control Section
- ○ Draw Area on Map

- ○ Metro
- ○ Hwy/Hwy Jct
- ◉ Tribe

Tribe: 1 - Quapaw Tribe ▼

☐ Query over Multiple Roadways or Regions

- In ROADWAY / REGION SELECT pick Tribe

- Select which tribe you want to query

- "Tribe" is based on tribal jurisdictions only. It has nothing to do with driver race or tribal lands

- Not all crashes found are mappable, and some crashes may not be found.

Exporting Data

Introduction

1/1/2011		to	2017-01-18						
Control #	Milepoint	Hwy Name	Hwy Class	Type of Collision	Severity	Date	Street 1	Street 2	On Street	At Street
21	38.45		6	F-O CURB	3	1/10/2011	2140	3845	17 ST.	WEBSTER AVE.
4	4.55	US-183	7	ANGLE-TURNING	3	8/13/2011	400	455	OKLAHOMA AVE.	22 ST.
8	9.2	SH-15	8	REAR-END	3	9/6/2011	800	920	OKLAHOMA AVE.	60 ST.
21	36.7		6	OTHER	3	9/28/2011	2100	3670	22 ST.	CHERRY AVE.
21	36		6	RIGHT-ANGLE	3	12/23/2011	2170	3600	13 ST.	DOWNS AVE.
8	10.7	SH-15	8	ANGLE-TURNING	4	12/27/2011	800	1070	OKLAHOMA AVE.	40 ST.
4	4.41	US-183	7	REAR-END	4	2/8/2012	400	441	OKLAHOMA AVE.	20 ST.

- Safe-T can export crash data to Excel.

- Data can be manipulated and analyzed using Excel.

- Most exports are in the form of a table with one line for every crash report and one column for every data field selected, each field being an attribute of the crash.

Exporting Data

ROADWAY / REGION SELECT

Query Over:

- ○ Entire State
- ○ County
- ○ City Street
- ○ Division
- ● City
- ○ County Road
- ○ Troop
- ○ Control Section
- ○ Draw Area on Map
- ○ Metro
- ○ Hwy/Hwy Jct

County: 77 - Woodward ▼   View County Map   City: 30 - WOODWARD ▼

☐ Query over Multiple Roadways or Regions

Construct a query as usual. This example is for the entire city of Woodward

Exporting Data

Apply two filters to get injury accidents at intersections

Exporting Data

| Preview Collision Count | Generate Report | Generate Excel Report | Export Collisions | View in Collision Explorer |

| Save Criteria | Reset Criteria |

Instead of Generate Report click **Export Collisions**

Exporting Data

Querying for selected collisions... .Query Time: 1.028 seconds
5 Collisions...

2016-01-01 to 2017-10-31

Instructions: »

Generate ShapeFile

Generate KML File

Generate Excel File

Load Criteria

Download User Data Dictionary

Download Other Data Definition Files ▼

Please select fields to include in exported collision listing.
Show Database Field Names
Show Shapefile Field Names

- When the query finishes running, a window should open that looks like this

- The needed fields are selected by checking the check boxes.

Exporting Data

☐ Select All in Section

☐ County #　　　☐ City #　　　☑ **Control #**　　　☐ Int ID #
☑ **Milepoint**　　　☑ **Hwy Name**　　　☑ **Hwy Class**　　　☐ Special Feature 1
☐ Special Feature 2　　　☐ Int. Rel.　　　☐ #Vis. Injured　　　☐ # Killed
☑ **Type of Collision (Derived)**　　　☑ **Severity**　　　☑ **Date**　　　☐ Latitude (Derived)
☐ Longitude (Derived)

☐ Select All in Section

☐ Reporting Agency　　　☐ # Vehicles　　　☐ # Commercial Vehicles　　　☐ First Harmful Event
☐ Collision Time　　　☐ Collision Troop　　　☐ Work Zone　　　☐ Railroad Crossing
☐ Alcohol Involved　　　☐ Drugs Involved　　　☐ Unit Count　　　☐ Person Count
☑ **Street 1**　　　☑ **Street 2**　　　☐ Collision ID　　　☐ Intersection Design
☐ Quadrant　　　☐ Diagram Collision Code

Environment Fields

☐ Select All in Section

☐ Case Number　　　☐ City Name　　　☐ Control Section # (DPS)　　　☐ County Name (DPS)
☐ Contact Veh #　　　☐ Noncontact Veh Num　　　☐ Day of Week　　　☐ East Grid #
☐ North Grid #　　　☐ Fatality　　　☐ Hit and Run　　　☐ Latitude (DPS)
☐ Longitude (DPS)　　　☐ Light Conditions　　　☐ Location (DPS)　　　☐ Manner of Collision
☑ **On Street**　　　☑ **At Street**　　　☐ Photograph　　　☐ Reporting Agency Name

Pick the fields needed to determine the location, date, type, and severity of the crash.

Exporting Data

Querying for selected collisions... .Query Time: 1.028 seconds
5 Collisions...

2016-01-01 to 2017-10-31

Instructions: »

Generate ShapeFile

Generate KML File

Generate Excel File

Load Criteria

Download User Data Dictionary

Download Other Data Definition Files

Please select fields to include in exported collision listing.
Show Database Field Names
Show Shapefile Field Names

- Click **Generate Excel File**

- **Download User Data Dictionary** can be useful for determining the meaning of codes

Exporting Data

Queried for selected collisions...
5 Collisions... Generating Excel File...

2016-01-01 to 2017-10-31

Open CSV (Excel) File

Control #	Milepoint	Hwy Name	Hwy Class	Type of Collision (Derived)	Severity	Date	Street 1	Street 2	On Street	At Street
21	34.75		6	F-O MAILBOX	4	2016-01-16	2100	3475	22 ST.	WINDSOR
04	04.65	US-183	7	ANGLE-TURNING	4	2016-03-28	0400	0465	OKLAHOMA AVE.	MAIN ST.
25	38.60		6	ROLLOVER	4	2016-11-25	2500	3860	LAKEVIEW DR.	MADISON AVE.
21	40.00		6	SIDESWIPE-OPP	4	2016-12-02	2100	4000	22 ST.	WESTERN
04	03.00	US-183	7	HEAD-ON	4	2017-03-08	0400	0300	9 ST.	8 ST. - N.

- A new window will open
- The table is a preview of the spreadsheet. If it does not appear, the query was too large to show a preview
- Click **Open CSV (Excel) File**

Exporting Data
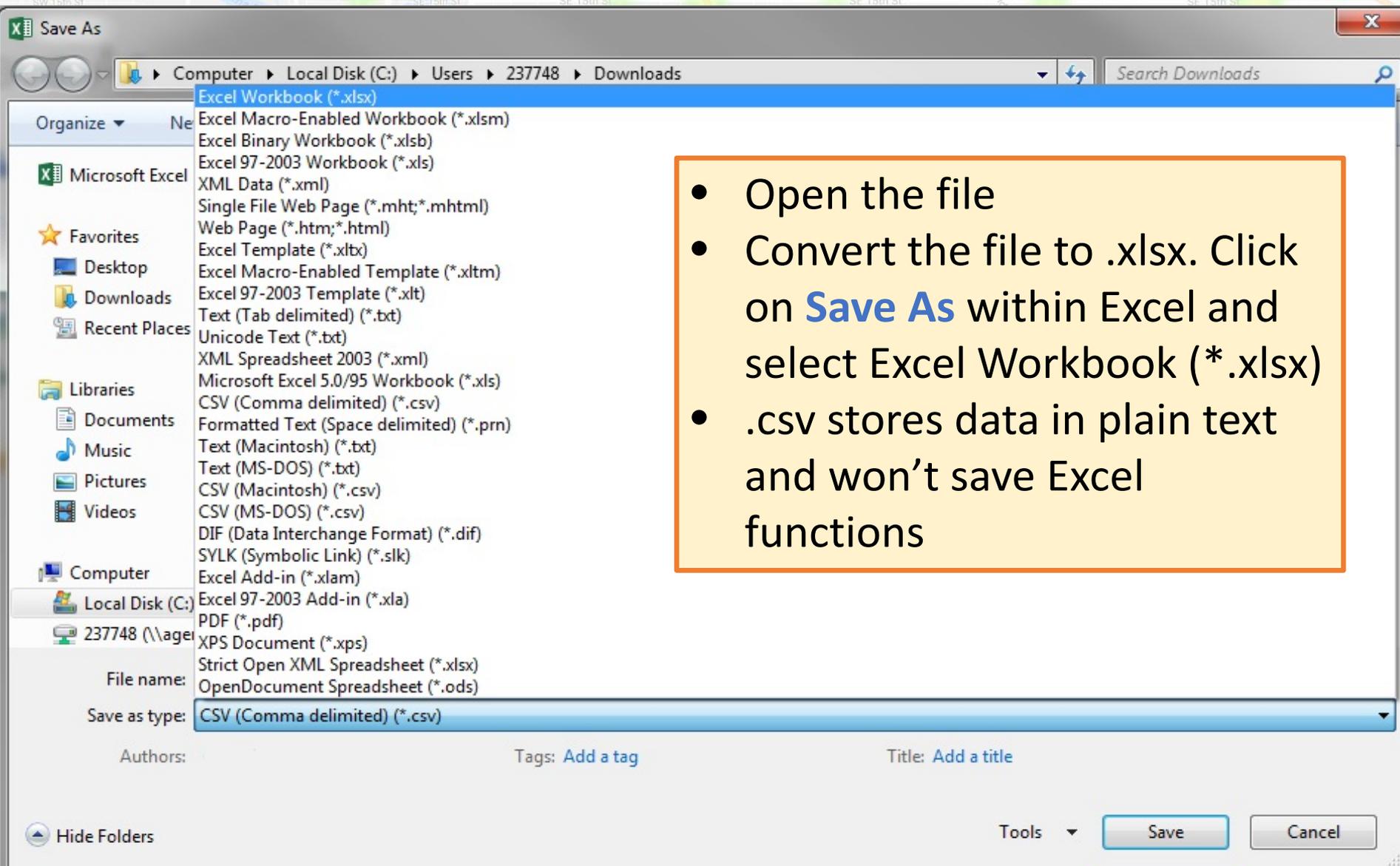
- Open the file
- Convert the file to .xlsx. Click on **Save As** within Excel and select Excel Workbook (*.xlsx)
- .csv stores data in plain text and won't save Excel functions

Exporting Data

☐ Select All in Section		
☐ County #	☐ City #	☑ Control #
☑ Milepoint	☑ Hwy Name	☑ Hwy Class
☐ Special Feature 2	☐ Int. Rel.	☐ #Vis. Injured
☑ Type of Collision (Derived)	☑ Severity	☑ Date
☐ Longitude (Derived)		

☐ Select All in Section			
☐ Reporting Agency	☐ # Vehicles	☐ # Commercial Vehicles	☐ First Harmful Event
☐ Collision Time	☐ Collision Troop	☐ Work Zone	☐ Railroad Crossing
☐ Alcohol Involved	☐ Drugs Involved	☐ Unit Count	☐ Person Count
☑ Street 1	☑ Street 2	☐ Collision ID	☐ Intersection Design
☐ Quadrant	☐ Diagram Collision Code		

- Certain exported fields will not be valid for all Highway Classes!
- Some fields may not be in the preferred data type format
- Each collision has a unique Collision ID, useful for determining which collision is in that row

Exporting Data

Unit Fields (All)

Fields are complete list for Unit information.

- Select All in Section
- Unit ID
- Vehicle Make
- Number of Occupants
- Harmful Event 2
- Road Condition
- Road Grade
- Vehicle Rolled
- Total Number of Lanes
- Damage Extent
- Pedestrian Safety Equipment Code
- Special Function
- Weight Rate Code
- Number of Fatalities in Unit

- Unit Type
- Vehicle Model
- Unsafe/Unlaw
- Vehicle Going To Do
- Visibility
- Road Alignment
- Vehicle Burned
- Legal Speed Limit
- Vehicle Towed
- Under Override
- Emergency Vehicle Use
- Number of Possible Injured Person in Unit

- Vehicle Type
- Number of Axles
- Most Harmful Event
- Vehicle Did
- Vehicle Condition
- Surface Type
- Phone Present
- HazMat Class
- Pedestrian Action Code
- Roadway Type
- First Contact
- Number of Non Incapacitating Unit

Persons Fields (All)

Fields are complete Persons Information.

- Select All in Section
- Person Unit ID
- Driver of Vehicle
- Restraint use
- Witness
- Tested for DUI
- Driver's License Restriction 2 Code
- Driver's License Endorsement 3 Code
- Injury Type 4 Code

- Person Num
- Injured
- Air Bag Deployed
- Passenger
- Blood Alcohol Test
- Driver's License Restriction 3 Code
- Injury Type 1 Code
- Injury Type 5 Code

- Age
- Injury Severity
- Ejected from Vehicle
- Property Owner
- Driver's License Class Code
- Driver's License Endorsement
- Injury Type 2 Code

- Each Unit and Person has a unique ID. Collision ID numbers are exported automatically when a Unit or Persons field is selected.

- **Crash data will be repeated for each Unit and/or Person in the crash**

KML Export

Querying for selected collisions... .Query Time: 1.028 seconds
5 Collisions...

2016-01-01 to 2017-10-31

Instructions: ⏩

Generate ShapeFile

Generate KML File

Generate Excel File

Load Criteria

Download User Data Dictionary

Download Other Data Definition Files ⬇

Please select fields to include in exported collision listing.
Show Database Field Names
Show Shapefile Field Names

- Click **Generate KML File** to create a KML file to use with Google Earth.

KML Example

Collision Fields

County # : 77
City # : 30
Control # :
Int ID # :
Milepoint :
Hwy Name : SH-15
Hwy Class : 8
Special Feature 1 : 00
Special Feature 2 : 00
Int. Rel. : 1
#Vis. Injured : 4
Killed : 0
Type of Collision (Derived) :
ANGLE-TURNING
Severity : 4
Date : 2011-12-27
Latitude (Derived) : 36.43355960
Longitude (Derived) : -99.43155020

Directions: To here - From here
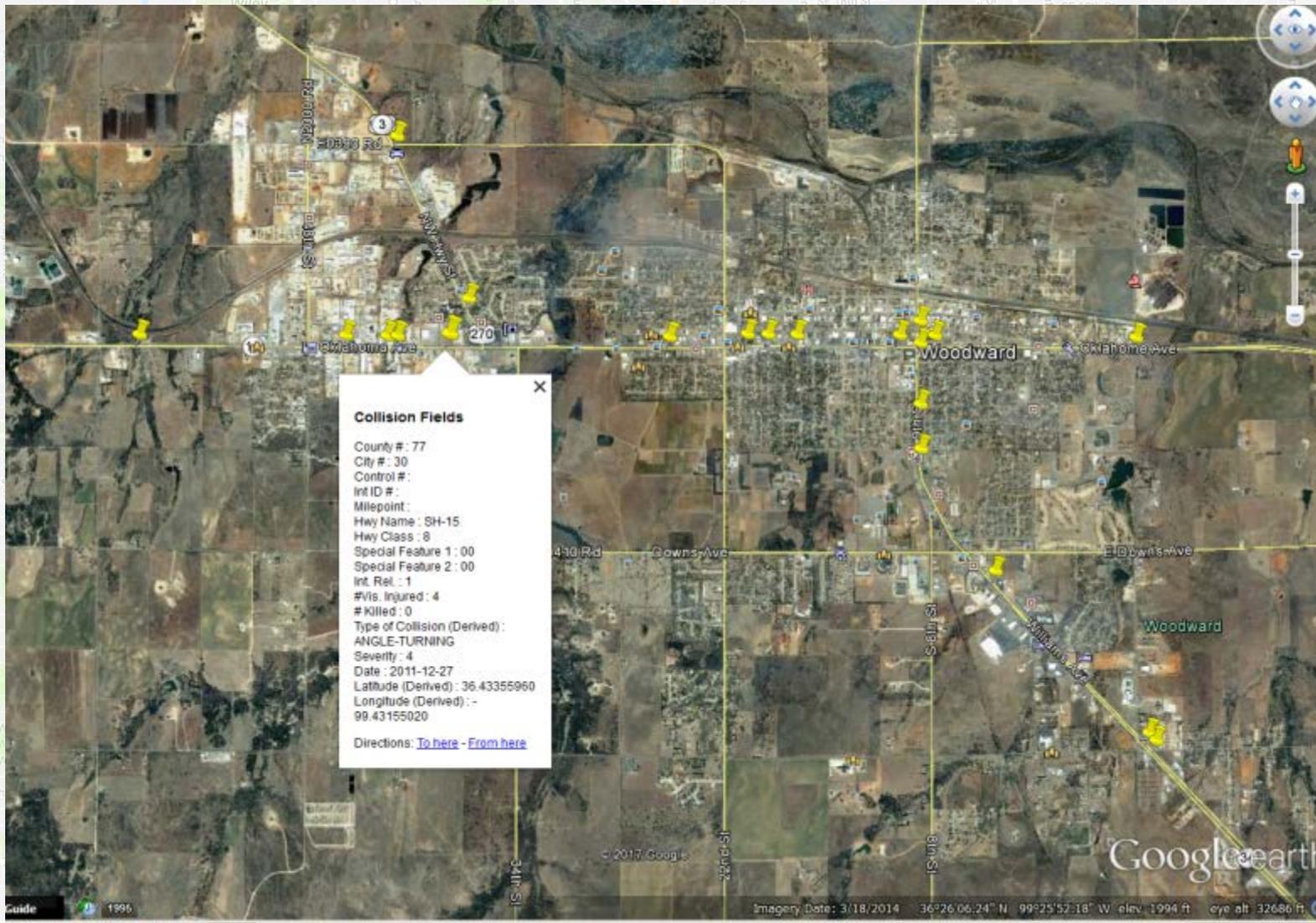
Rate Analysis

Collision Map & Study Totals

Map Options | ☐ Show Entire County on Map

☐ **Sliding Scale Analysis** 🔵
   (Highway Data only)

☐ **Collision Analysis Tables**

☐ **Concentration Listing** 🔵

☐ **Collision Diagrams** 🔵
   (Control Section Intersections, Hwy/Hwy Jct's, and City Street Intersections)

☑ **Rate Analysis** 🔵
   (Control Sections, Hwy/Hwy Jct's only)

☐ **Collision Listings**

☑ **Query Criteria** 🔵

In REPORT SECTIONS **Rate Analysis** calculates crash rates and gives Statewide rates for comparison

Only available for control sections

Based on highway type and NOT any filters except Exclude Intersection Related

Rate Analysis Example

Select **Control Section**, County **60 – Payne**, Control Section **20 – SH-51** for the **Entire CS**

Enter the date range from **2012 January 01** to **2016 December 31**

Under REPORT SECTIONS, check **Rate Analysis**

Generate the Report

Rate Analysis

RATE = No. of Collisions per 100 Million Vehicle Miles

Rate Type	Location Rates	Statewide Rates ** (2014 - 2016)
Overall Collision:	159.77	109.21
Fatal Collision:	3.73	1.97
Vis. Injury Collision *:	31.46	21.78

Collision History Summary
(Number of Years = 5)

# Collisions		# People	
Involving Fatality:	9	Killed:	10
Vis. Injury *:	76	Vis. Injured *:	114
Poss. Injury:	63	Poss. Injured:	107
Property Damage Only:	238		
TOTAL:	386		

* Includes Incapacitating and Non-Incapacitating Injuries.

Road Characteristics

Roadway Length (miles):	24.07
Roadway Width (feet):	24 - 52
Avg. Daily Traffic (Veh/Day):	5494
Number of Lanes *:	TWO-LANES
Access Control *:	NONE
Urban Area Type *:	RURAL
Rural or Municipal *:	RURAL
Median Type *:	UNDIVIDED
Median Width (feet):	0 - 24

* Predominate value.

$$RATE = \frac{100,000,000 \times \text{NO. OF COLLISIONS}}{\text{ADT} \times \text{LENGTH} \times \text{NO. OF DAYS IN REPORT}}$$

If you have an advanced account, critical rate will be visible

Rate Analysis

RATE = No. of Collisions per 100 Million Vehicle Miles

Rate Type	Location Rates	Statewide Rates ** (2014 - 2016)
Overall Collision:	14.49	109.21
Fatal Collision:	0.83	1.97
Vis. Injury Collision *:	2.07	21.78

Collision History Summary
(Number of Years = 5)

# Collisions		# People	
Involving Fatality:	2	Killed:	2
Vis. Injury *:	5	Vis. Injured *:	9
Poss. Injury:	2	Poss. Injured:	4
Property Damage Only:	26		
TOTAL:	35		

* Includes Incapacitating and Non-Incapacitating Injuries.

Road Characteristics

Roadway Length (miles):	24.07
Roadway Width (feet):	24 - 52
Avg. Daily Traffic (Veh/Day):	5494
Number of Lanes *:	TWO-LANES
Access Control *:	NONE
Urban Area Type *:	RURAL
Rural or Municipal *:	RURAL
Median Type *:	UNDIVIDED
Median Width (feet):	0 - 24

* Predominate value.

$$RATE = \frac{100,000,000 \times NO. \; OF \; COLLISIONS}{ADT \times LENGTH \times NO. \; OF \; DAYS \; IN \; REPORT}$$

Filter the query by going to Environment Fields, **Road Conditions** and select **2 – Wet**
The rates are very different but the Statewide rate is not adjusted!

Critical Rate Analysis (Advanced Account Only)

RATE = No. of Collisions per 100 Million Vehicle Miles

Rate Type	Location Rates	Statewide Rates ** (2014 - 2016)	Critical Rates
Overall Collision:	159.77	109.21	120.48
Fatal Collision:	3.73	1.97	
Vis. Injury Collision *:	31.46	21.78	
Vis. Injury + Fatal:	35.18	23.75	29.11

Collision History Summary
(Number of Years = 5)

# Collisions		# People	
Involving Fatality:	9	Killed:	10
Vis. Injury *:	76	Vis. Injured *:	114
Poss. Injury:	63	Poss. Injured:	107
Property Damage Only:	238		
TOTAL:	386		

* Includes Incapacitating and Non-Incapacitating Injuries.

Road Characteristics

Roadway Length (miles):	24.07
Roadway Width (feet):	24 - 52
Avg. Daily Traffic (Veh/Day):	5494
Number of Lanes *:	TWO-LANES
Access Control *:	NONE
Urban Area Type *:	RURAL
Rural or Municipal *:	RURAL
Median Type *:	UNDIVIDED
Median Width (feet):	0 - 24

* Predominate value.

$$RATE = \frac{NO.\ OF\ COLLISIONS}{EXPOSURE}$$

$$CRIT\ RATE = STATE\ RATE + 1.645 \times SQRT\left(\frac{STATE\ RATE}{EXPOSURE}\right) + \left(\frac{0.5}{EXPOSURE}\right)$$

$$EXPOSURE = \frac{ADT \times LENGTH \times NO.\ OF\ DAYS\ IN\ REPORT}{100,000,000}$$

Only available for advanced accounts!

Rate Analysis

- Use with extreme caution especially when there are <25 collisions

- Approximately 400 collisions are needed to have confidence in a crash rate

- Critical crash rate is the rate that only 5% of facilities would be expected to exceed if they all had the same long-term average rate

- Having a crash rate over the critical rate does not prove that the facility has an abnormal crash rate

Collision Diagrams

- In REPORT SECTIONS
- Intersections Only
- Collisions plotted by code and type of crash
- Use User Data Dictionary for details on the codes

Collision Diagrams
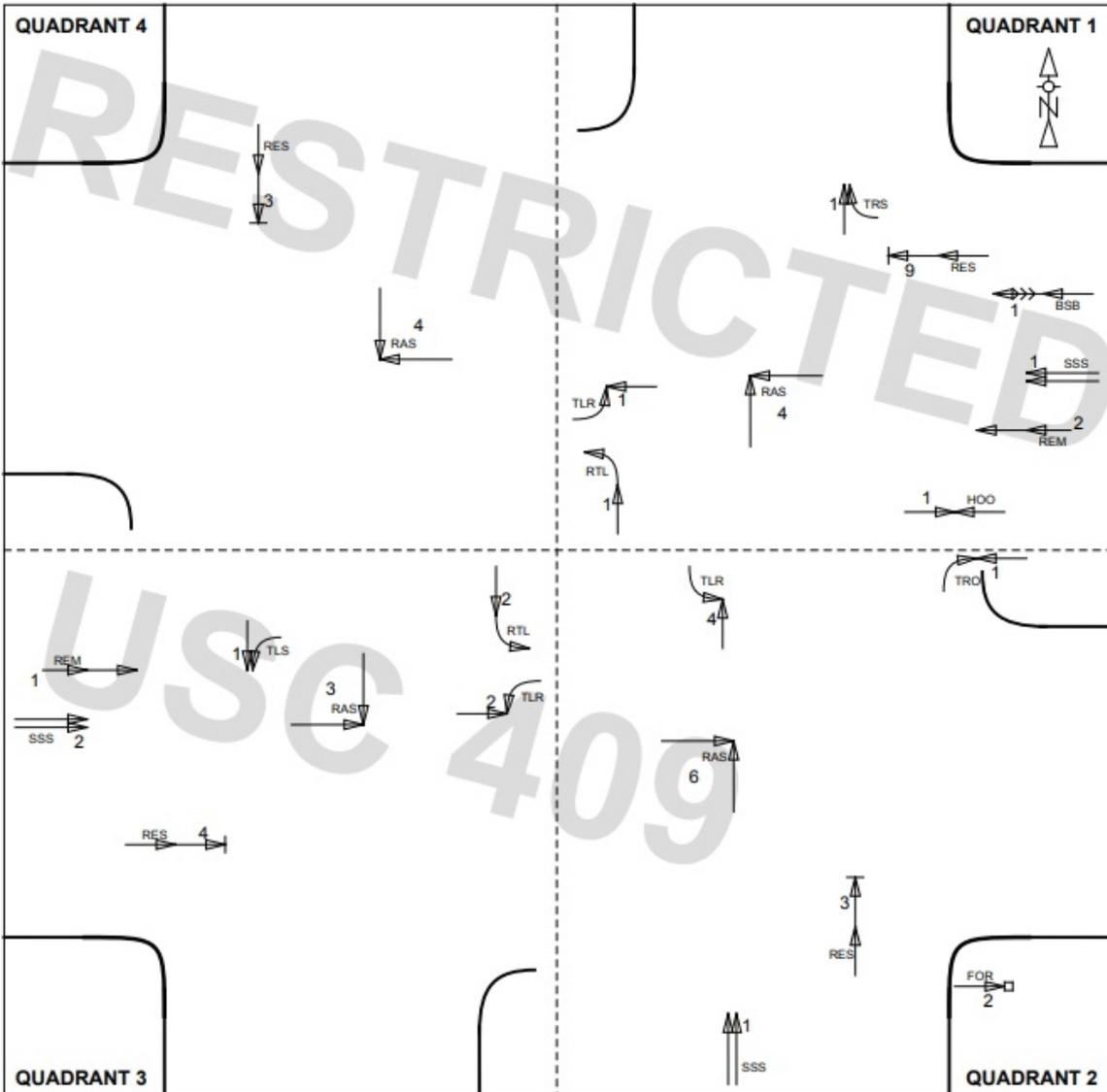
- Arrows represent crash types and direction

- Location not to scale

- Numbers indicate crashes

- Letters are code for crash type

- Not all crashes are diagramed

Collision Diagrams

Location: **OKLAHOMA County**
City : OKLA. CITY
Street : WESTERN AVE.
and
23 ST. N.

Time Period: **01-01-2012 to 12-31-2016**

Printed Collisions (60)

Date	Quadrant	Manner of Collision
2012-10-08	2	RAS - RIGHT ANGLE STRAIGHT
2013-04-23	2	RAS - RIGHT ANGLE STRAIGHT
2013-09-05	1	RAS - RIGHT ANGLE STRAIGHT
2013-11-03	1	RAS - RIGHT ANGLE STRAIGHT
2014-03-05	1	RAS - RIGHT ANGLE STRAIGHT
2014-03-08	3	RAS - RIGHT ANGLE STRAIGHT
2014-03-09	4	RAS - RIGHT ANGLE STRAIGHT
2014-09-19	2	RAS - RIGHT ANGLE STRAIGHT
2015-03-09	1	RAS - RIGHT ANGLE STRAIGHT
2015-06-26	3	RAS - RIGHT ANGLE STRAIGHT
2015-10-13	3	RAS - RIGHT ANGLE STRAIGHT
2015-10-26	4	RAS - RIGHT ANGLE STRAIGHT
2015-12-23	4	RAS - RIGHT ANGLE STRAIGHT
2016-01-21	2	RAS - RIGHT ANGLE STRAIGHT
2016-02-06	2	RAS - RIGHT ANGLE STRAIGHT
2016-10-04	4	RAS - RIGHT ANGLE STRAIGHT
2016-08-20	2	RAS - RIGHT ANGLE STRAIGHT
2012-08-25	3	RES - REAR END, STOPPED
2012-09-13	1	RES - REAR END, STOPPED
2012-09-26	3	RES - REAR END, STOPPED
2012-12-17	4	RES - REAR END, STOPPED
2013-07-31	3	RES - REAR END, STOPPED
2013-08-10	1	RES - REAR END, STOPPED
2014-01-27	1	RES - REAR END, STOPPED
2014-04-09	1	RES - REAR END, STOPPED

*** WARNING: 2 COLLISIONS NOT DIAGRAMMED ***

- Left of the diagram there is a table of collisions

- If collisions were not diagrammed there will be a warning in the lower corner

- Collisions not in the diagram will be in a table after Printed Collisions

Concentration Listing

- Generates a list of point locations by number of crashes or severity index

- Mainly useful for intersections

- Each ramp terminal is treated as a different location even though they have the same milepoint

Concentration Listing Example

| COUNTY | CITY | HWY CL | INT ID | CS/ ST.1 | HWY | INT-REL/ TERM-LOC | CITY STREET NAME | ------INTERSECTING------ | | | MILE/ ST.2 | SEV INDEX | NUM COLLS | RANK |
								CITY STREET NAME	HWY					
(58)OTTAWA	(20)MIAMI	7		14	US-69	INTER	MAIN ST.	22/VETERANS BLV.			03.92	64	46	1
(58)OTTAWA	(20)MIAMI	7		14	US-69	INTER	MAIN ST.	B.J.TUNNELL/9 AV N			02.92	56	44	2
(58)OTTAWA	(20)MIAMI	7		14	US-69	INTER	MAIN ST.	GOODRICH BLVD			03.16	42	29	3
(58)OTTAWA	(20)MIAMI	8	04	14	US-69	INTER	A ST. E.	STEVE OWENS BLVD	SH-10		01.87	32	21	4
(58)OTTAWA	(20)MIAMI	3	14	01	I-44	TERM LOC LFT	WILL ROGERS TPK	SH-10 OP*2*	SH-10		15.62	30	23	5
(58)OTTAWA	(20)MIAMI	8	20	14	US-69	INTER	STEVE OWENS BLVD	MAIN ST.	SH-125		01.81	30	23	6
(58)OTTAWA	(20)MIAMI	6		1725		INTER	D ST. E.	CENTRAL AVE.			2815	28	18	7
(58)OTTAWA	(20)MIAMI	6		1700		INTER	MAIN ST.	3 AVE. N.			2830	24	18	8
(58)OTTAWA	(20)MIAMI	8		34	SH-69A	INTER	MUSHROOM FARM RD	22 AVE.NE/EW80(32)			02.18	23	13	9
(58)OTTAWA	(20)MIAMI	6		1725		INTER	D ST. E.	3 AVE. N.			2830	18	14	10

- This example is for the city of Miami (Intersection Related Only)
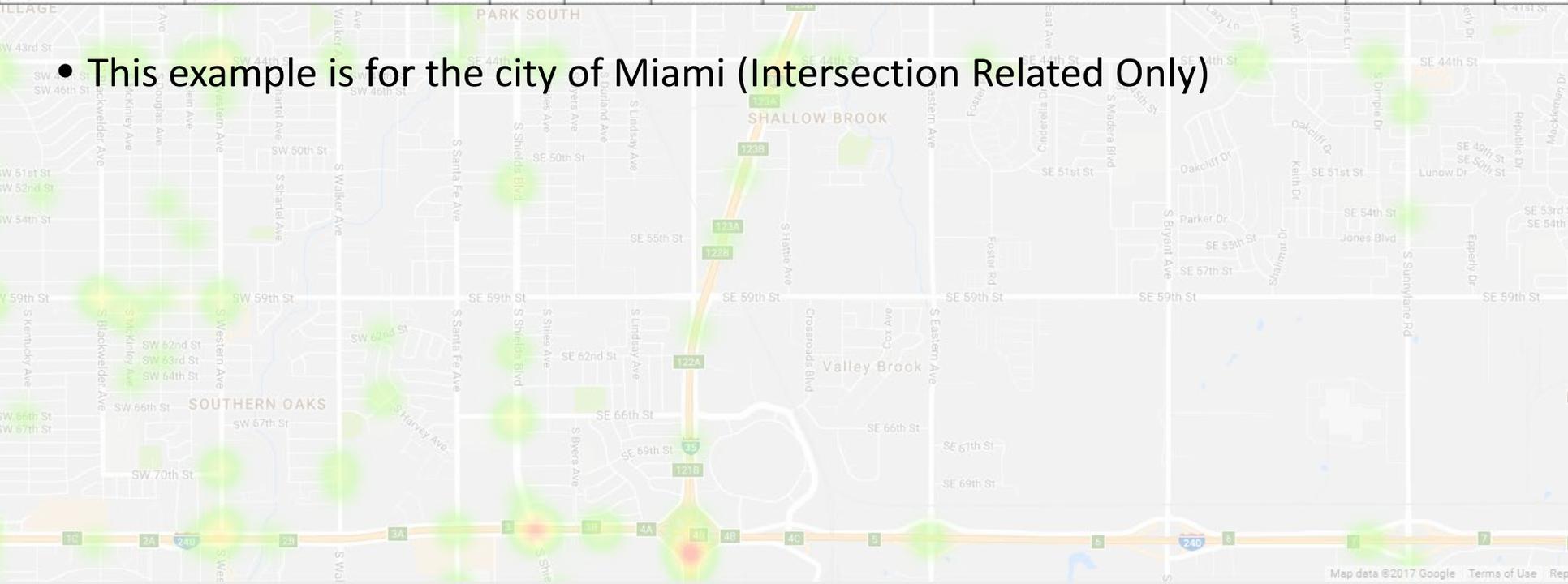
Advanced Account Options

- Sliding Window query
- Special Feature Exclusion
- Expected Collisions analysis

Coming Soon:

- GIS conversion
- Advanced Training
- Pattern Recognition
- Control Sections for City/County Collectors

Sliding Scale Analysis

- Searches highway segments of specified length that have the highest crashes

- Ranked by total crashes, crash severity, crash rate, or severity rate

- Data is returned as "windows" (segments of highway) that are displayed on a map and listed in a table

- Uses normal query criteria

- Can include part of a single control section or the entire state

- Currently only works on highways (ODOT & Turnpike) and not for city streets or county roads

Sliding Scale Analysis

☑ **Sliding Scale Analysis**

(Highway Data only)

Sliding Scale Options

Maximum Window Length: [5 miles ▼]

Number of Windows

◉ Top — [50 ▼] **Windows**

○ by Threshold: [25] %

Maximum Window Length - approximate length of windows to search (windows may be shorter). Set to 0.0 (points only) to search intersections

Number of Windows - **Top** reports a specified number of the highest-ranked windows. The pull-down menu lets you choose the maximum number of windows, up to 750. The number of windows found may be less. **Threshold** finds the highest ranked window and then includes any window that has __% above the highest window's rank.

Sliding Scale Analysis

Rank By

- ⦿ Severity Index ❓
- ◯ Severity Rate ❓
- ◯ Number of Collisions   [Total ▾]

- ☑ Print Sliding Scale Map on the Report
- ☑ Print Windows Table on the Report

Rank by Severity Index: ranks by a point system from 1-5 for each crash. 5 is fatality, 1 is property damage only.

Rank by Severity Rate: ranks by total severity points divided by exposure. For intersections, exposure = AADT (Annualized Average Daily Traffic) on the mainline highway x # of days queried. For all other windows, exposure = AADT x length (miles) x # of days queried

Rank by Number of Collisions: ranks by the total # of collisions, regardless of severity, length of the window, or traffic volume

Sliding Scale Analysis Example

- Query Over: **City**
- County: **14 – Cleveland** and City: **20 – Norman**
- Set the date range from **2014 January 01** to **2016 December 31**

Sliding Scale Analysis Example

Report Preset Quick Links

Basic   Collision Analysis   Sliding Scale Analysis   Concentration Listing   All

Include in Report

☐ Collision Map & Study Totals

☑ Sliding Scale Analysis
   (Highway Data only)

Sliding Scale Options

Maximum Window Length: [5 miles ▼]

Number of Windows

◉ Top   [50 ▼] Windows
○ by Threshold: [25] %

Rank By

◉ Severity Index
○ Severity Rate
○ Number of Collisions [Total ▼]

☑ Print Sliding Scale Map on the Report
☑ Print Windows Table on the Report

- In REPORT SECTIONS select **Sliding Scale Analysis** from the Report Preset Quick Links

Any other report option will include all the crashes that met the criteria including if they were not part of a window

Sliding Scale Analysis Example

FILTER COLLISIONS

| Roadway Type | ○ All Collision Data | ◉ Hwy. Data Only | ○ City St. Data Only | ○ County Rd. Data Only |

Common Fields

Collision Severity	▽	*All Selected	Special Features	▽	*All Selected
Unsafe Unlawful (Any Units)	▽	*All Selected	Type of Collision	▽	*All Selected
Harmful Events for Collision	▽	*All Selected	Roadway Departure	▽	*All Selected
Number of Vehicles	▽	*All Selected			

Click **Hwy. Data Only** in the FILTER COLLISIONS panel. Helps the query run slightly faster

Click **Generate Report**. Sliding Window searches take longer than ordinary queries

Sliding Scale Analysis Example

- Shows windows found, their ranking, and divides them into 3 groups: red (highest ranked), blue (high ranked) and green (lower ranked). Groups are different for every report

Sliding Scale Analysis Example

COLLISION WINDOW DATA : 01-01-2014 Thru 12-31-2016

Rank #		Window Start								Window Stop								# Crashes							
	County	CS	Rdwy	Mile Point	Int #	Int Hwy	MM	Location	County	CS	Rdwy	Mile Point	Int #	Int Hwy	MM	Location	Fat	Inc Inj	N-Inc Inj	Poss Inj	PDO	Total	Win Len	ADT	Sev Index
1	14-Cleveland	04	US-77	13.60				CEDAR LANE RD. *	14-Cleveland	44	US-77	04.21				CENTRAL PKWY. *	1	14	84	147	484	730	5.00	24050	1091
2	14-Cleveland	06	I-35	00.86	07	SH-9	108.18	SH-9 UP	14-Cleveland	06	I-35	05.86			113.18	MM 113 *	2	3	68	111	538	722	5.00	83018	986
3	14-Cleveland	09	SH-9	00.00	07	I-35		I-35 OP	14-Cleveland	11	SH-9	00.86				IMHOFF RD/24 AVE. *	1	4	52	131	410	598	5.00	29974	849
4	14-Cleveland	44	US-77	04.86				KINGSTON/SHAD OWLAK *	14-Cleveland	44	US-77	09.86	05	I-35		*4* *		10	28	55	140	233	5.00	17631	374
5	14-Cleveland	06	I-35	06.15			113.48	LITTLE RIVER BR. *	14-Cleveland	06	I-35	11.15			118.48	N. 12 ST. SB ENT. *		4	26	46	171	247	5.00	107883	357
6	14-Cleveland	11	SH-9	00.92				IMHOFF RD/24 AVE. *	14-Cleveland	11	SH-9	05.92				84 AVE. E. *		2	15	22	63	102	5.00	10796	160
7	14-Cleveland	11	SH-9	07.58				GREEN TURF CIR. *	14-Cleveland	11	SH-9	12.58				JUANITA *	4	4	16	15	19	58	5.00	7562	133
8	14-Cleveland	39	SH-77H	00.00	15	US-77		TECUMSEH RD.	14-Cleveland	39	SH-77H	05.00				134 ST. S. *	1	3	8	13	27	52	5.00	21792	94
9	14-Cleveland	11	SH-9	12.58				JUANITA *	14-Cleveland	11	SH-9	17.47				PECAN CR. *	2	1	7	9	13	32	4.89	6711	66
10	14-Cleveland	44	US-77	04.21				CENTRAL PKWY. *	14-Cleveland	44	US-77	04.86				KINGSTON/SHAD OWLAK *			4	6	17	27	0.65	24200	41
11	14-Cleveland	11	SH-9	05.92				84 AVE. E. *	14-Cleveland	11	SH-9	07.58				GREEN TURF CIR. *		1	4	1	5	11	1.66	9900	23
12	14-Cleveland	06	I-35	00.00			107.32	S. CANADIAN RIV BR	14-Cleveland	06	I-35	00.86	07	SH-9	108.18	SH-9 UP					11	11	0.86	71900	11
13	14-Cleveland	04	US-77	08.60				48 ST.(33) *	14-Cleveland	04	US-77	13.60				CEDAR LANE RD. *			1	2	3	6	5.00	13204	10

* Location Near But Not At Point

- Total collisions only include the crashes that met the filters
- Window Length can be less than the maximum if a route is very short or if the roadway attributes changed and didn't meet the filters
- ADT is averaged over the whole window

Sliding Scale Analysis Example

REPORT FORMAT OPTIONS

Report Title:	none
Remarks:	none

☑ Export Sliding Scale Window Data

Hide Help Icons

Preview Collision Count ● Generate Report ● Generate Excel Report ● Export Window Data ● View in Collision Explorer ●

- Because **Sliding Scale Analysis** in REPORT SECTIONS is checked, **Export Sliding Scale Window Data** appears at the bottom of REPORT FORMAT OPTIONS

- Check **Export Sliding Scale Window Data**

- **Export Collisions** changes to **Export Window Data**. The export has one or more lines for each sliding window found. Data on individual collisions, units, or persons is unavailable. If the box is not checked the export will include all crashes that met the criteria and include nothing about the window.

Sliding Scale Analysis Example

☐ Select All in Section

☑ **Window Rank**   ☐ Starting County #   ☐ Starting Control #   ☐ Starting On-Highway

☐ Starting Milepoint   ☐ Starting Intersection ID   ☐ Starting Intersecting Highway ☐ Starting Mile Marker

☐ Starting Location   ☐ Ending County #   ☐ Ending Control #   ☐ Ending On-Highway

☐ Ending Milepoint   ☐ Ending Intersection ID   ☐ Ending Intersecting Highway ☐ Ending Mile Marker

☐ Ending Location   ☐ # Fatality   ☐ # Incapacitating Injury   ☐ # Non-Incapacitating Injury

☐ # Possible Injury   ☐ # Property Damage Only   ☑ **# Total Collisions**   ☑ **Average Daily Traffic**

☑ **Window Length**   ☐ Severity Index

SUBSECTIONS

☐ Select All in Section

☐ County Code   ☐ Control Section   ☐ City Code   ☐ Maintenance Division

☐ Subsection Start   ☐ Subsection Type   ☑ Subsection Length   ☐ Rural Municipal Code

☐ Access Control   ☐ Number of Lanes   ☐ Surface Width   ☐ Surface Type

☐ Terrain Type   ☐ Parking Type   ☐ Outer Shoulder Type   ☑ **Outer Shoulder Width**

☐ Inner Shoulder Type   ☐ Inner Shoulder Width   ☐ Median Type   ☐ Median Width

☑ **Subsection Average Daily Traffic**   ☑ **Weighted Speed Limit**   ☐ Minimum Speed Limit   ☐ Maximum Speed Limit

Check Window Rank, Window Length, # Total Collisions, Average Daily Traffic, Subsection Average Daily Traffic, Weighted Speed Limit, and Outer Shoulder Width

Click **Generate Excel File** and save the .cvs file or convert it to .xlxs

Sliding Scale Analysis Example

Window R	# Total Co	Window L	Average D	Subsectio	Outer Sho	Subsectio	Weighted
1	730	5	24050	1.38	0	18400	53.33
1	730	5	24050	0.32	10	19000	50
1	730	5	24050	0.1	10	19000	50
1	730	5	24050	0.12	10	19500	50
1	730	5	24050	0.42	0	17900	45.48
1	730	5	24050	0.23	0	18000	45
1	730	5	24050	0.12	0	19500	43.33
1	730	5	24050	0.37	0	24100	40
1	730	5	24050	0.3	0	31300	40
1	730	5	24050	0.4	0	31500	40
1	730	5	24050	0.35	0	29300	40
1	730	5	24050	0.33	0	30200	40
1	730	5	24050	0.8	0	24200	40
1	730	5	24050	1.48	0	24200	44.7
2	722	5	83018	0.42	10	63600	60
2	722	5	83018	0.47	10	87600	60
2	722	5	83018	0.59	10	87600	60
2	722	5	83018	0.43	10	89300	60
2	722	5	83018	0.58	10	81400	60
2	722	5	83018	1.25	10	76300	60
2	722	5	83018	2.19	10	90900	65.89
3	598	5	29974	0.32	10	32300	60
3	598	5	29974	3.82	10	32000	50.52
3	598	5	29974	0.24	10	32800	50
3	598	5	29974	0.27	10	15200	50
3	598	5	29974	1.25	10	15200	52.72

- One export line is created for each highway subsection in each window found

- The Window Rank will tell you which window the subsection is included in

- To get a single row per window rank, uncheck all boxes in SUBSECTIONS prior to generating an Excel file

Sliding Scale Analysis Limitations

- **Include All Crashes Associated With Every Intersection and Interchange** has a dramatic effect on Sliding Window searches
  - If intersection related crashes are excluded this box can be unchecked so that windows do not include crashes at interchanges (some may still appear)
  - If only intersection related crashes are wanted, unchecking this box will cause some of the crashes on at-grade highway-highway intersections to be not included
- For many highway queries it is desirable to use **Exclude Intersection Related**

Some crashes at interchanges may be included even if they are not on the highway mainline

Sliding Scale Analysis Limitations

- If windows appear with a length longer than the chosen maximum, it's likely a bug and the length may not be accurate

- Use an appropriate maximum window length: 0.0 for intersections, 0.5 for curves, 1 for interchanges; 5 or 10 for corridor projects

- Use caution with **Severity Rate.** The top windows are likely to be segments with very low traffic and a single crash which is of no statistical significance

- **Do not run Sliding Scale Analysis up to current date**

Special Feature Exclusion

Type of Collision	?	▼	*All Selected
Roadway Departure	?	▼	*All Selected
Special Features (Exclusion)	?	▲	*None Selected

☑ None
```
0 - Not Stated
1 - Driveway (Influenced by driveway)
2 - Median Opening
3 - 2 Way Turn Bay (5th lane)
4 - Reversible Lane
5 - Construction Zone / Work Zone
```

☐ Exclude Intersection Related ?

Advanced users have the option to use filters to exclude crashes with certain Special Features.

This filter can be used for example to exclude work zone crashes, unlocatable crashes, and interchange related crashes.

Basics of Collision Analysis

- Crashes are random. Even if two sites are identical we could expect a variation in number of crashes

- Crashes can be roughly modeled using a Poisson Distribution

- In a Poisson Distribution, a variable λ (lambda) = μ (mean) = σ^2 (variance), where σ is standard deviation

- Poisson Regression can be used to get a quick estimate of whether or not data falls within normal values. Ex: There were 250 crashes in 2016. The standard deviation σ is = $\sqrt{250}$ which is approximately 15 crashes. We could reasonably expect 15 more or less crashes for that year.

Basics of Collision Analysis Example

Traffic Fatalities
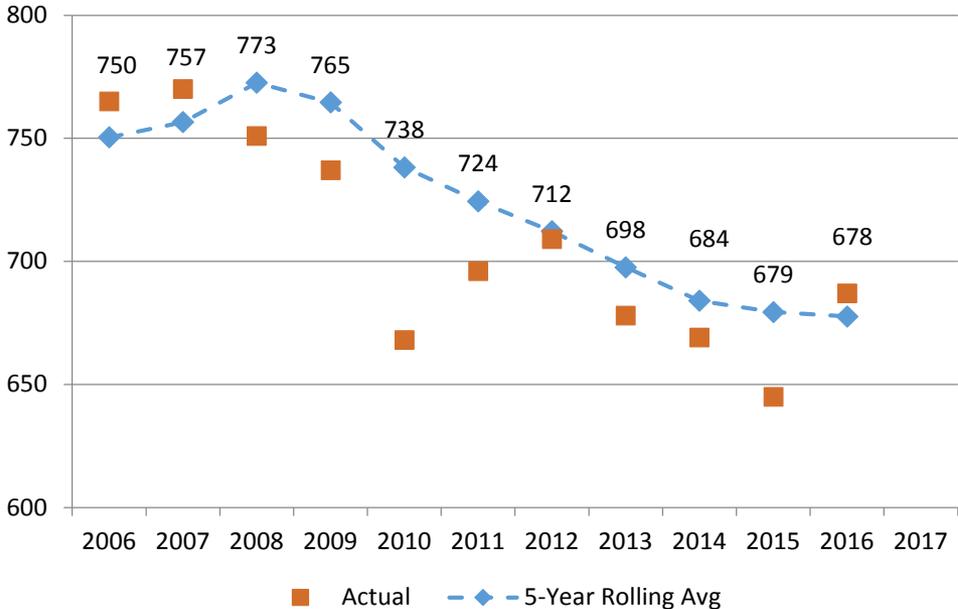
Let's look at five years of crash data and decide whether anything significant has happened. The crash counts are from 2012 to 2016 for fatalities: 709 678 669 645 687

$$\mu = \frac{709 + 678 + 669 + 645 + 687}{5} = 677.6$$

- $\sigma = \frac{\sqrt{709} + \sqrt{678} + \sqrt{669} + \sqrt{645} + \sqrt{687}}{5} = 26$

- But what is the standard error of the standard deviation? $\sigma_{\bar{x}}^{-} = \frac{\sigma}{\sqrt{n}} = \frac{26}{\sqrt{5}} = 11$

- While two of the years exceed the standard deviation of the mean, they all fall within the standard error. Nothing can be said about the data.

Basics of Collision Analysis

- Realistically mean ≠ variance, in which case the mean is called under- or overdispersed

- Negative binomial regression (NB) can be used to better fit data. It is like Poisson regression but with an extra parameter, k

- For NB $\mu \neq \sigma^2$, instead $\sigma^2 = \mu + \frac{\mu^2}{k}$ where k is the dispersion parameter

- Safety Performance Functions use a NB model

- Using a NB model reduces the effects of regression to the mean, a phenomenon where if a variable is extreme in it's first measurement, it will tend to be closer to the average on it's second measurement

Basics of Collision Analysis

- Safety Performance Functions (SPFs) estimate the number of crashes at a given site depending on the location parameters

- SPFs are custom-made to fit the target collision type at a statewide level, but not overfit to the point of being unrealistic

- Unlike critical rate SPFs take into account the non-linear relationship between AADT and crash risk

- SAFE-T lets advanced users query for expected collisions, which uses SPFs along with crash data to adjust crash history for regression to the mean

- Expected Collision Analysis is useful when trying to identify sites for countermeasures

Expected Collision Analysis Example
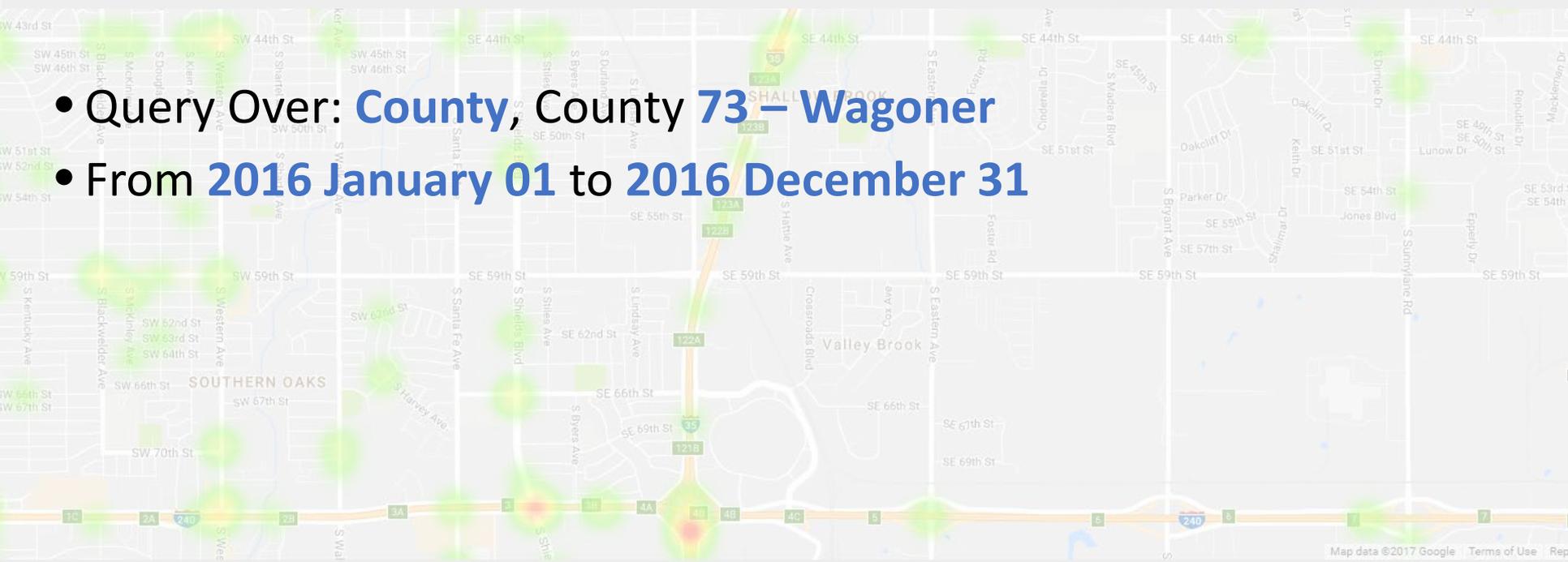
ROADWAY / REGION SELECT

Query Over:
- ○ Entire State
- ● County
- ○ City Street
- ○ Division
- ○ City
- ○ County Road
- ○ Troop
- ○ Control Section
- ○ Draw Area on Map
- ○ Metro
- ○ Hwy/Hwy Jct
- ○ Tribe

County: 73 - Wagoner ▼   View County Map

☐ Query over Multiple Roadways or Regions

- Query Over: **County**, County **73 – Wagoner**
- From **2016 January 01** to **2016 December 31**

Expected Collision Analysis Example

☐ Rate Analysis 🌐
   (Control Sections, Hwy/Hwy Jct's only)

☑ Expected Collisions (SPF Analysis) 🔵
   (Hwy Control Sections only)

☐ SPF Pattern Recognition
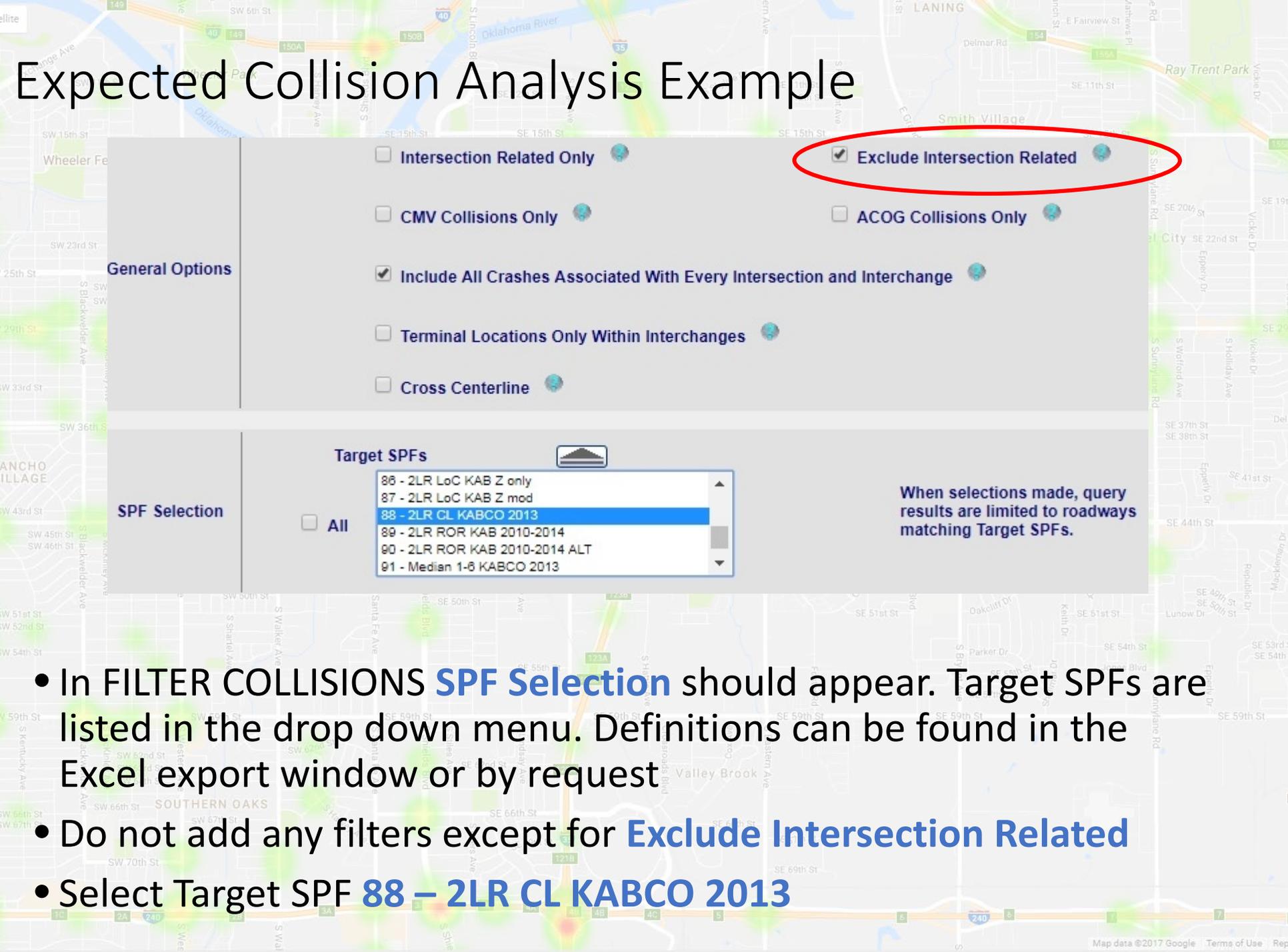   (Division, Troop, Counties, Cities, Control Sections, Hwy/Hwy Jct's, City Streets)

☐ Collision Listings

☑ Query Criteria 🔵

- From REPORT SECTIONS check **Expected Collisions (SPF Analysis)**

- Expected Collision Analysis can also be used in sliding scale analysis but we won't do that in this example

- Not available for Excel export unless Sliding Scale Analysis is also checked

Expected Collision Analysis Example

- In FILTER COLLISIONS **SPF Selection** should appear. Target SPFs are listed in the drop down menu. Definitions can be found in the Excel export window or by request

- Do not add any filters except for **Exclude Intersection Related**

- Select Target SPF **88 – 2LR CL KABCO 2013**

Expected Collision Analysis

SPF Selection	**Target SPFs** ▲ *All Selected*	When selections made, query results are limited to roadways matching Target SPFs.
	☑ **All**	86 - 2LR LoC KAB Z only 87 - 2LR LoC KAB Z mod 88 - 2LR CL KABCO 2013 89 - 2LR ROR KAB 2010-2014 90 - 2LR ROR KAB 2010-2014 ALT 91 - Median 1-6 KABCO 2013	

- If you select **All**, once you generate the report you will be forced to choose a Target SPF for each group of subsections or exclude the group.

- Subsections are grouped by similar road characteristics.

- Do not enter filters other than unchecking **Include All**. The SPF automatically identifies the correct crashes.

- Some SPFs will produce very wrong results if any filters are used

Expected Collision Analysis Example

Querying for roadway subsections... ...
Querying for selected collisions... Query Time: 0.105 seconds
28 Collisions...

2016-01-01 to 2016-12-31
Analyzing subsections... ....

Subsection SPF Assignments

Green Text = Selected Manually By User   Blue Text = Auto Selected

SPF Selection For: 11 Distinct Subsection Types | 25 Subsections | 50.59 Miles   show subsection types
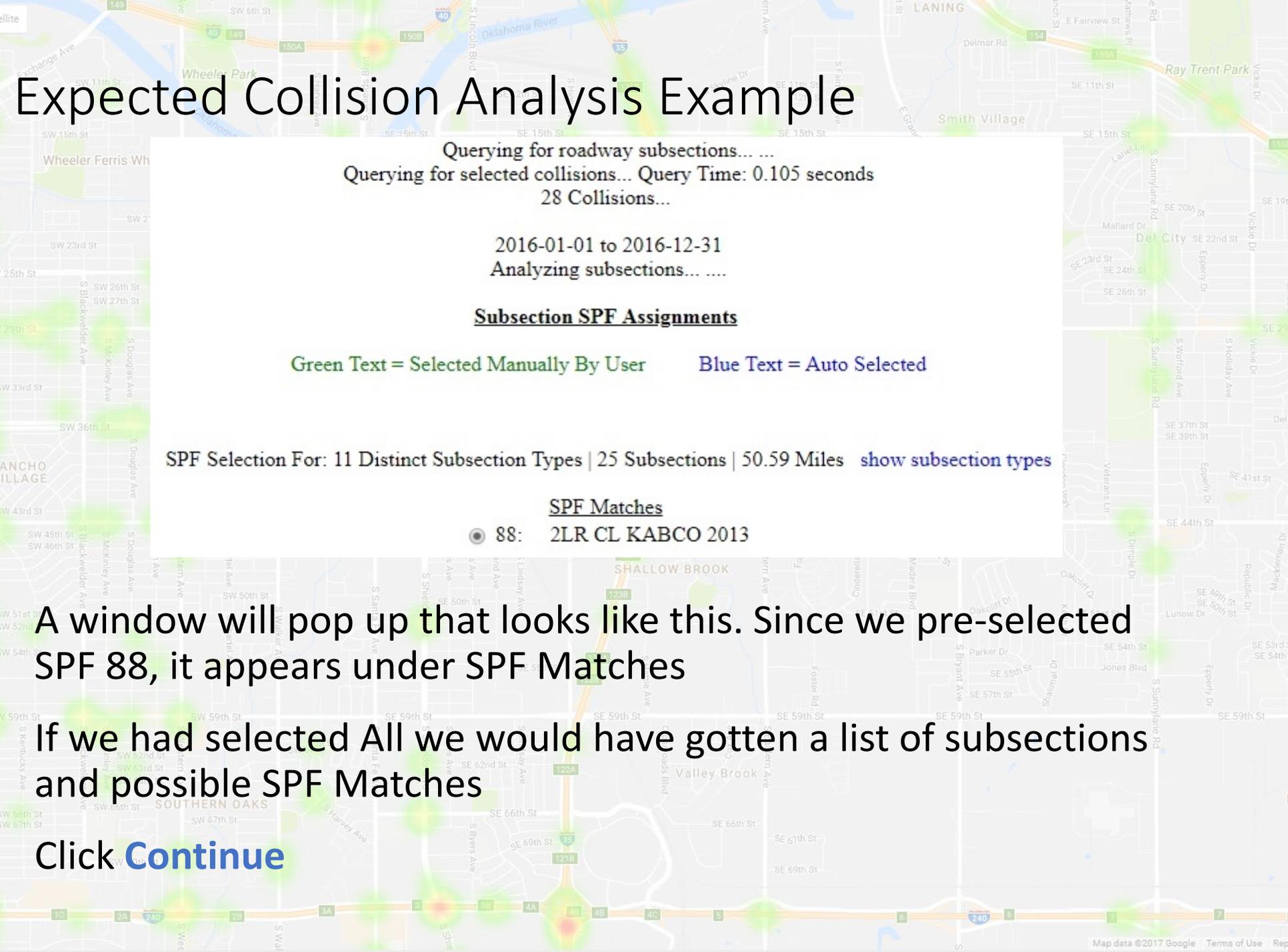
SPF Matches
◉ 88:   2LR CL KABCO 2013

A window will pop up that looks like this. Since we pre-selected SPF 88, it appears under SPF Matches

If we had selected All we would have gotten a list of subsections and possible SPF Matches

Click **Continue**

Expected Collision Analysis Example

Program Provided by:
Traffic Engineering Division
Collision Analysis and Safety Branch
(405) 522-0985
Created: 04/13/2018 by Jessica Avery

ODOT
Oklahoma Department of Transportation

Expected Collision Analysis

Time Period: 01-01-2016 to 12-31-2016
Number of Years in Query: 1.00

$$\text{Exp Target Colls} = \left(\frac{1 + (1/K) \text{ Target Colls}}{1 + (1/K) \text{ Pred Colls}} \right) \text{Pred Colls}$$

Pred Colls = Collisions Predicted by Selected SPF
Target Colls = Collisions that Match Selected SPF
1/K = Overdispersion for Selected SPF

Exp Crash Frequency = Exp Target Colls / Num Years
Exp Crash Density = Exp Crash Frequency / Length
Exp Crash Rate = (Exp Crash Density * 100,000,000) / (ADT * 365)
Exp Excess Crash Freq = (Exp Target Colls - Pred Colls) / Num Years
Typical Crash Freq = Pred Colls / Num Years
Exp/Typ Crash Ratio = Exp Target Colls / Pred Colls
Deviation Probability = Cumulative Value of Exp Target Colls in Distribution

ANALYSIS PER SUBSECTION

CO	CS	Start	End	Length	ADT	Selected SPF	Queried Colls	Target Colls	Predicted Colls	Over dispersion	Exp Target Colls	Exp Crash Frequency	Exp Crash Density	Exp Crash Rate	Exp Excess Crash Freq	Typical Crash Freq	Exp/Typ Crash Ratio	Deviation Probability
73	02	00.00	00.56	0.56	4200	88: 2LR CL KABCO 2013	0	0	0.04	1.79	0.04	0.04	0.06	4.15	-0.00	0.04	0.94	0.66
73	02	00.56	04.77	4.21	2500	88: 2LR CL KABCO 2013	3	1	0.22	0.24	0.26	0.26	0.06	6.79	0.04	0.22	1.18	0.69
				4.77	1405		3	1	0.26	0.29	0.31	0.31	0.07	12.77	0.05	0.26	1.20	0.70

- Broken down by ODOT subsections with a subtotal for each control section. Totals are shown at the bottom

- **Queried Colls** are the total number of crashes found on the subsection

- **Target Colls** is the total number of target crashes found for the SPF (cross-centerline in this case)

Interpreting the Results

ANALYSIS PER SUBSECTION

CO	CS	Start	End	Length	ADT	Selected SPF	Queried Colls	Target Colls	Predicted Colls	Over dispersion	Exp Target Colls	Exp Crash Frequency	Exp Crash Density	Exp Crash Rate	Exp Excess Crash Freq	Typical Crash Freq	Exp/Typ Crash Ratio	Deviation Probability
73	02	00.00	00.56	0.56	4200	88: 2LR CL KABCO 2013	0	0	0.04	1.79	0.04	0.04	0.06	4.15	-0.00	0.04	0.94	0.66
73	02	00.56	04.77	4.21	2500	88: 2LR CL KABCO 2013	3	1	0.22	0.24	0.26	0.26	0.06	6.79	0.04	0.22	1.18	0.69
				4.77	1405		3	1	0.26	0.29	0.31	0.31	0.07	12.77	0.05	0.26	1.20	0.70

CO	CS	Start	End	Length	ADT	Selected SPF	Queried Colls	Target Colls	Predicted Colls	Over dispersion	Exp Target Colls	Exp Crash Frequency	Exp Crash Density	Exp Crash Rate	Exp Excess Crash Freq	Typical Crash Freq	Exp/Typ Crash Ratio	Deviation Probability
73	16	02.62	03.37	0.75	5500	88: 2LR CL KABCO 2013	2	0	0.11	1.33	0.10	0.10	0.13	6.33	-0.01	0.11	0.87	0.61
73	16	03.37	03.79	0.42	5500	88: 2LR CL KABCO 2013	0	0	0.04	2.38	0.04	0.04	0.09	4.34	-0.00	0.04	0.91	0.68
73	16	03.79	07.84	4.05	5500	88: 2LR CL KABCO 2013	5	1	0.45	0.25	0.50	0.50	0.12	6.15	0.05	0.44	1.12	0.66
73	16	07.84	08.58	0.74	3400	88: 2LR CL KABCO 2013	0	0	0.04	1.35	0.03	0.03	0.05	3.69	-0.00	0.04	0.95	0.64
				5.96	3339		7	1	0.63	0.34	0.70	0.70	0.12	9.57	0.07	0.63	1.10	0.64

- **Predicted Colls** are the total number of target collisions estimated only from roadway characteristics and exposure (usually number of years, subsection length, AADT, paved shoulder width, and terrain type).

- Note that the excluded subsections are still included in the report, but do not contribute to the totals.

- **Overdispersion** is used in calculating the Expected Target Collisions; it is given for diagnostic purposes.

Interpreting the Results

ANALYSIS PER SUBSECTION

CO	CS	Start	End	Length	ADT	Selected SPF	Queried Colls	Target Colls	Predicted Colls	Over dispersion	Exp Target Colls	Exp Crash Frequency	Exp Crash Density	Exp Crash Rate	Exp Excess Crash Freq	Typical Crash Freq	Exp/Typ Crash Ratio	Deviation Probability
73	02	00.00	00.56	0.56	4200	88: 2LR CL KABCO 2013	0	0	0.04	1.79	0.04	0.04	0.06	4.15	-0.00	0.04	0.94	0.66
73	02	00.56	04.77	4.21	2500	88: 2LR CL KABCO 2013	3	1	0.22	0.24	0.26	0.26	0.06	6.79	0.04	0.22	1.18	0.69
				4.77	1405		3	1	0.26	0.29	0.31	0.31	0.07	12.77	0.05	0.26	1.20	0.70

- **Expected Target Collisions** is the regression *estimate* of mean target crashes. It is more reliable the higher the number of target crashes and the lower the overdispersion

- There is a standard error (not given) associated with Expected Target Collisions

- **Deviation Probability** is a measure of how much the site deviates from similar sites. It is a network screening measure, not a predictive measure

Interpreting the Results

Based on only the 2016 history of target crashes, we would expect 28 cross-centerline crashes on rural highways per year.

Based on the Expected Crashes Analysis, we would expect only 3.85 per year.

If the same query is run for the year 2014, how many target crashes were found? **32**

Is the difference statistically significant? $\sqrt{32} = \mathbf{5.7}$, **no**

In this example the SPF seems to be consistently underestimating, perhaps there are unaccounted for contributing factors

SPF Pattern Recognition

- Currently available only for city street intersections (excluding highways)

- Crash types currently tested are wet pavement, night/dark, and impaired driving

- Only one metric (Deviation Probability) is reported

- The method used takes into account that the proportions of crash types vary with the total crash frequency

- The equations are calibrated for five years of crash data – using more or less will produce incorrect results

Pattern Recognition Example

Pattern Recognition Example

Currently the user has to manually select the correct SPFs for the intersection type.

Pattern Recognition Example

(405) 522-0589

Created: 09/25/2017 by Matt Warren

Time Period: 01-01-2012 to 12-31-2016

Selected Wet SPF: 53 - City InX Wet

Selected Dark/Night SPF: 64 - City InX Dark

Selected Impaired SPF: 71 - City InX Drunk

PATTERN ANALYSIS PER SUBSECTION

City	Street One	Intersecting Street	Queried	Wet	Dark/Night	Impaired	Wet	Dark/Night	

One crash was miscoded and appears on a separate line, but this does not substantially affect the result.

Douglas & SE 15th is estimated to be at approximately the 95th percentile for the *expected* proportion of wet road collisions, among a theoretical population of city street intersections with 77 total crashes in five years.

The UFC/RFC
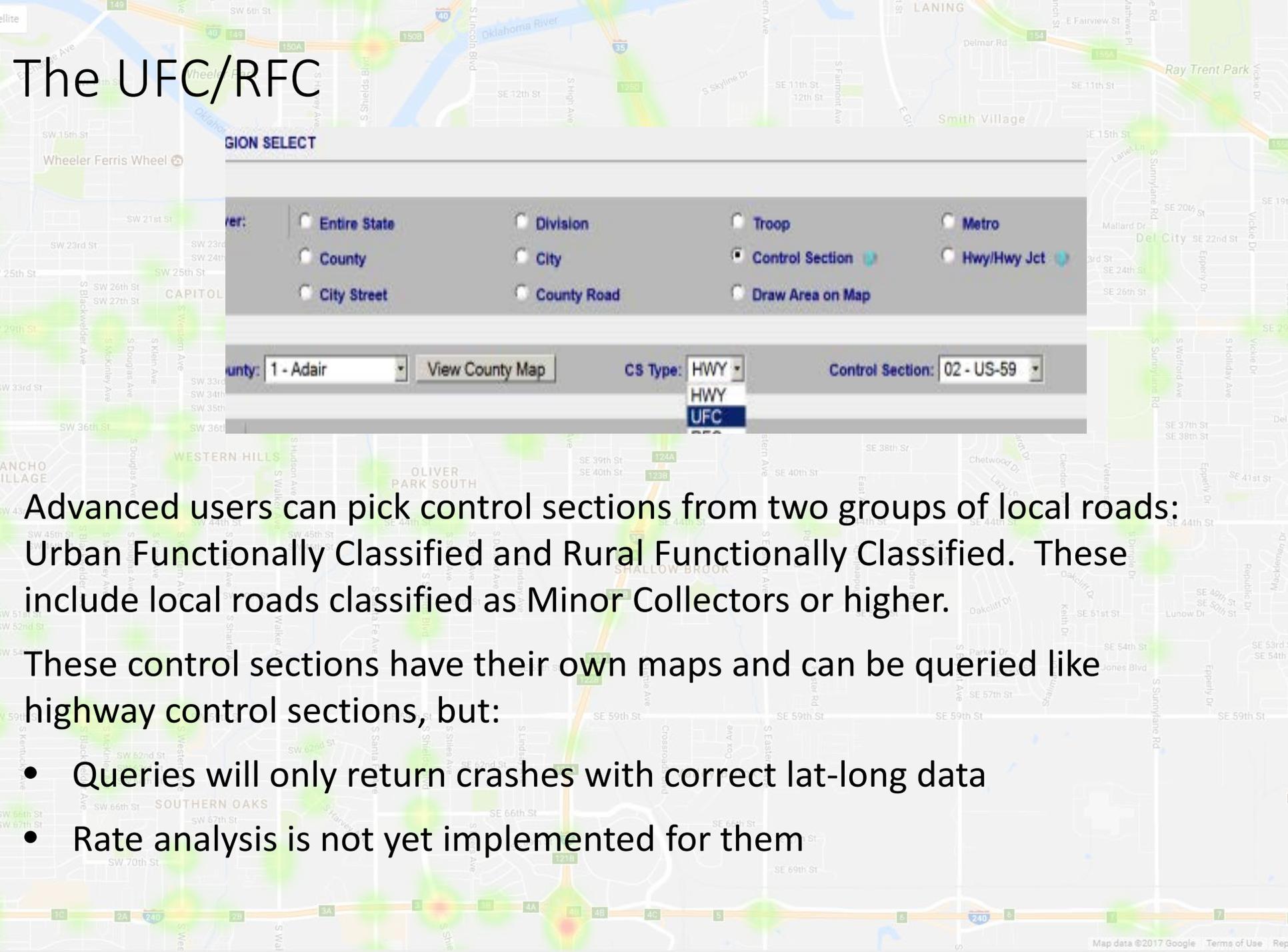
Advanced users can pick control sections from two groups of local roads: Urban Functionally Classified and Rural Functionally Classified. These include local roads classified as Minor Collectors or higher.

These control sections have their own maps and can be queried like highway control sections, but:

- Queries will only return crashes with correct lat-long data
- Rate analysis is not yet implemented for them