



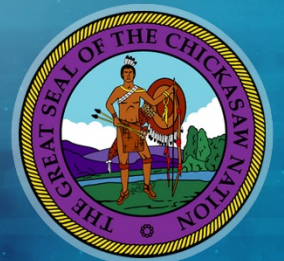
*the*  
**Chickasaw  
Nation**

# Enhancing Collision Data Analysis and Road Safety Audits Using GIS

Terry Holman  
Transportation Program Manager  
The Chickasaw Nation Roads Program

# Discussion Topics

- GIS in transportation
- Data analysis
- Safety audits
- Prioritization
- Resources





# GIS in Transportation

- Asset management
- Transportation planning
- Project development
- Construction management
- Traffic management
- **Safety planning**



# Safety Planning - Data Analysis

- Traffic load analysis
- Collision mapping
- Behavioral trends
- Demand projection
- Environmental impacts





# Collision Data Analysis

1. Acquire collision data
2. Limit data to specific routes
3. Analyze data based on pre-determined criteria (injuries, roadway departures, etc.)
4. Isolate routes
5. Perform on-site safety audits
6. Assign safety priority based on audit findings
7. Add priority list to long-range and safety plans



# Collision Data

1. Data source (SAFE-T)
2. Area of impact (13 counties)
3. Timeframe (2010 – 2017)
4. Collision filters (all collisions)
5. Data fields
6. Shapefiles

SAFE-T ([oksafe-t.org](http://oksafe-t.org))

Oklahoma Department of Transportation

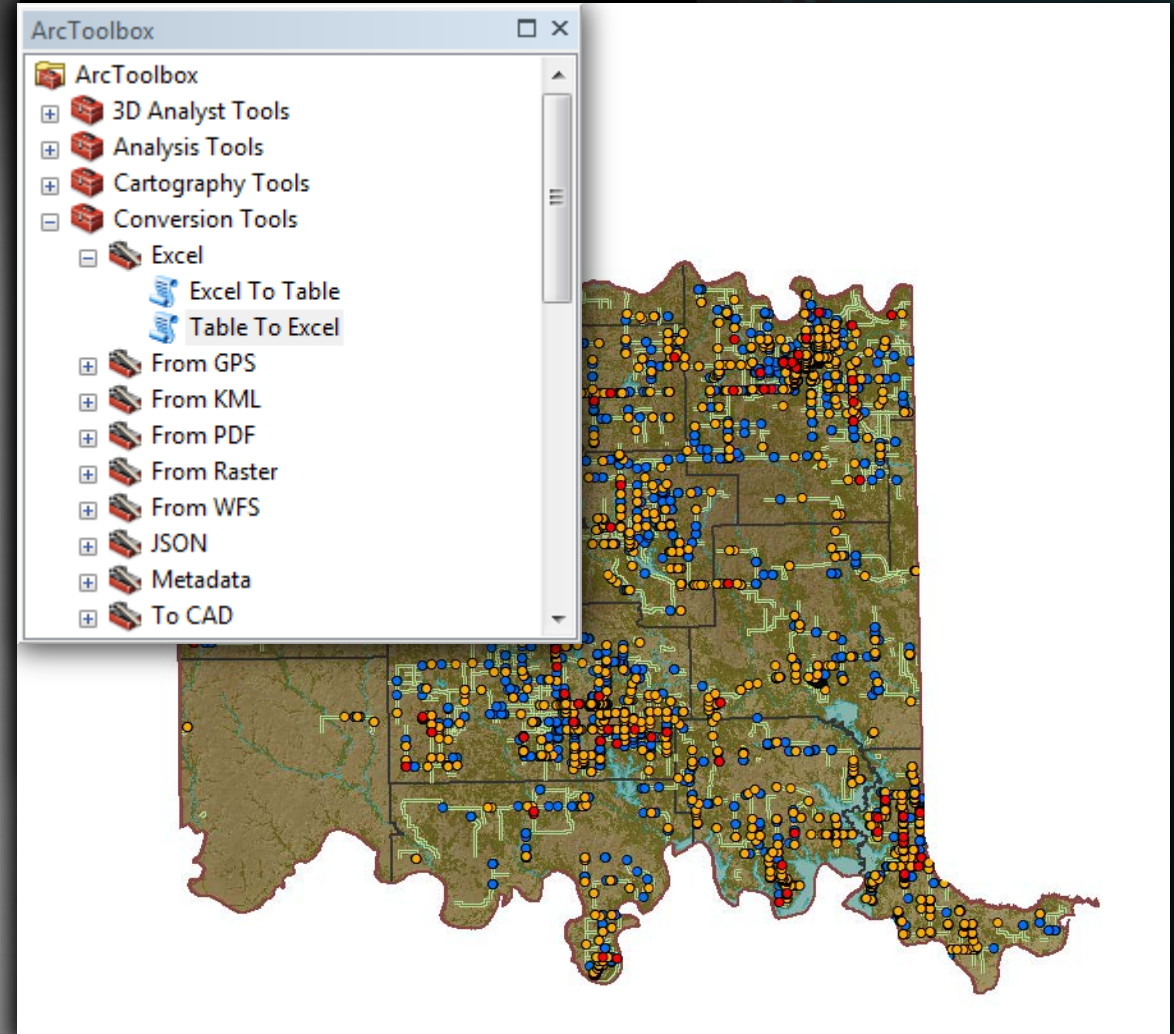
|                                                                 |                                                 |                                                   |                                                                                       |
|-----------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Select All in Section       |                                                 |                                                   |                                                                                       |
| <input checked="" type="checkbox"/> County #                    | <input checked="" type="checkbox"/> City #      | <input checked="" type="checkbox"/> Control #     | <input checked="" type="checkbox"/> Int ID #                                          |
| <input checked="" type="checkbox"/> Milepoint                   | <input checked="" type="checkbox"/> Hwy Name    | <input checked="" type="checkbox"/> Hwy Class     | <input checked="" type="checkbox"/> Special Feature 1                                 |
| <input checked="" type="checkbox"/> Special Feature 2           | <input checked="" type="checkbox"/> Int. Rel.   | <input checked="" type="checkbox"/> #Vis. Injured | <input checked="" type="checkbox"/> # Killed                                          |
| <input checked="" type="checkbox"/> Type of Collision (Derived) | <input checked="" type="checkbox"/> Severity    | <input checked="" type="checkbox"/> Date          | <input checked="" type="checkbox"/> Latitude (Derived)                                |
| <input checked="" type="checkbox"/> Longitude (Derived)         |                                                 |                                                   |                                                                                       |
| <hr/>                                                           |                                                 |                                                   |                                                                                       |
| <input type="checkbox"/> Select All in Section                  |                                                 |                                                   |                                                                                       |
| <input type="checkbox"/> Reporting Agency                       | <input type="checkbox"/> # Vehicles             | <input type="checkbox"/> # Commercial Vehicles    | <input type="checkbox"/> First Harmful Event                                          |
| <input type="checkbox"/> Collision Time                         | <input type="checkbox"/> Collision Troop        | <input type="checkbox"/> Work Zone                | <input type="checkbox"/> Railroad Crossing                                            |
| <input type="checkbox"/> Alcohol Involved                       | <input type="checkbox"/> Drugs Involved         | <input type="checkbox"/> Unit Count               | <input type="checkbox"/> Person Count                                                 |
| <input type="checkbox"/> Street 1                               | <input type="checkbox"/> Street 2               | <input type="checkbox"/> Collision ID             | <input type="checkbox"/> Intersection Design                                          |
| <input type="checkbox"/> Quadrant                               | <input type="checkbox"/> Diagram Collision Code |                                                   |                                                                                       |
| <hr/>                                                           |                                                 |                                                   |                                                                                       |
| Environment Fields                                              |                                                 |                                                   |    |
| Primary Vehicle Fields                                          |                                                 |                                                   |    |
| Vehicle/Person Sums                                             |                                                 |                                                   |    |
| Derived Fields                                                  |                                                 |                                                   |    |
| Unit Fields (All)                                               |                                                 |                                                   |    |
| Persons Fields (All)                                            |                                                 |                                                   |    |
| Highway Inventory Fields                                        |                                                 |                                                   |   |
| Additional Highway Inventory Fields                             |                                                 |                                                   |  |





# Collision Data

1. Import collision data
2. Add inventory layer
3. Limit collisions (intersect)
4. Collision and route layers
5. Convert data table to Excel spreadsheet for in-depth collision analysis (optional)



# Safety Audits



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Nation*

## ROADS PROGRAM

**TRIBAL TRANSPORTATION FACILITY  
ON-SITE SAFETY INSPECTION CHECKLIST**

|                |  |               |  |             |  |
|----------------|--|---------------|--|-------------|--|
| INSPECTION BY: |  | DATE          |  | TIME        |  |
|                |  |               |  |             |  |
| ROUTE NO.      |  | ROUTE NAME    |  | SECTION(S)  |  |
|                |  |               |  |             |  |
| SURFACE TYPE   |  | ROADWAY WIDTH |  | SPEED LIMIT |  |
|                |  |               |  |             |  |
| NO. LANES      |  |               |  |             |  |
|                |  |               |  |             |  |
| SHOULDER WIDTH |  | MEDIAN WIDTH  |  | CURB DESIGN |  |
|                |  |               |  |             |  |
| CURB WIDTH     |  | CURB HEIGHT   |  |             |  |
|                |  |               |  |             |  |

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## SAFETY FEATURES

|               |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Guardrails    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Lighting      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Shoulder      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Signage       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Signalization | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## PEDESTRIAN SAFETY

|                            |                          |                          |                          |                          |                          |
|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| ADA Features (Ramps, Etc.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Crosswalks                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sidewalks                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Signage                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Signalization              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## NOTES

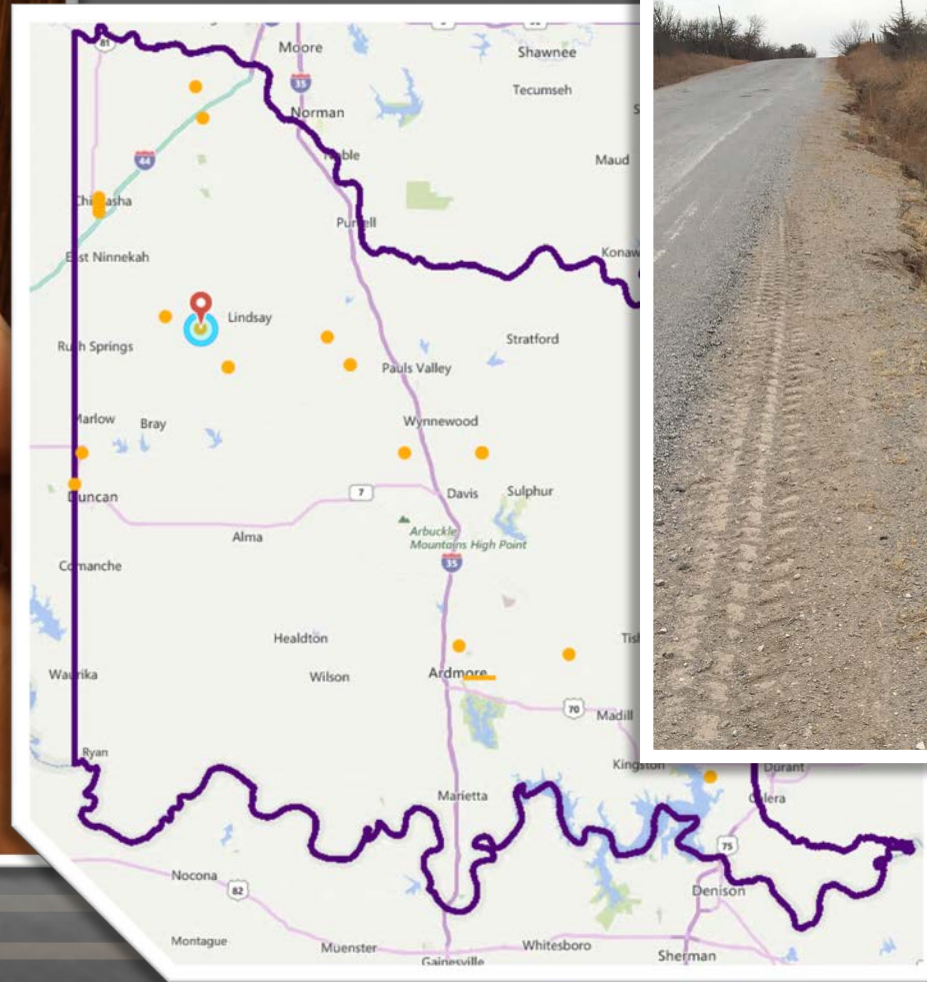
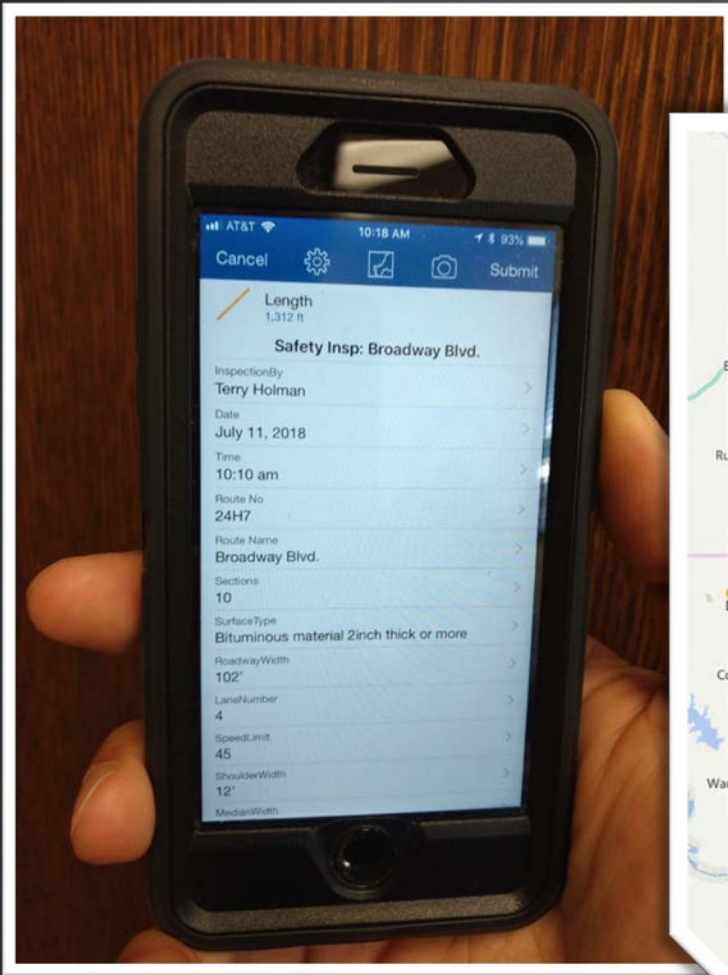
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SKETCH





# Safety Audits – Collector App





## The seal of the Chickasaw Nation is a circular emblem. It features a central figure of a Native American man in traditional dress, holding a bow and arrow. Behind him is a large, ornate drum. The background of the seal depicts a landscape with green hills and a blue sky with white clouds. The words "THE GREAT SEAL OF THE CHICKASAW NATION" are inscribed around the perimeter of the seal in a circular border.

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# Resources – GIS Data

USDA Geospatial Data Gateway

([datagateway.nrcs.usda.gov](http://datagateway.nrcs.usda.gov))

U.S. Census Bureau

([www.census.gov/geo/maps-data](http://www.census.gov/geo/maps-data))

NHTSA ~ Fatality Analysis Reporting System

FARS Encyclopedia ~ ([www-fars.nhtsa.dot.gov](http://www-fars.nhtsa.dot.gov))

OK Geographic Information Council

([okmaps.onenet.net/digital\\_data.htm](http://okmaps.onenet.net/digital_data.htm))

Oklahoma Department of Transportation

Open Data Portal ~ ([gis-okdot.opendata.arcgis.com](http://gis-okdot.opendata.arcgis.com))

SAFE-T ([oksafet.org](http://oksafet.org)) ~ Matt Warren ([mwarren@odot.org](mailto:mwarren@odot.org))



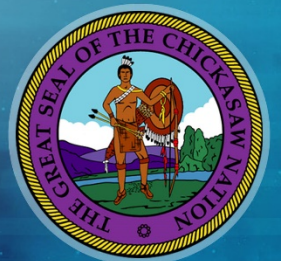
# Resources - Safety Audits

National Transportation Safety Board

([www.nts.gov](http://www.nts.gov))

Tribal Transportation Safety

([www.tribalsafety.org](http://www.tribalsafety.org))





Thank You!

Questions/Comments?

