South Dakota Office of Highway Safety Grant Opportunities

2017 TRIBAL TRANSPORTATION SAFETY SUMMIT

RAPID CITY, SD

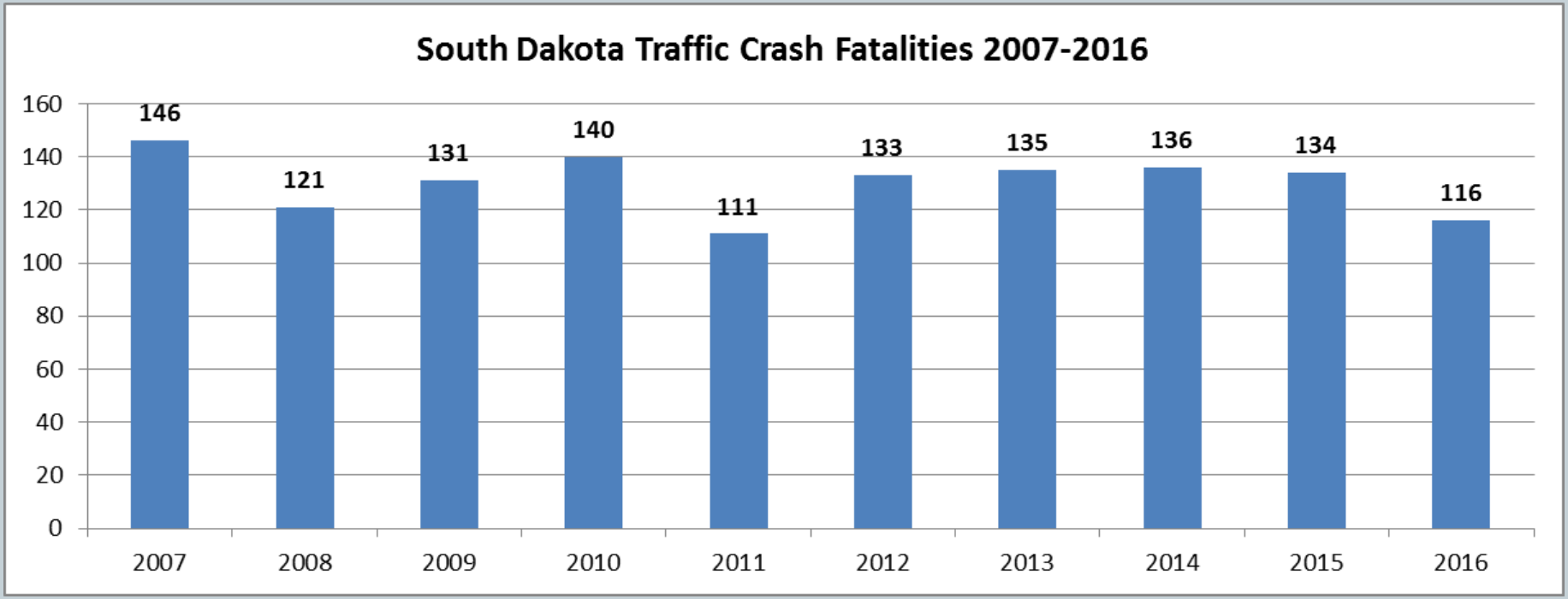
OCTOBER 24-26

DRIVESAFESD.COM

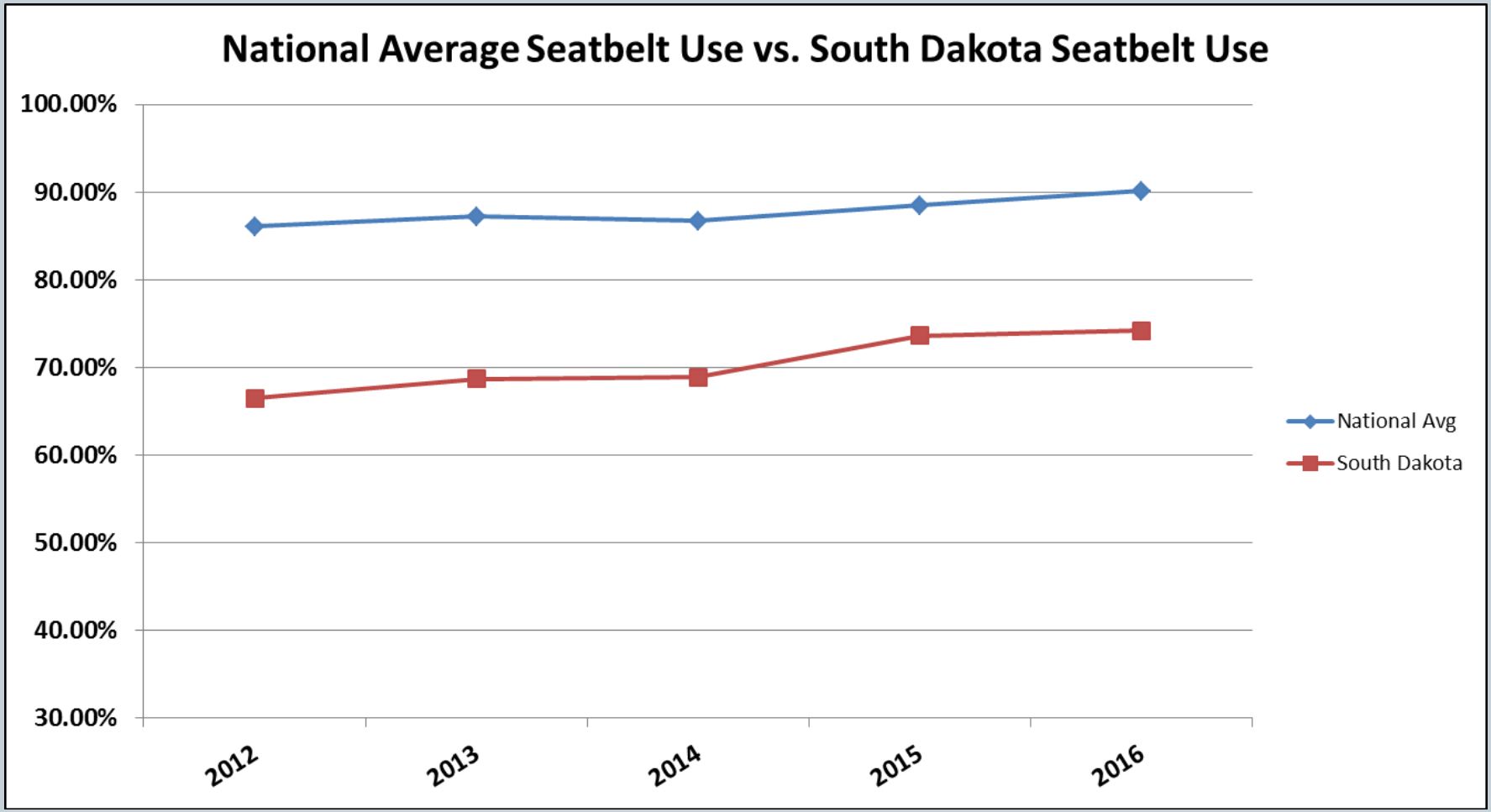
Office of Highway Safety Priorities

- Impaired Driving (drunk and drugged)
- Occupant Protection
- Speeding
- Distracted Driving
- Young Drivers
- Motorcycle Safety

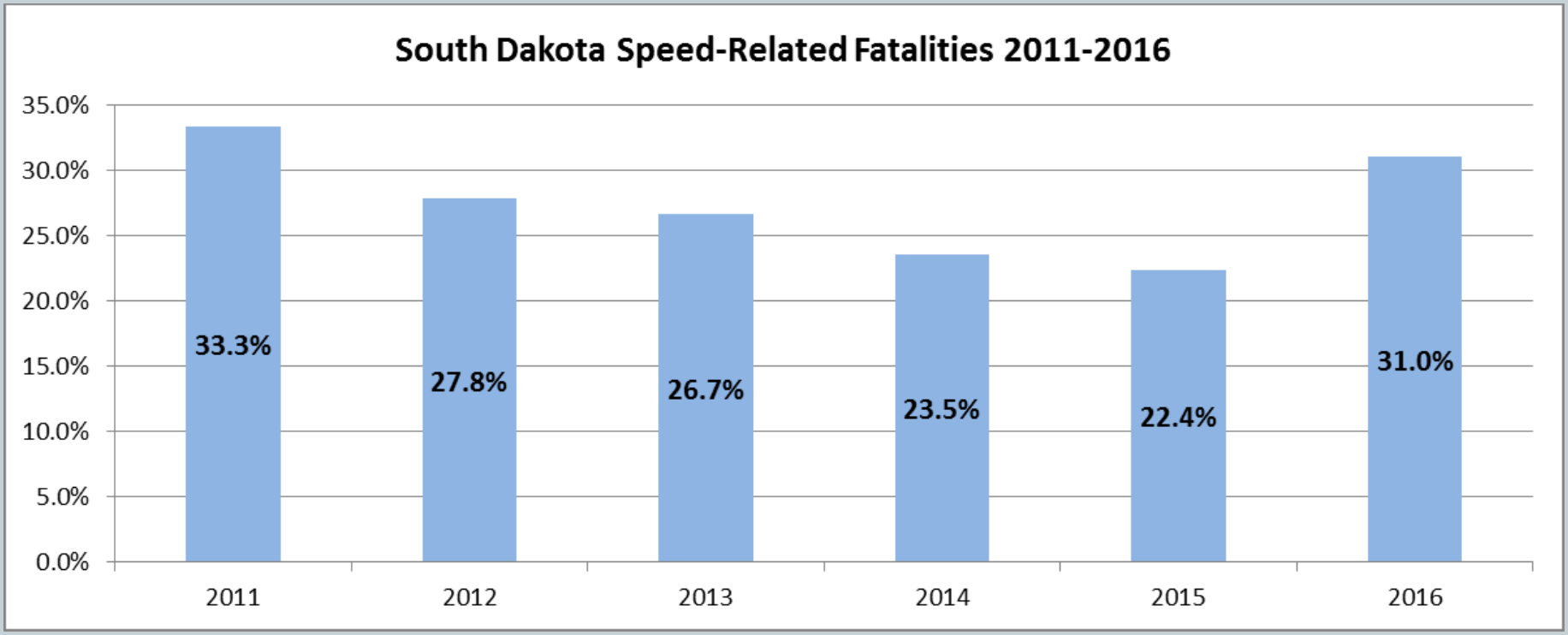
Fatal Crash Trend



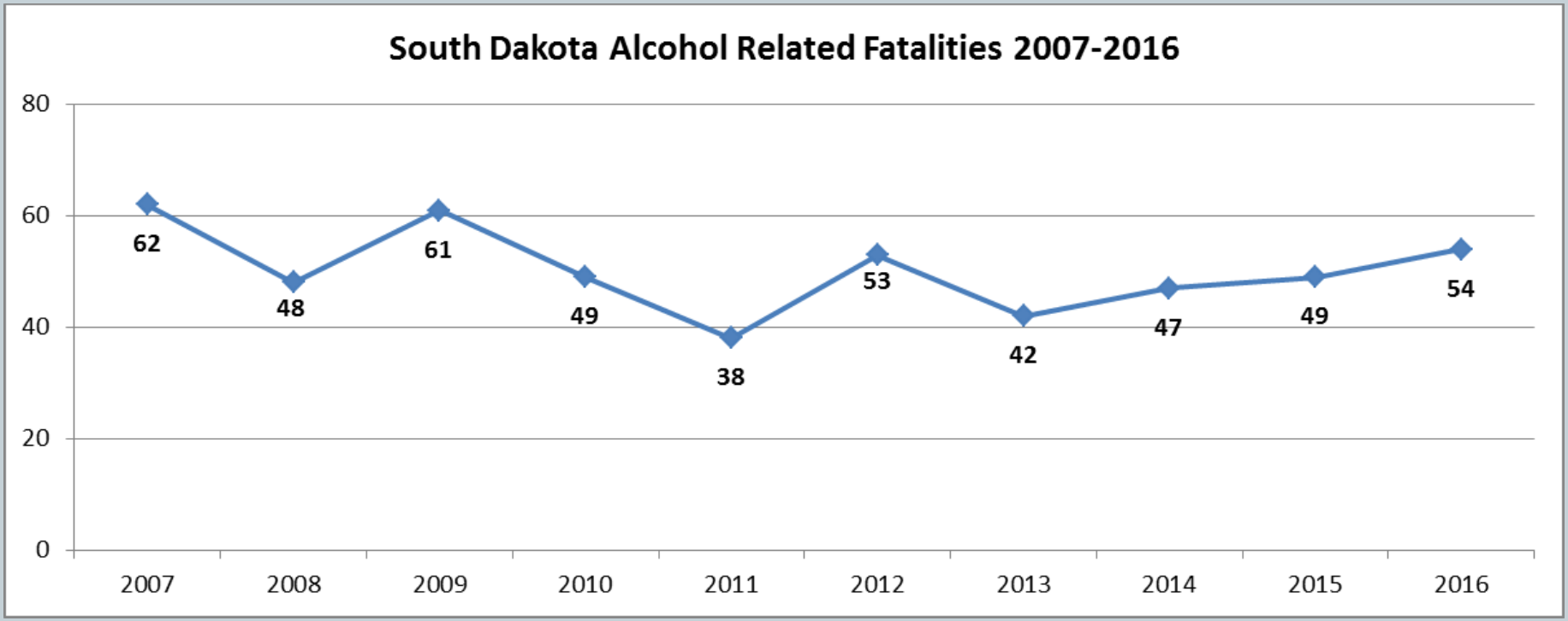
Seatbelt Use Rate



Speed Related Fatalities

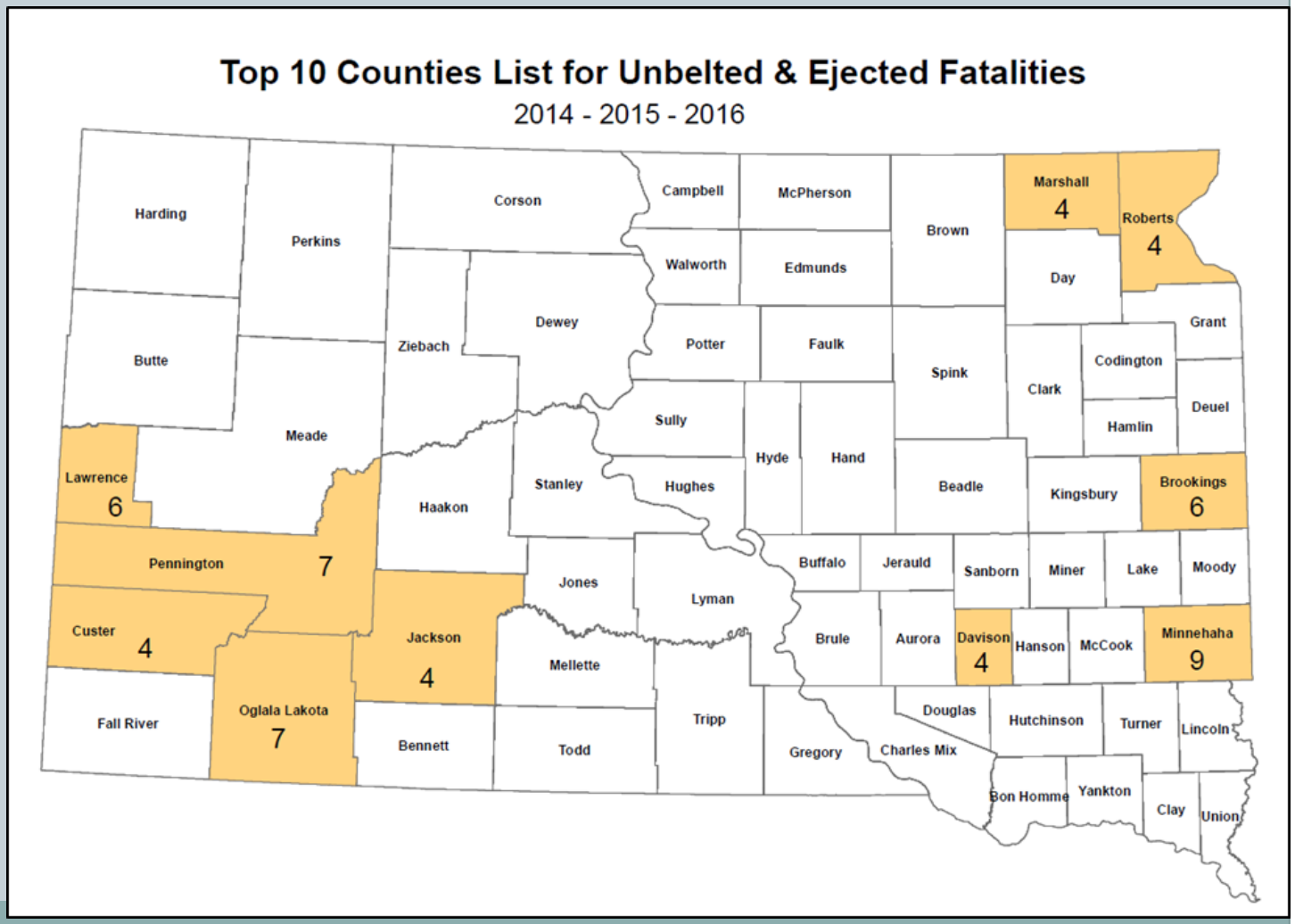


Alcohol Related Fatalities



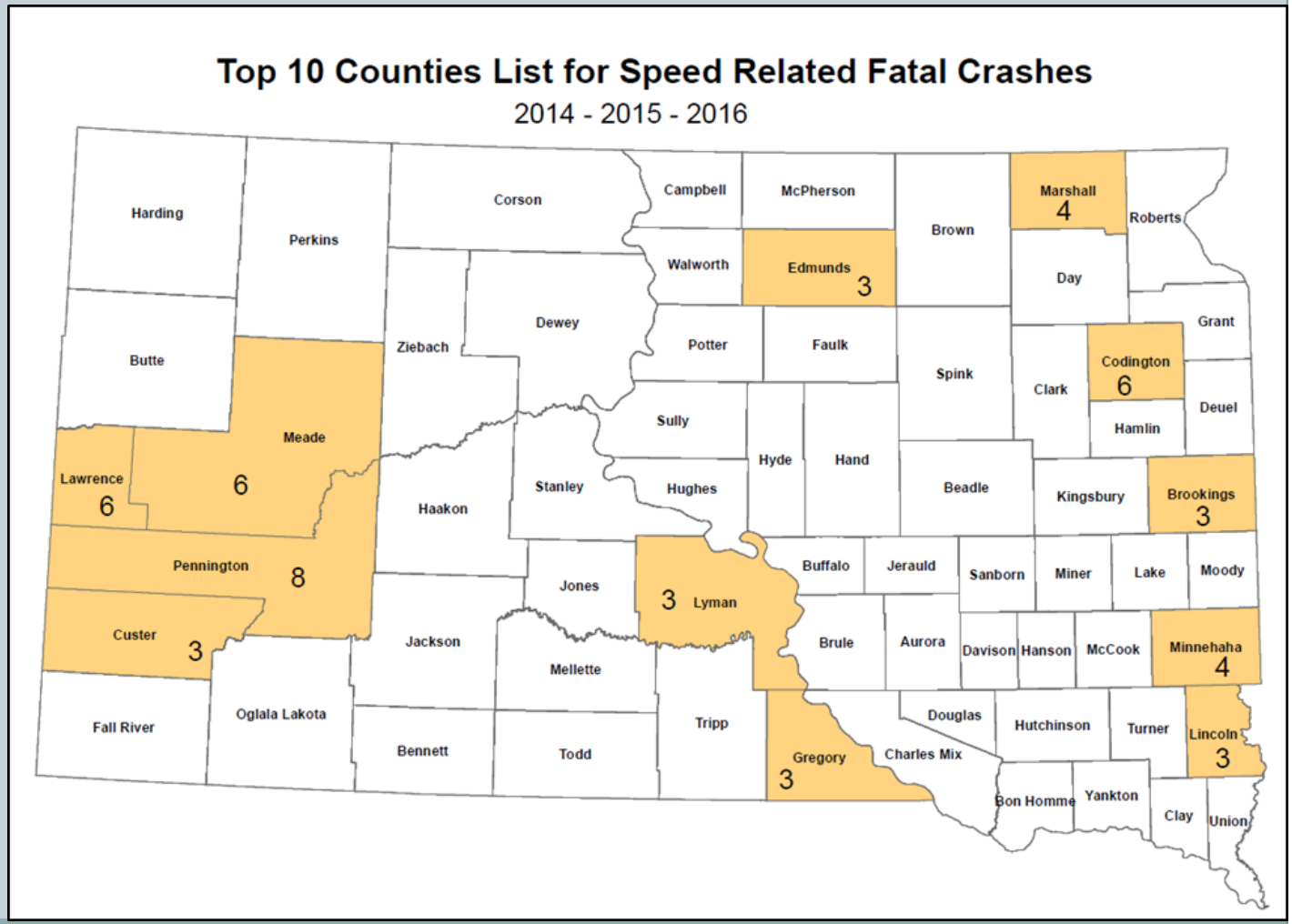
Top 10 Counties for Unbelted Fatalities

1. Minnehaha-9
2. Oglala Lakota-7
3. Pennington-7
4. Brookings-6
5. Lawrence-6
6. Custer-4
7. Davison-4
8. Jackson-4
9. Marshall-4
10. Roberts-4



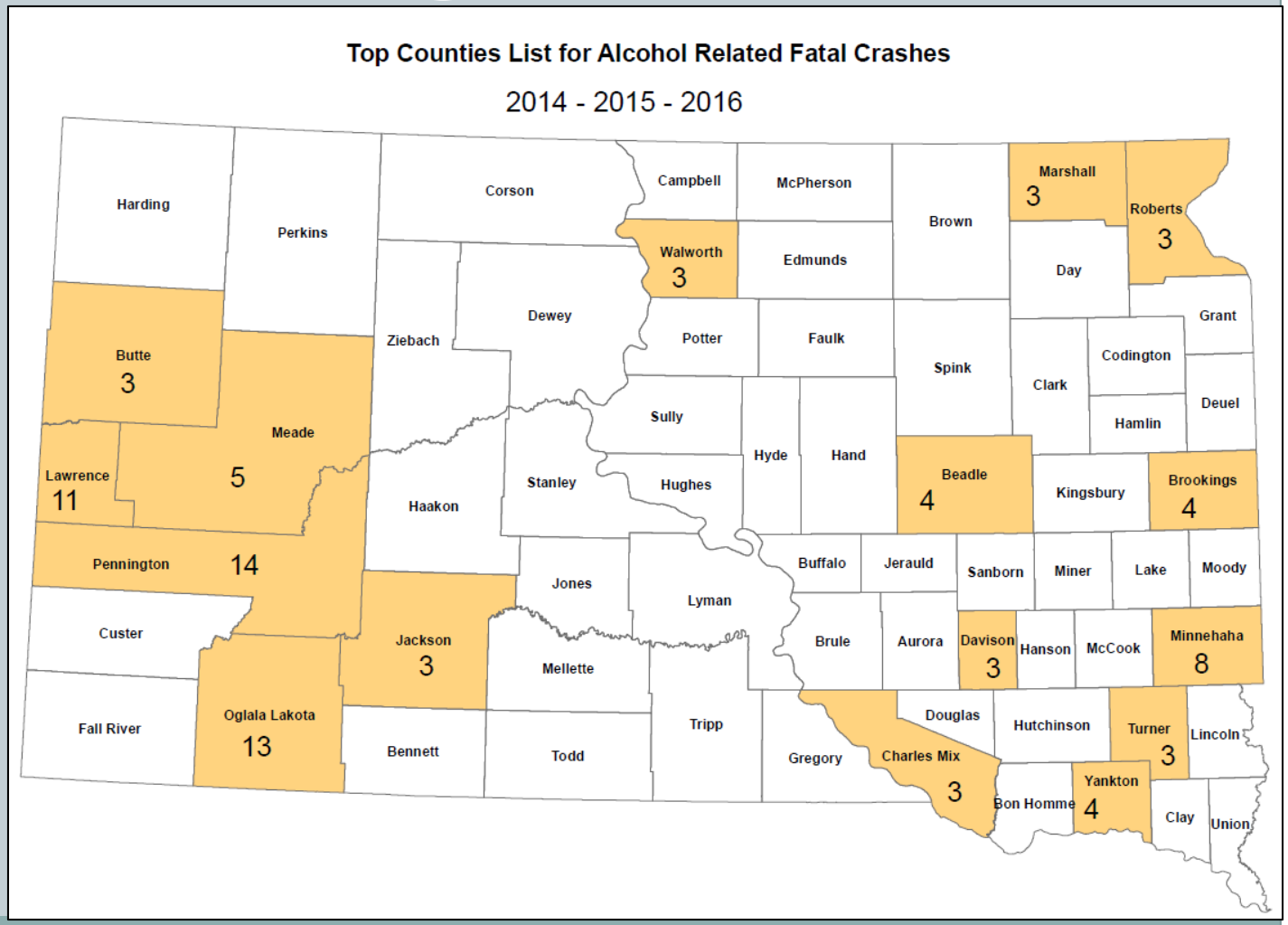
Top Counties for Speed Related Fatalities

1. Pennington-8
2. Meade-6
3. Codington-6
4. Lawrence-6
5. Marshall-4
6. Minnehaha-4
7. Brookings-3
8. Edmunds-3
9. Custer-3
10. Gregory-3
11. Lincoln-3
12. Lyman-3



Top Counties for Alcohol Related Fatalities

1. Pennington-14
2. Oglala Lakota-13
3. Lawrence-11
4. Minnehaha-8
5. Meade-5
6. Brookings-4
7. Beadle-4
8. Yankton-4



Highway Safety Grant Requirements

WHO IS ELIGIBLE?

WHAT INFORMATION IS NEEDED?

EXAMPLES OF HIGHWAY SAFETY PROJECTS

HOW DO I APPLY?

Who is eligible?

- The following agencies are eligible for grant funding:
  - South Dakota State Agencies
  - Federally recognized Tribal Governments
  - City and County Agencies
  - Non-profit entities with existing IRS 501(c)(3) or (4) status
  - Public Schools and private schools w/ non-profit status

What information is needed?

- Problem Identification
- Targets and Objectives
  - Example: Reduce the number of alcohol-related fatalities in Hughes County by 20% from 5 in 2016 to 4 in 2017.
- Activities
- Evaluation
- Budget Table & Narrative

Examples of Highway Safety Projects

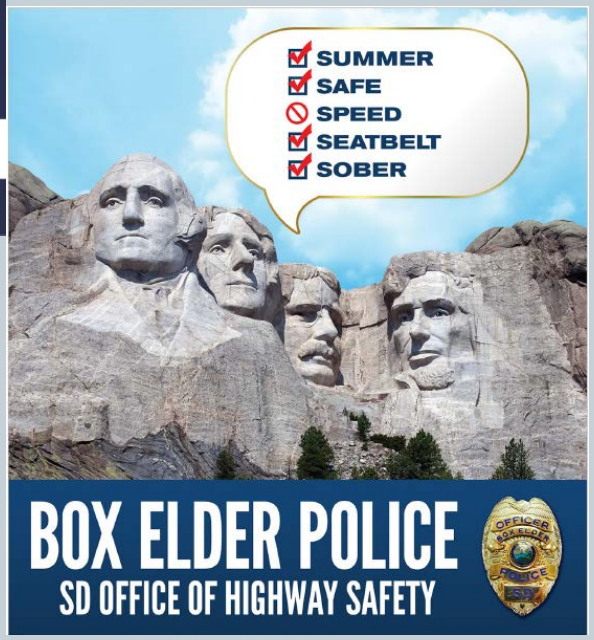
- Speed, seatbelt and impaired driving OT enforcement
- Equipment (radar, speed trailer, in-car cameras, breath testing devices)
- Educational materials (handouts and pamphlets)
- Advertising media (billboards, TV or radio ads, banners, posters)

Sioux Falls Police Department

- Impaired Driving Enforcement
- Billboards

Box Elder Police Department

- Impaired Driving and Speed Enforcement
- Billboards



Oglala Sioux Tribe, Department of Public Safety

- KILI radio station weekly show
- Speed and Seatbelt Enforcement

Corson & Dewey County Sheriff's Office

- Speed and Seatbelt Enforcement
- Reimburse mileage instead of overtime
  - County will not allow overtime

How do I apply?

- Attend spring grant training workshop.
  - Contact Amanda to be added to the mailing list.

- EDGAR (Electronic Database for Grant Application and Reporting)

https://sddps.intelligrants.com/login2.aspx?APPTHEME=SDDPS_OHS

OR

Safesd.gov and click on Grant Application & Reporting

Highway Safety Contact Information

Pierre Office:

- Lee Axdahl
  - lee.axdahl@state.sd.us
  - 605-773-4949
- Amanda Hossle
  - amanda.hossle@state.sd.us
  - 605-773-8210

Law Enforcement Liaisons:

- Dennis Falken (Northeast)
  - dfalken@brookings.net
  - 605-690-5110
- Eric Majeres (Southeast)
  - eric.majeres@state.sd.us
  - 605-444-6301
- Greg Ingemunson (Western)
  - greg.ingemunson@state.sd.us
  - 605-484-8132
- Vacant (North Central)

QUESTIONS???

TRIBAL TRANSPORTATION SAFETY SUMMIT

Tom Croymans

Regional Roads Engineer
Bureau of Indian Affairs
Great Plains Region

Rushmore Hotel & Suites
2017 Annual Conference
October 24-26
Rapid City, SD

Agenda

- Tribal Transportation Program Safety Funds (TTPSF) NOFO
- FY17 - 18 TTPSF Program Funding
- TTPSF program information

FY 17 / 18 TTP Safety Program

- FY 2017 - FY 2018 TTP Safety Fund ◦Notice: The Notice of Funding Opportunity (NOFO) was published on September 21, 2017.
- Application Deadline: Applications must be submitted electronically no later than 11:59 p.m., e.t. on December 11, 2017.

FY 17 / 18 TTP Safety Program

- Tribal Transportation Program (TTP) Funding
- FY16 - $465 Million
- FY17 - $475 Million
- FY18 - $485 Million
- FY19 - $495 Million
- FY20 - $505 Million
- TOTAL - $2.425 Billion over 5 years

FY 17 / 18 TTP Safety Program

- Program funding 2% of total program after recession and obligation limitation.
- FY 17 Available funding - $475 Million– 7.2% Obligation Limitation = 8.8 Million
- FY 18 Available funding - $485 Million– ?% Obligation Limitation = ? Million

Safety Plan Implementation in South Dakota

- 2013 7 projects funded at $176,600
  - 6 Safety Plans
  - 1 project (engineering)
- 2014 4 projects funded at $537,629
  - 1 Safety Plan
  - 3 Projects (2 education, EMS/Enforcement)
- 2015 projects funded at $348,000
  - 3 Projects (education, engineering, other)
- 2016 6 projects funded at $1,027,535
  - 2 Safety Plans
  - 4 Projects (2 pathways, speed study, crash record system)

TTP Safety Program FAQs

- **Should Tribes include a Tribal resolution in their applications?**
  No. It is not necessary to include a Tribal resolution with the application unless required by the Tribe's policies.
- **Can a Tribe submit more than one application?**
  Yes. There is no limit to the number of applications a Tribe may submit. Multiple applications can be submitted in each category. Each application will be evaluated separately. Only one project may be included on each application.
- **Can other sources of funds be used to finance an awarded project in advance of receiving TTPSF funds?**
  Yes. A Tribe can use other funding sources, including TTP Tribal Shares, to being work on a project that has been approved for funding on an official FHWA awards announcement, available on the web page: https://flh.fhwa.dot.gov/programs/ttp/safety/ttpsf.htm. Once the TTPSF funds arrive the other funding source can be reimbursed.

TTP Safety Program FAQs

- **If the Tribe is successful in their grant application for the TTPSF, can the funds be allocated directly to the Tribe, or must it be taken down through a BIA contracting mechanism?**
  TTPSF funds will be allocated to the BIA Agreement Tribes through the BIA Region Office, compact Tribes thru OSG, and FHWA Agreement Tribes thru the FHWA Referenced Funding Agreements (RFA).
- **What are the reporting requirements for this grant?**
  Required reporting follows the requirements for regular TTP funds.
- **May a Tribe include Indirect Cost Rates in the amount being requested from TTPSF?**
  An indirect cost of not more than 3% is allowed to be applied to pass thru funds. If the project is done by a Tribe's work force, then the ICR should be based from negotiated rate from the Dept. of Interior's Interior Business Center (IBC).

TTP Safety Program FAQs

- **What should a Tribe do when a project is complete with some TTPSF funds unexpended?**
  Upon completion of a TTPSF project, funds that are not expended are to be recovered and returned to the TTPSF funding pool.
- **How long are TTPSF funds available for a project?**
  Any project not under contract within three fiscal years after the award announcement will forfeit unexpended funding. This funding will be returned to FHWA for redistribution under the next year's TTPSF awards. Applicants may request, in writing, a one-time, 1-year extension of this deadline from FHWA.
- **I put in a TTPSF application but funds have not been awarded. Can I begin working on my project now?**
  After an application has been submitted, the applicant may begin expenditures on the project that *may possibly* be reimbursed by TTPSF if the application is selected by funding. However, the applicant should understand there is no guarantee of an award, and the decision to implement the project is at their own risk. TTPSF cannot be used to reimburse a Tribe for work performed prior to an application for the work being submitted.

Allowable Activities

- §148. Highway safety improvement program
- (a) Definitions.-In this section, the following definitions apply:
- (4) Highway safety improvement project.-
  - (A) In general.-The term "highway safety improvement project" means strategies, activities, and projects on a public road that are consistent with a State strategic highway safety plan and-
    - (i) correct or improve a hazardous road location or feature; or
    - (ii) address a highway safety problem.

Allowable Activities

- **§148. Highway safety improvement program**
- (B) Inclusions.-The term "highway safety improvement project" only includes a project for 1 or more of the following:
- (i) An intersection safety improvement.
- (ii) Pavement and shoulder widening (including addition of a passing lane to remedy an unsafe condition).
- (iii) Installation of rumble strips or another warning device, if the rumble strips or other warning devices do not adversely affect the safety or mobility of bicyclists and pedestrians, including persons with disabilities.
- (iv) Installation of a skid-resistant surface at an intersection or other location with a high frequency of crashes.
- (v) An improvement for pedestrian or bicyclist safety or safety of persons with disabilities.

Allowable Activities

- **§148. Highway safety improvement program**
- (vi) Construction and improvement of a railway-highway grade crossing safety feature, including installation of protective devices.
- (vii) The conduct of a model traffic enforcement activity at a railway-highway crossing.
- (viii) Construction of a traffic calming feature.
- (ix) Elimination of a roadside hazard.
- (x) Installation, replacement, and other improvement of highway signage and pavement markings, or a project to maintain minimum levels of retroreflectivity, that addresses a highway safety problem consistent with a State strategic highway safety plan.

Allowable Activities

- **§148. Highway safety improvement program**
- (xi) Installation of a priority control system for emergency vehicles at signalized intersections.
- (xii) Installation of a traffic control or other warning device at a location with high crash potential.
- (xiii) Transportation safety planning.
- (xiv) Collection, analysis, and improvement of safety data.
- (xv) Planning integrated interoperable emergency communications equipment, operational activities, or traffic enforcement activities (including police assistance) relating to work zone safety.

Allowable Activities

- **§148. Highway safety improvement program**
- (xvi) Installation of guardrails, barriers (including barriers between construction work zones and traffic lanes for the safety of road users and workers), and crash attenuators.
- (xvii) The addition or retrofitting of structures or other measures to eliminate or reduce crashes involving vehicles and wildlife.
- (xviii) Installation of yellow-green signs and signals at pedestrian and bicycle crossings and in school zones.
- (xix) Construction and operational improvements on high risk rural roads.
- (xx) Geometric improvements to a road for safety purposes that improve safety.

Allowable Activities

- **§148. Highway safety improvement program**
- (xxi) A road safety audit.
- (xxii) Roadway safety infrastructure improvements consistent with the recommendations included in the publication of the Federal Highway Administration entitled "Highway Design Handbook for Older Drivers and Pedestrians" (FHWA–RD–01–103), dated May 2001 or as subsequently revised and updated.
- (xxiii) Truck parking facilities eligible for funding under section 1401 of the MAP–21.
- (xxiv) Systemic safety improvements.
- (xxv) Installation of vehicle-to-infrastructure communication equipment.

Allowable Activities

- **§148. Highway safety improvement program**
- (xxvi) Pedestrian hybrid beacons.
- (xxvii) Roadway improvements that provide separation between pedestrians and motor vehicles, including medians and pedestrian crossing islands.
- (xxviii) A physical infrastructure safety project not described in clauses (i) through (xxvii).

Thank You

Contact Information

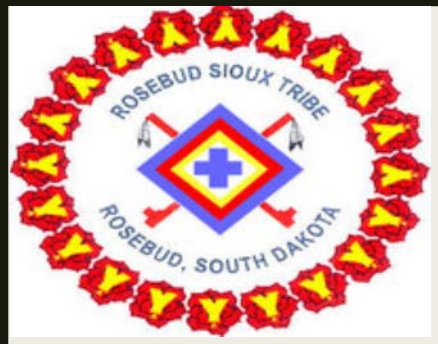
Tom Croymans

Regional Road Engineer– Great Plains Region

thomas.croymans@bia.gov

Work (605)226-7645

Cell (605)290-2539



RST MAP-21

Motor Carriers
and
Crash Data

Motor Carriers on the Rosebud Reservation

- No weigh stations
- Motor Carriers speed
- Motor Carriers overweight
- Reservation boundary jurisdiction
- No Law Enforcement support (Todd County, Mission, Rosebud PD)
- US HWY 18 & 83

All these factors allow for motor carriers to speed through the reservation with visibly grossly heavy cargo. They know the reservation boundaries and are aware that tribal police cannot and will not stop them or will the Todd County Sherriff or the Mission police officer. US HWY 18 & 83 traverse all 4 directions through the Rosebud Reservation.

Something must be done to curtail the motor carrier traffic. A weigh station would aide immensely!

There are the traditional Fixed Weigh station and the Virtual Weigh Station

Fixed weigh stations:

- Cost and man-power spread thin

- Limited geographic coverage

- Limited hours of operation

- Inability to deploy to some areas, ie, the Reservations, rural, remote areas

- Expenses associated with the acquisition, development, operation and maintenance of the sites

- Across the US there are only 680 fixed weigh stations. Massachusetts and New York currently do not have any fixed weigh stations.

Virtual Weigh Station:

- Unmanned

- Remotely monitored roadside enforcement facility

These stations aide the state's truck size and weight enforcement by monitoring and screening commercial vehicles on routes that bypass fixed inspection stations and secondary roadways, like county roads and reservation roads.

Also in urban or remote areas, like the reservation where it can be difficult to deploy traditional enforcement operations.

Currently 10 states that have deployed the Virtual Weigh Station

The cost of a VWS is between $300,000 and $1,400,000 versus a fixed weigh station which are approximately $12,000,000.

Other factors of deploying a weigh station on the reservations is the jurisdiction, we often think a Memorandum of Agreement/Understanding (MOA/U) between jurisdictions will rectify this but often Tribal police departments will not enter into an MOA/U because of Tribal sovereignty. The stigma still exist that the Tribe would have to give up sovereignty or jurisdiction when that simply is not the case.

- *"Arizona estimates that overweight trucks cause $12 million to $53 million in damage to the State's infrastructure annually.10 A similar study conducted in 1999 found that overweight vehicles in Texas caused an estimated $6 million to $48 million in damage to the State's roads and bridges annually."*

Crash data

-The support and involvement of the Tribal Police Dept (PD) is important, otherwise you will not get the crash data that you need. You will end up going to other resources who may or may not help you with the data.

-Traffic Safety Officer plays a very important role in gathering crash data and sharing it. When the data is not shared it hinders applying for traffic safety grants and other funds that aide with Traffic Safety efforts.

-How do we get Tribal Police Depts involved?

TRB
Tribal Safety Issues Subcommittee

SD Tribal Safety Summit

October 25, 2017

What is TRB

- The Transportation Research Board (TRB):
  - innovative, research-based solutions to improve transportation.
  - Part of the National Academies of Sciences, Engineering, and Medicine,
  - TRB is a non-profit organization that provides independent, objective, and interdisciplinary solutions.
  - TRB manages transportation **research** by producing publications and online resources.
  - TRB also provides **advice** through its policy studies that tackle complex and often controversial issues of national significance.
  - TRB is powered by volunteers

Research

- Over 200 publications annually
- 300+ research projects currently managed
- $58 million dollars invested annually in the Cooperative Research Programs
- 1 million+ transportation research records in the online database
- 165,000+ full text documents
- 900+ peer-reviewed papers published in the *Transportation Research Record*
- *Can access through the TRB Website or SDDOT may be able to assist.*

Committees and Annual Meeting

- **CONVENE**
- 200+ standing committees
- 7,000+ active committee and panel members
- 12,000+ attendees at the TRB Annual Meeting
- 750+ sessions and workshops at the TRB Annual Meeting

Advise on Policy

- 100+ national policy studies conducted
- 15 active policy study committees
- 38 policy studies that have contributed to changes in legislation

TRB Process

- Schedule:
  - Early July – Solicits Problem Statements
  - Mid September – Problem Statements Due
  - Dec/Jan – Ballots Sent to Selection Panel
  - Late March – Projects Selected
  - May/June – Projects Approved

TRB Process

- Eligible Submission Bodies:
  - AASHTO Committees
  - State DOTs
  - FHWA

Native American Transportation Issues Committee

- Ron Hall – Bubar and Hall Consulting is Chairman
- Dave Huft – SDDOT
- Debbie Shinstine – Wyoming
- TTAPs
- Craig Genzlinger - KLJ

- Need more Tribal Membership

Tribal Safety Subcommittee

- A subcommittee under the Native American Issues Committee.
- Currently have 5 Research Statements in development:
  - The Role that Road Maintenance Plays in the Safety Crisis on Tribal Lands – John Smith, being carried by Ron Hall.
  - Effects of Drivers Education and Graduated Drivers Licenses on Native American Teens – Karla Cisco.
  - Methods to Assess the Tribal Transportation Safety Culture– Dennis Trusty.
  - Assessment of the Accuracy of Ethnicity in FARs Data– Craig Genzlinger
  - Tribal Traffic Codes Assessment – Ron Hall

How to get involved

- Annual Meeting January 7-11, 2018 in DC
- Over 750 sessions
  - Safety
  - Structures
  - Policy
  - Emerging areas
  - International Presentations
  - Much more
  - http://onlinepubs.trb.org/onlinepubs/am/2017/TRB_2017_Final_Program.pdf
- http://www.trb.org/AnnualMeeting/AnnualMeeting.aspx
- To Join Committee:
  - Contact Ron Hall
  - Need a short resume

FEDERAL SAFETY UPDATE

Mark Hoines
FHWA South Dakota Division
605-776-1010
Mark.Hoines@dot.gov

Adam Larsen
Safety Engineer
Office of Tribal Transportation
Federal Highway Administration
360-619-7751
Adam.Larsen@DOT.gov

Road Map

- TTP Safety Fund
- Report to Congress: Tribes & Crash Data
- National Tribal Transportation Safety Plan (NEW!)
- Safety Committee & TribalSafety.org
- Proven Safety Countermeasures (NEW!)

TTP Safety Fund Applications

	2013	2014	2015	2016	17-18
Funds Available	$8.6M	$8.5M	$8.5M	$9M	$18M
Funds Requested	$27.2M	$27.1M	$37M	$40.1M	
No. of Applications	239	127	167	171	

FY17-18 TTP Safety Fund

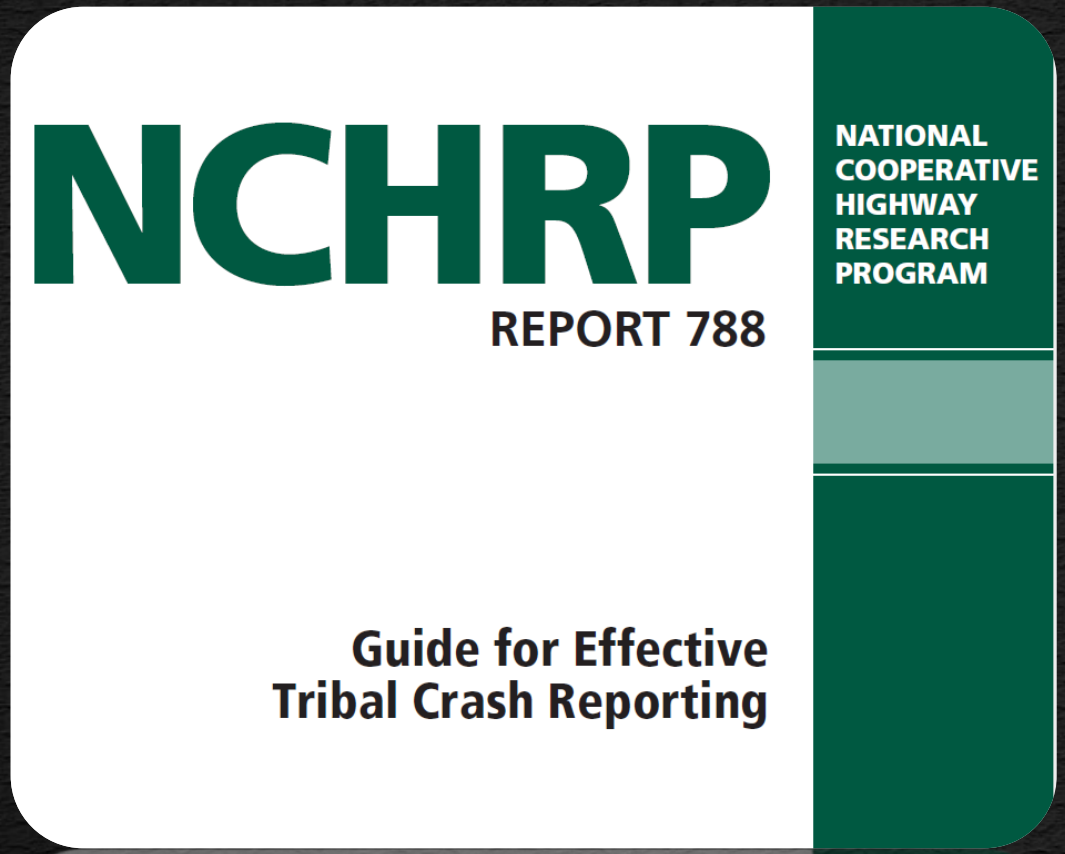
- About $18M available
- 12/11/2017 deadline
- Recorded webinar on FHWA's website: https://flh.fhwa.dot.gov/programs/ttp/safety/ttpsf.htm

  – Safety Plans
  – Data Assessment, Improvement, and Analysis
  – Infrastructure Improvement

1. Tribes & Safety Data

2. Options to Improve Safety

Crash Data Improvement



- Tribes encouraged to conduct Traffic Records Assessments (NCHRP 788)
- NHTSA offering new resources to Tribes

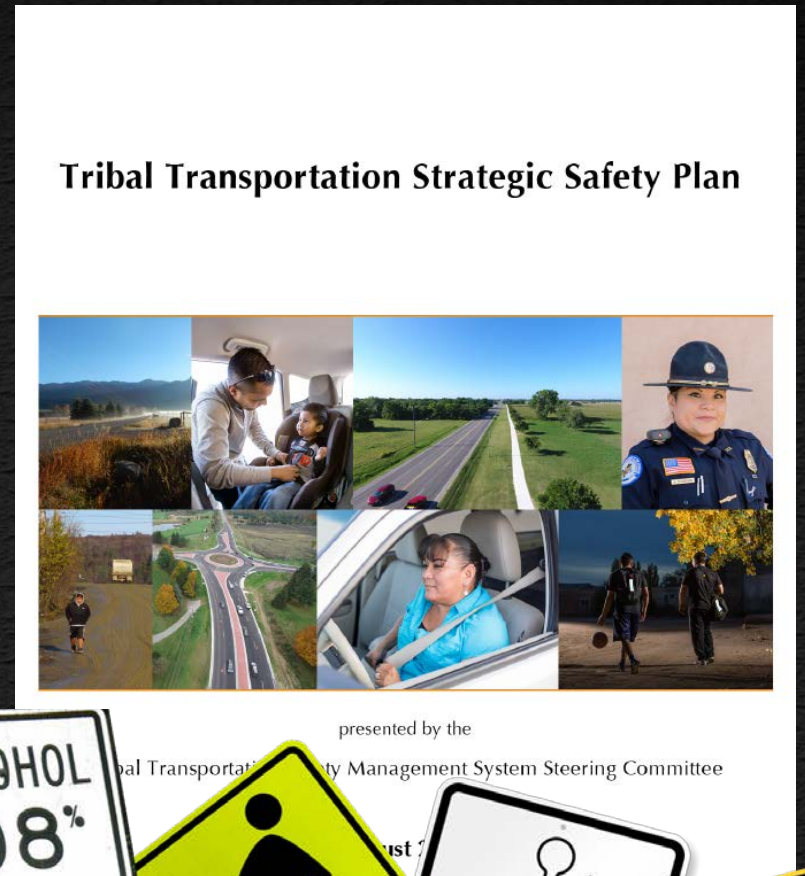
TOOLS FOR IMPROVING CRASH DATA

Nov 8 Webinar

TribalSafety.org
>News>Webinar

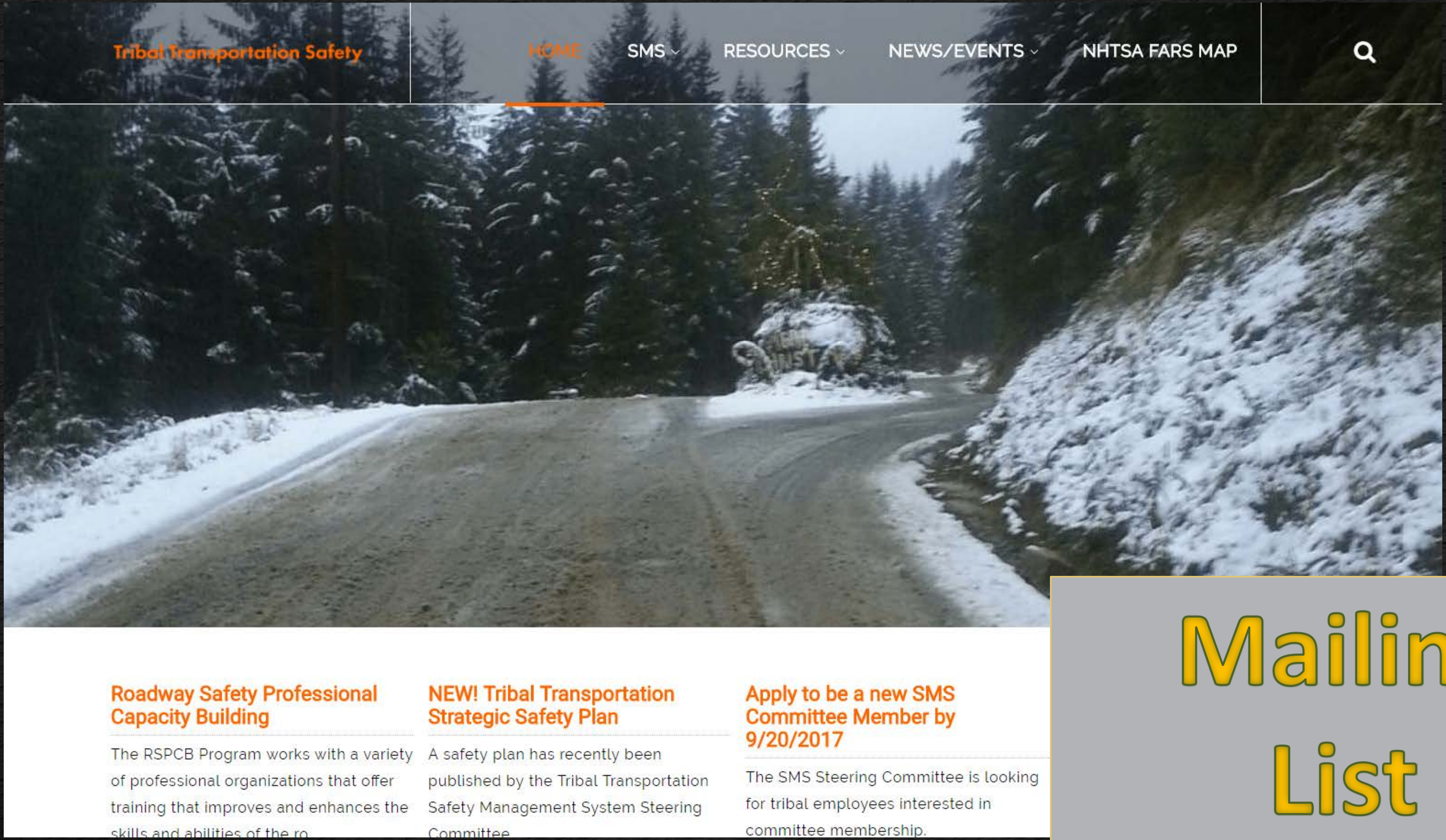
Options to Improve Safety

- Decision Making Process
- Safety Data
- Occupant Protection/Child Seats
- Roadway Departure Crashes
- Alcohol/Drug Impaired Driving
- Pedestrian Safety
- Availability of Public Safety Services



Safety Management System Steering Committee Membership

www.TribalSafety.org



Mailing List

Proven Safety Countermeasures

https://safety.fhwa.dot.gov/provencountermeasures/

Updated September 2017

Added:

- Local Road Safety Plans
- Leading Ped Intervals
- Systemic treatment of stop-controlled intersections
- Alternative intersection designs
- Roadside design in Curves
- USLIMITS 2

[redacted]y project…

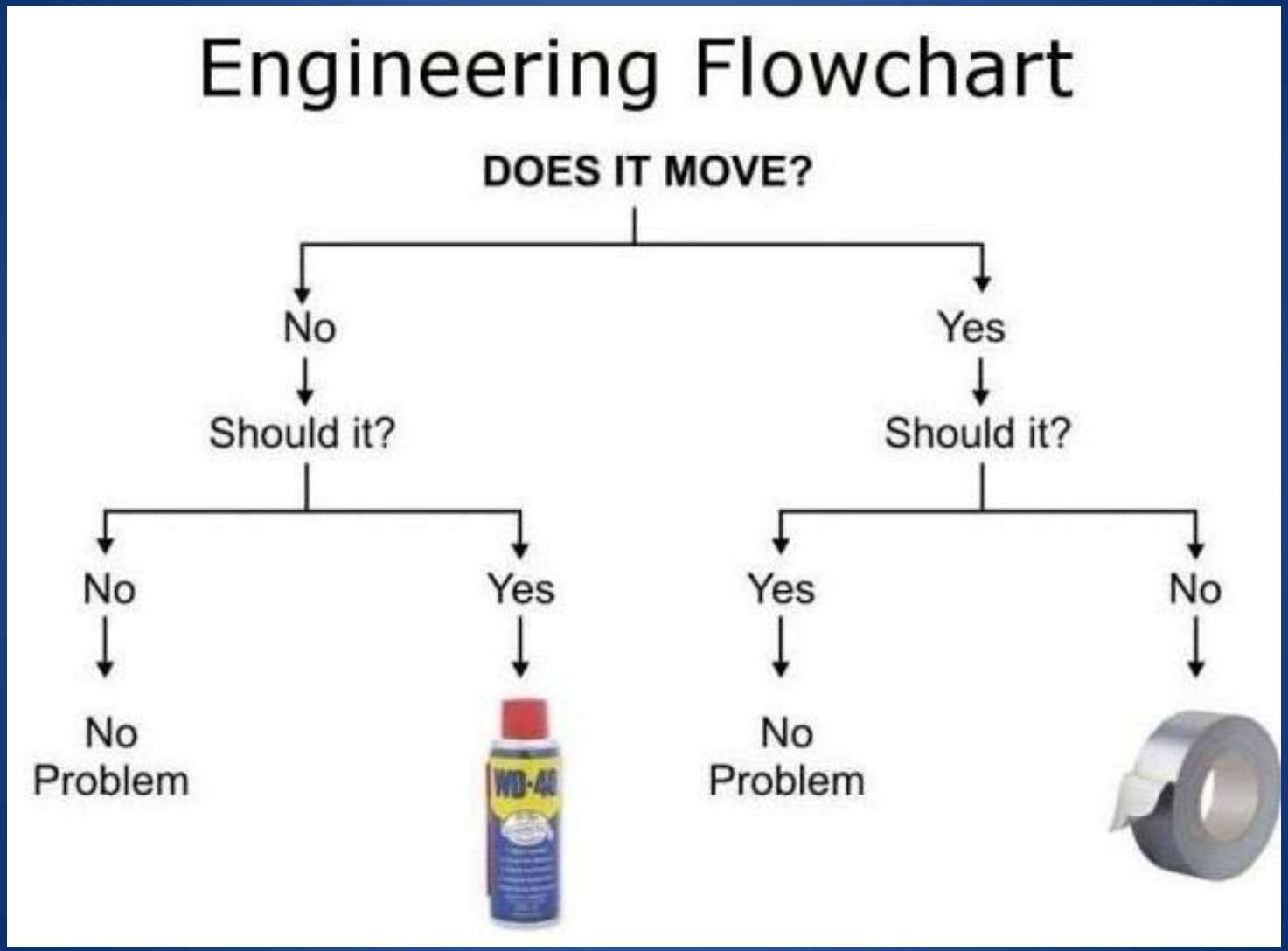
Comments?
Questions?

Adam Larsen
Adam.Larsen@dot.gov
360-619-7751

flh.fhwa.dot.gov/programs/ttp/safety/

TribalSafety.org

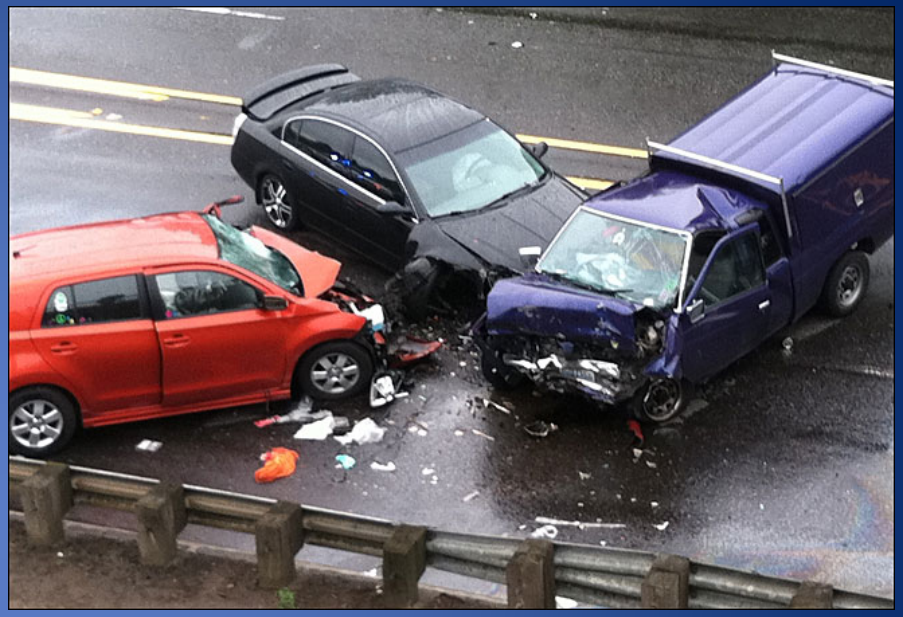
Roundabouts



Mark Malone, PE

SDDOT Intersection Review

Traffic



Crashes

Costs

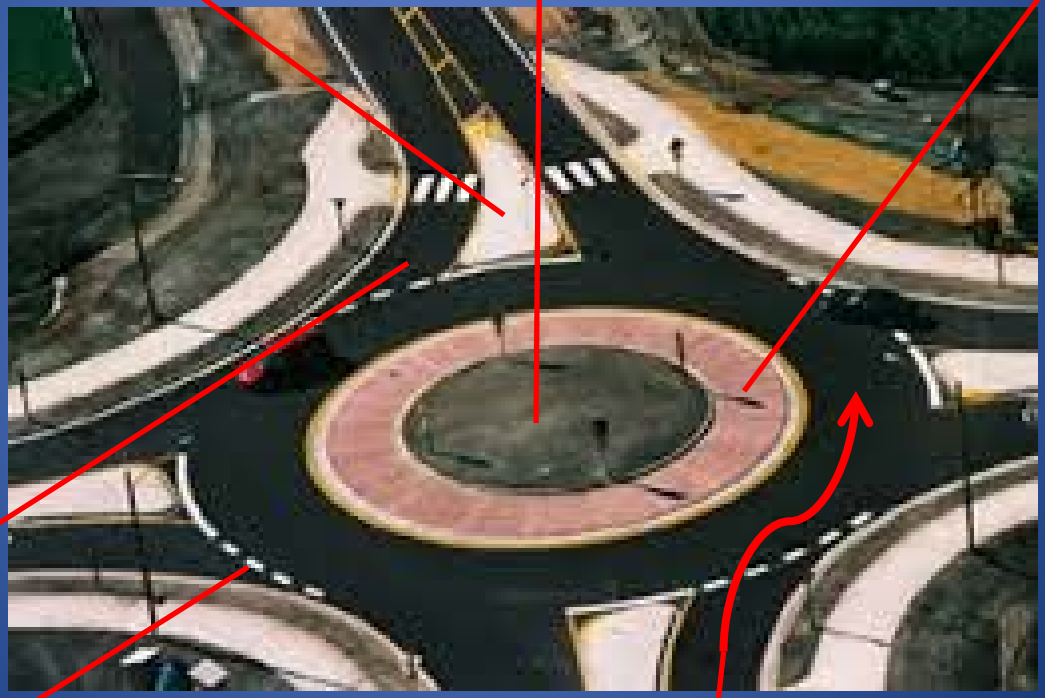
Evaluate Alternatives

Common Intersection Alternatives

Roundabout – IS NOT

- Traffic Circle
- Rotory

Roundabout Principles



Rules of the road

Traffic Signal

1. If the signal is a red ball, come to a complete stop
   a) After stopping, you may turn right but must yield to oncoming traffic; except if the sign says "NO TURN ON RED", you cannot
   b) After stopping, you may turn left on red from a one-way street onto a one-way street but must yield to oncoming traffic
2. If the signal is a green ball
   a) you may go straight or turn right, but only if the way is clear - you must yield to vehicles still in the intersection
   b) you may turn left but must yield to oncoming traffic
3. If the signal is a yellow ball
   a) you may go straight or turn right
   b) you may turn left but must yield to oncoming traffic
4. If there is one signal head for several lanes, it applies to all those lanes; if there is a signal head for each lane, each lane is governed by its own signal head; and if there are multiple heads but not as many as there are lanes, generally a head centered above a lane governs that lane, a single head located above the line dividing two lanes governs both lanes, and a single head centered above three lanes governs all three lanes
5. If the signal for your lane is a red arrow pointing left or right, come to a complete stop
   a) After stopping, you may turn right on red but must yield to oncoming traffic; except if the sign says "NO TURN ON RED", you cannot
   b) After stopping, you may turn left from a one-way street onto a one-way street ; except if the sign says "NO TURN ON RED", you cannot
6. If the signal for your lane is a red arrow pointing up, you may not go straight
7. If the signal for your lane is a green arrow pointing left or right, you may turn in the direction of the arrow, after yielding the right-of-way to vehicles within the intersection, even if the red light is burning at the same time
8. If the signal for your lane is a green arrow pointing up, you may go straight, after yielding the right-of-way to vehicles within the intersection, even if the red light is burning at the same time
9. If the signal for your lane is a yellow arrow, it means the same thing as the yellow ball, but applies only to movement in the direction of the arrow
10. If the signal is a blinking red ball, come to a complete stop and then enter the intersection, except you must yield to other vehicles already in the intersection
11. If the signal is a blinking yellow ball, enter the intersection with caution, except you must yield to other vehicles already in the intersection
12. If none of the bulbs on the signal head are illuminated (power outage), come to a complete stop and then enter the intersection with caution, except you must yield to other vehicles already in the intersection

*special thanks to Ken Sides

Rules of the road

Roundabout

$$f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos \frac{n\pi x}{L} + b_n \sin \frac{n\pi x}{L} \right)$$

1. Yield to traffic already in roundabout.

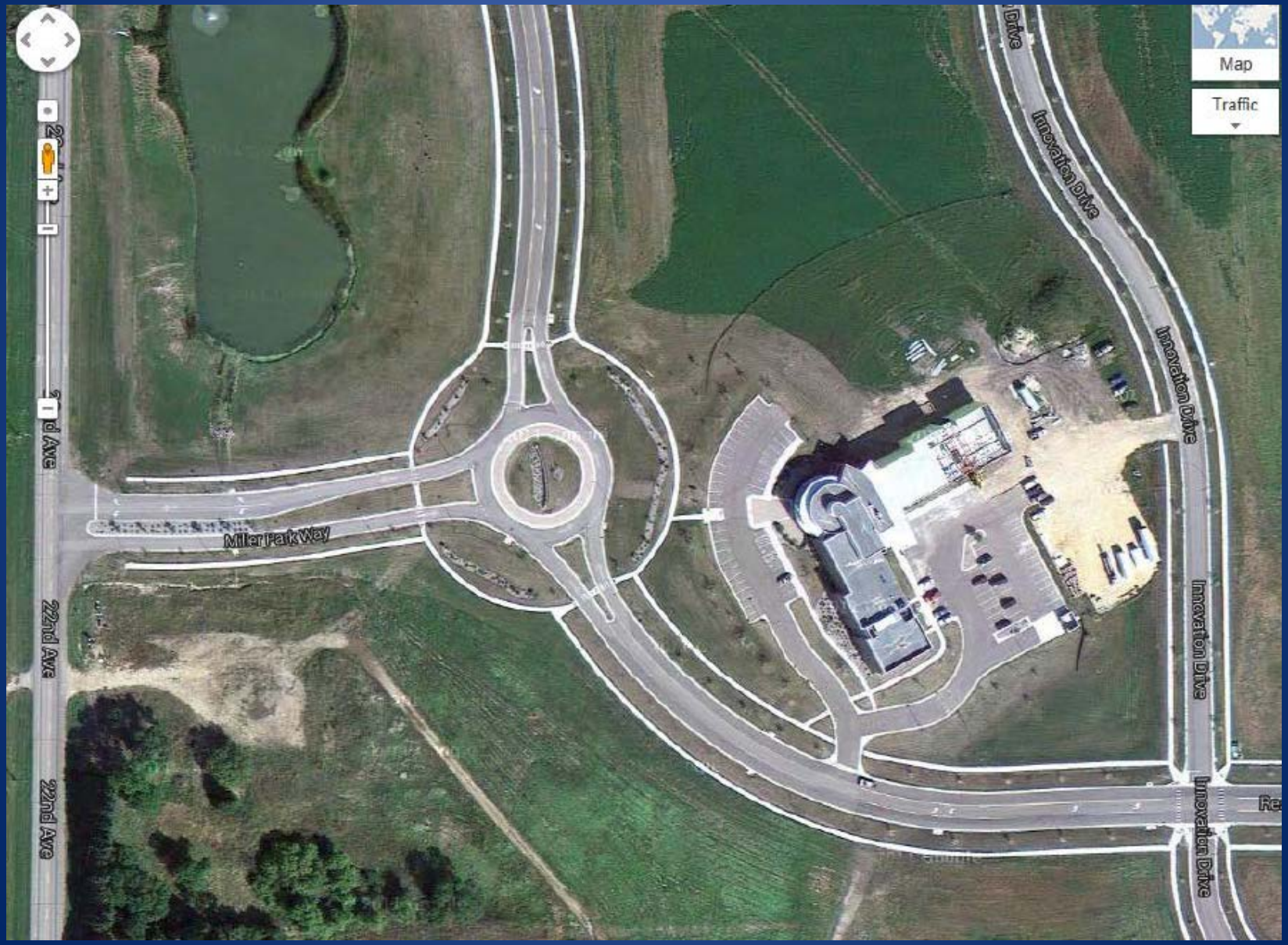
Roundabouts, New Concept?

- NOT REALLY
  - UK has an estimated 25,000
    - ✓Introduced in 1963
  - France has more than 30,000

  - USA – estimated at 3,700 (Dec '13)
    - ✓First introduced 1990
    - ✓Every state has at least one
    - ✓Some estimates are now over 10,000
  - Canada – 400
    - ✓Similar ratio per capita to USA

Brookings

Innovation Campus



Sioux Falls

69th St & Southeastern Ave

Sioux Falls

Career Ave at University Center

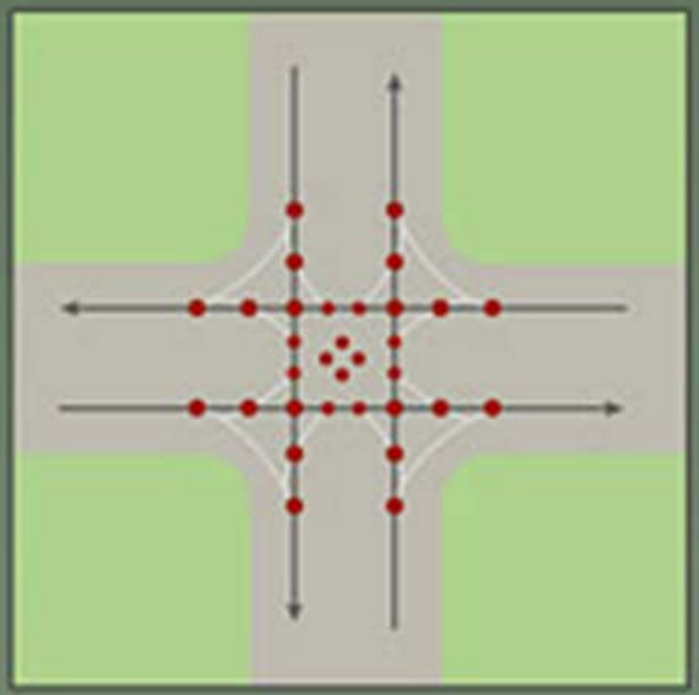
Roundabout Safety Facts

- 90% reduction in fatalities
- 76% reduction in injuries
- 35% reduction in all crashes

According to Federal Highway Administration Intersection Statistics

- Single Lane Roundabouts are the safest at-grade intersection possible

With roundabouts, head-on and high-speed right angle collisions are virtually eliminated.



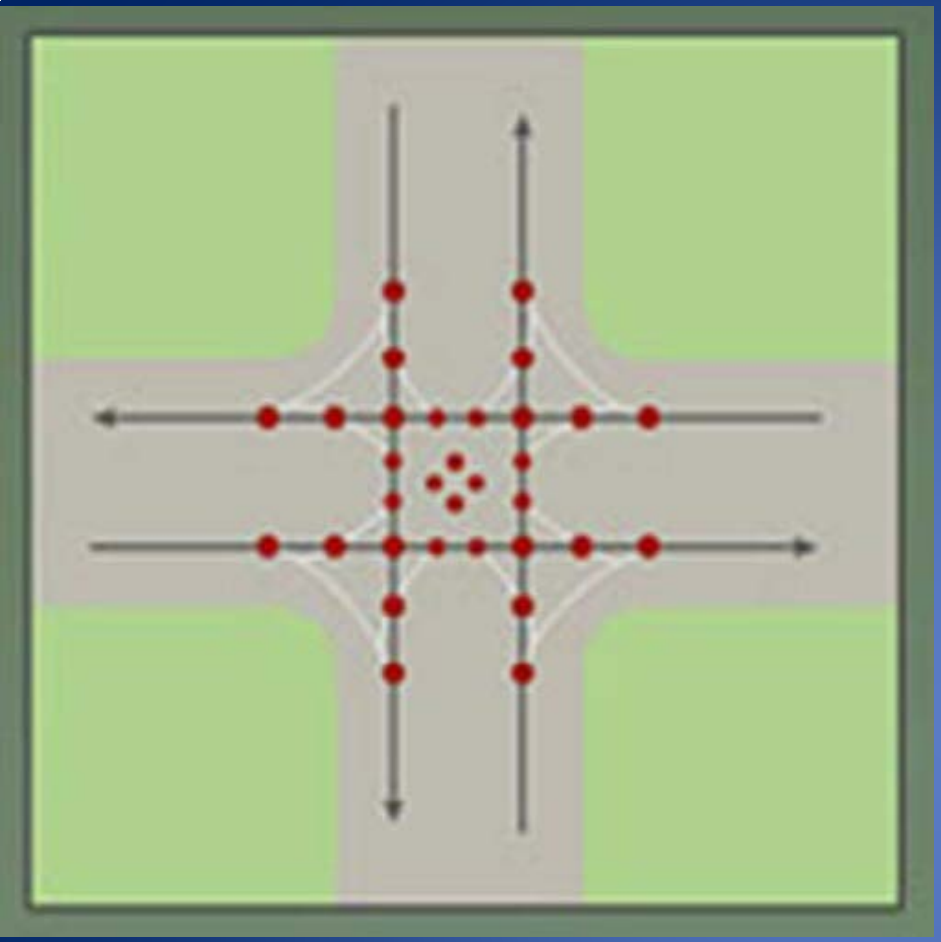
[Traditional intersection]

[Roundabout]

● Potential vehicle conflict point

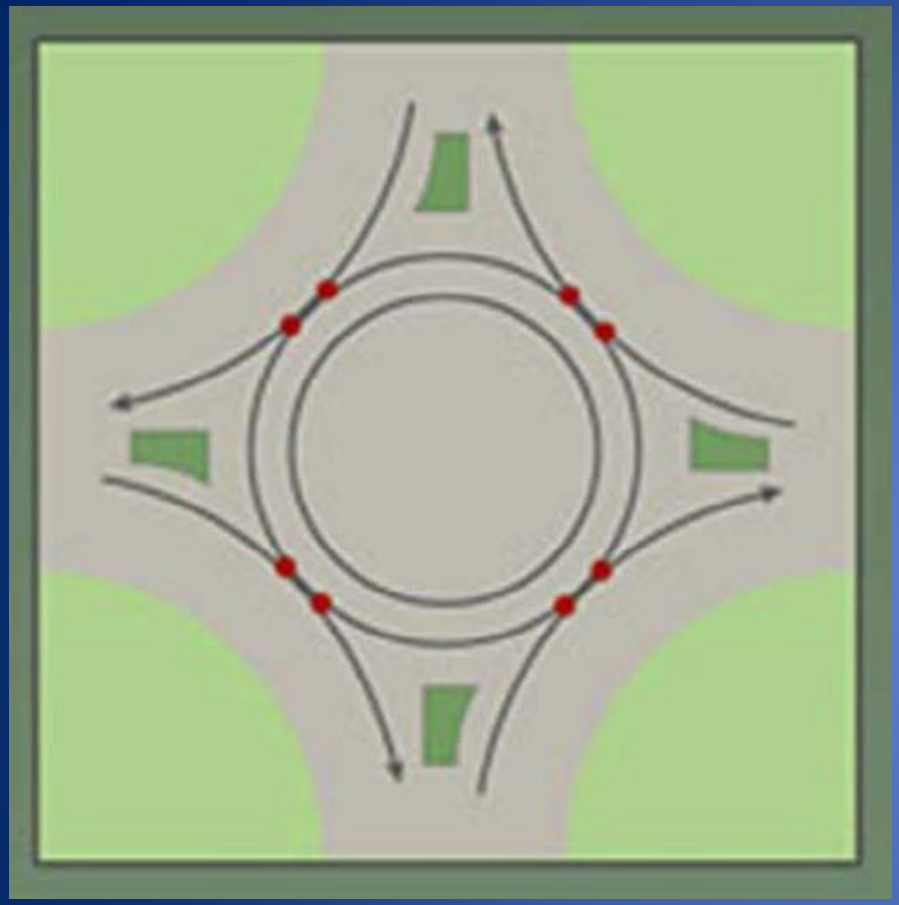
32 CONFLICT POINTS

8 CONFLICT POINTS



Potential:

High Speed Angle Crashes

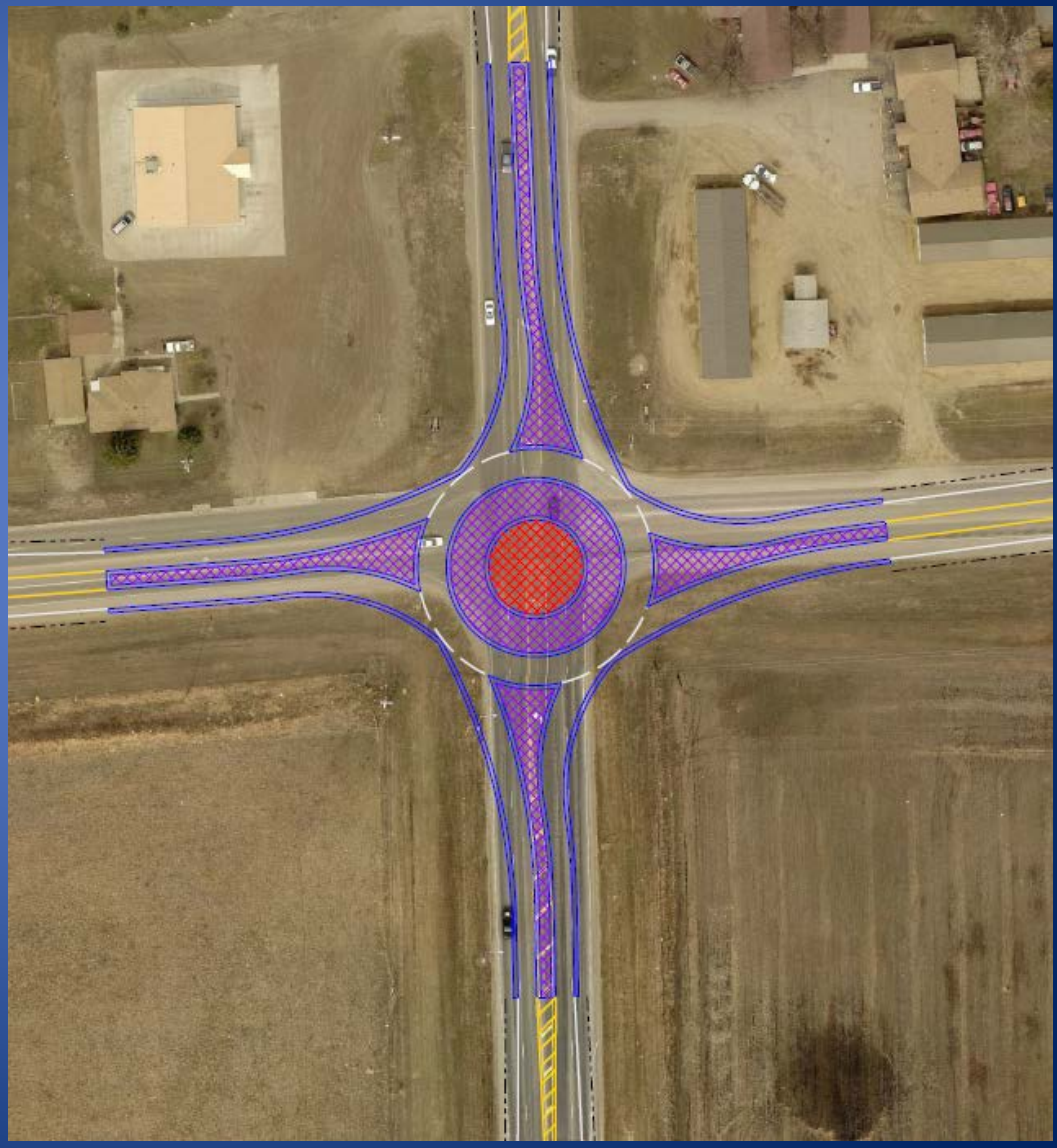


Rear End

Sideswipe

SDDOT Planned Roundabouts

- Pine Ridge – 2
- Sisseton – 2
- Watertown – 1
- W of Sioux Falls
  - ✓Wall Lake
  - ✓SD17
- Pierre – 2

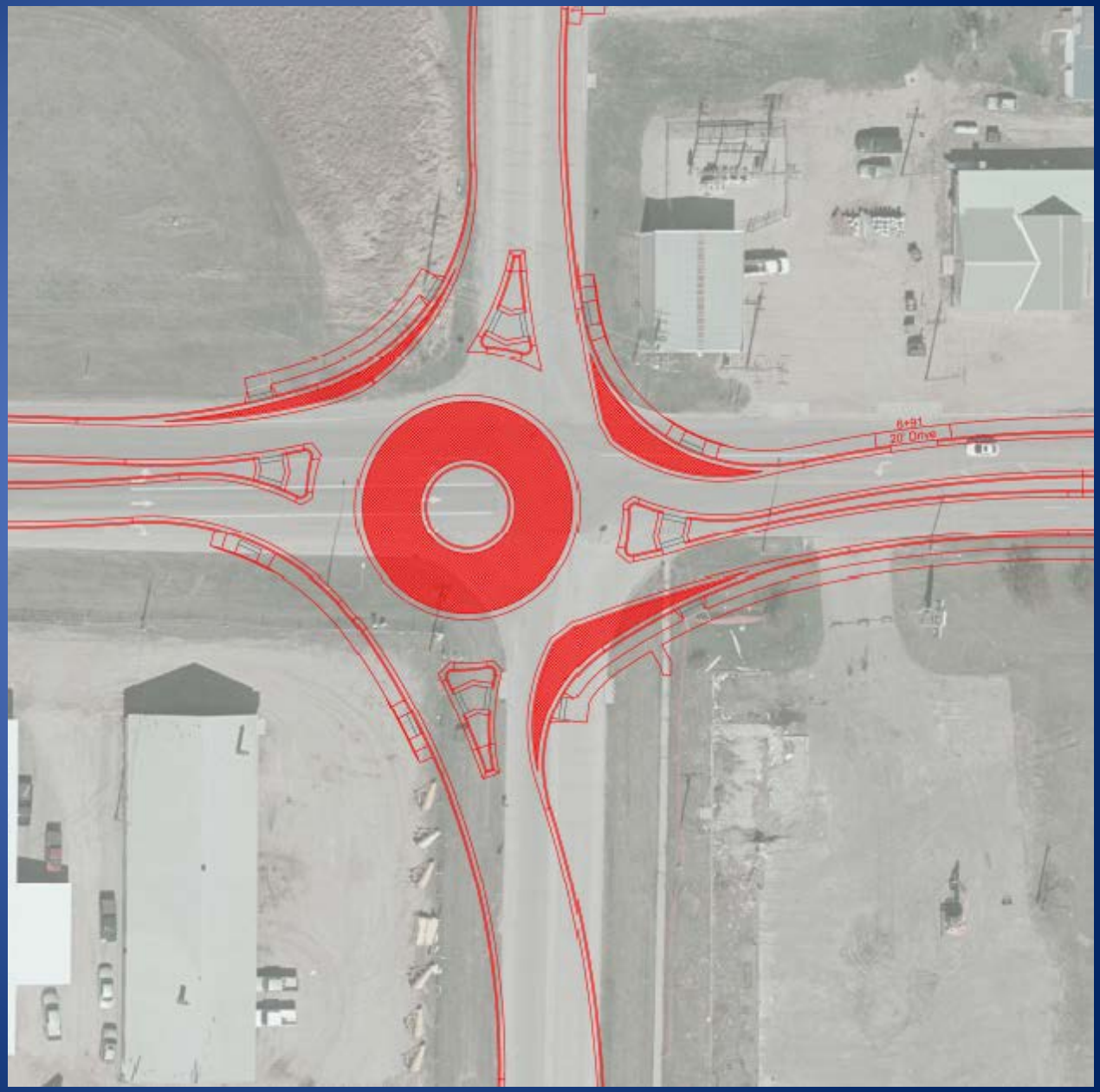


SDDOT Roundabouts

Sisseton

2 Planned:

- 8th St West
- 8th St East



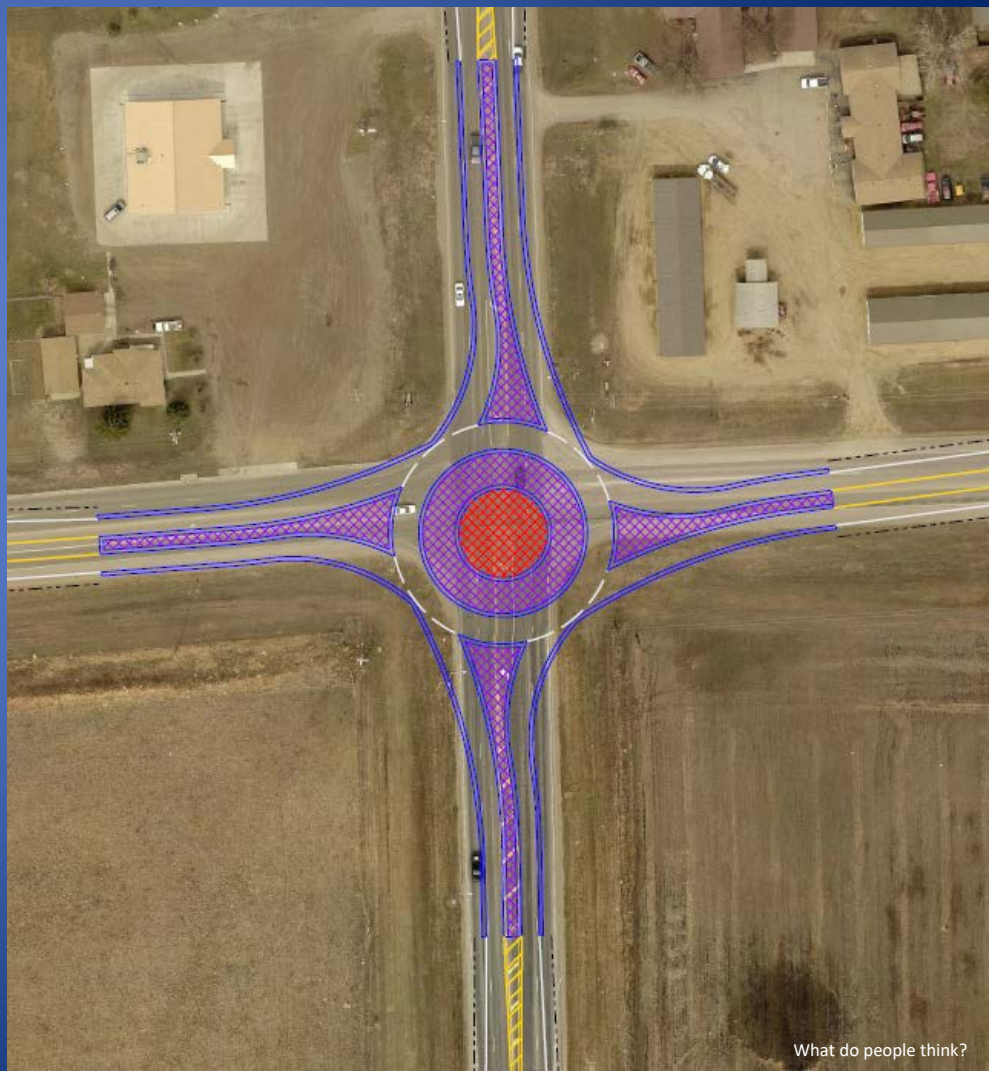
Sisseton - 8th St E

- Traffic Signal warranted
  - ✓ Roundabout saves 2,652 hrs/yr ($42,644)
- Signal maintenance costs
  - ✓ ~$4,000/yr
- Crashes
  - ✓ Existing: 1.8 crashes/yr (2010-2014)
  - ✓ Signal Anticipated: ~4 crashes/yr
  - ✓ Roundabout Anticipated: ~1 crash/yr

SDDOT Planned Roundabouts

Watertown

- Signal not warranted
- Traffic during US212 Reconstruction
- 17 crashes (2010-2014)
  - ✓ 9 injuries
- Anticipate at least 1 crash per year reduction (hoping more)



What do people think?

Public Meetings

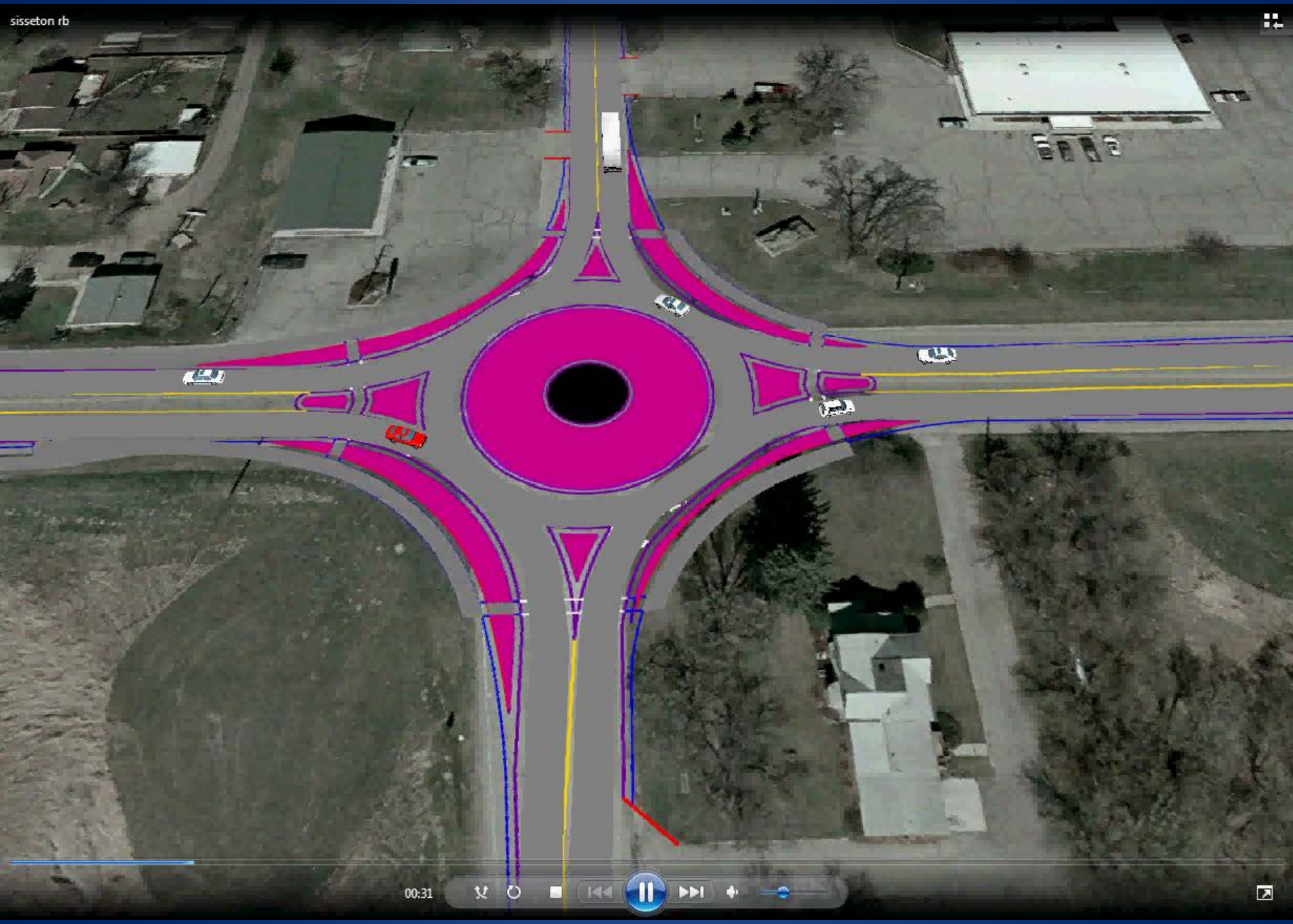
- Traffic Concerns – Volumes
- Confusion – Don’t know how to navigate
- Truck Turning
- Snow

Public Comments

- Rule Number 1
- People hate roundabouts

CAVE People

- Some people afraid of change
- Some don't understand
- Some are Cave People
  - ✓ Citizens Against Virtually Everything


sisseton rb
00:31

Traffic Engineering

- Art
- Science

- Our experts have performed analysis and models for Sisseton intersections
- Signal and Roundabout both operate well
  - ✓ Although it may be hard to believe, a roundabout will truly have less delay than a signal with the volumes that are specific to Sisseton

Confusion

TOUCHDOWN INTERCEPTION

Driver “UN”familiarity

- SDDOT follow up meetings
  - ✓There are opportunities for outreach meetings for education on roundabouts

Snow

- Visited with MNDOT & NDDOT
  - ✓ No Red Flags
- SDDOT will be plowing the roundabouts
- Will look to incorporate this concern in the design to avoid drifting snow

Biggest Concern

- trucks

Insurance Institute for Highway Safety

- Before Construction
  - ✓ 31% in favor
  - ✓ 41% strongly oppose
- After Construction
  - ✓ 63% in favor
  - ✓ 15% strongly opposed

- Reasons cited for concern:
  - ✓ Fear of the unknown
  - ✓ Safety concerns
  - ✓ Confusion - how to navigate

Mini Roundabouts

Mini Roundabout Characteristics

- Smaller – Less ROW impacts
- Slightly less traffic capacity
- Similar safety characteristics
- Fully traversable central island (sometimes just pavement markings)
- 35 mph or less (very important for safety)


OUR PRESENTATION IS FINALLY OVER
NAP TIME IS OVER
MEMES & FUNNY PICS FRABZ.COM

Base Stabilization and Dust Control

SD Tribal Transportation Safety Summit

October 24 - 26, 2017

Rapid City, SD

An Alternative: Stabilized Gravel

- Long Term Performance Has Been Observed By SDLTAP Roads In SD –
  - Lawrence County
  - Brookings Township – Brookings County
  - Meade County
  - Hughes County
  - Richland County, MT

Three Primary Things That Make Chloride Treatments Successful (Or Fail):

- The quality of the surface gravel.
- Preparation – shaping, drainage correction and coordination with suppliers.
- The application of the product.

Good Quality Gravel Has:

- Good overall gradation meeting SDDOT Gravel Surfacing specification.
- Top size of stone not exceeding three quarters of an inch
- 8 to 15% passing a #200 sieve (by weight).
- Minimum PI (plasticity index) of 4 and maximum of 12 is very important.

Road Surface Preparation

- Generally loosen the top one to two inches of gravel.
- A "bit type" cutting edge on the grader will do a nice job of loosening the surface and blending the stone, sand and fines.
- The surface must crowned properly and shaped uniformly.
- Crown should be at or near 4%. Never exceed 6%.
- If the material is dry, it is important to pre-wet the road to near optimum moisture prior to treatment.

MgCl -- Cost & Application

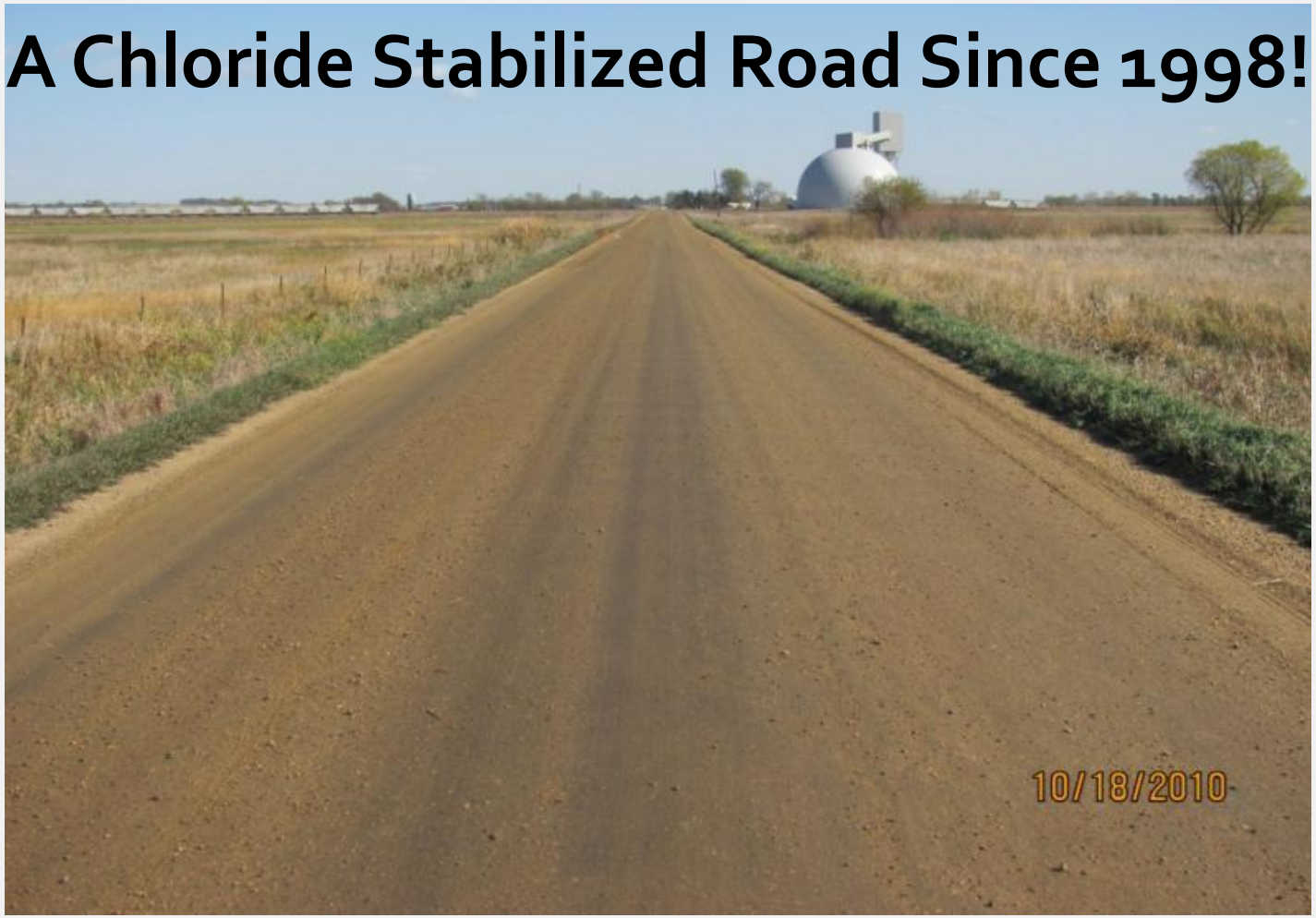
- $7000.00/Mile + Prep Work On 24 – 26 Ft. Roadway.
- Apply .25 Gal/ Sq. Yd.
- Apply In Two Lifts – Total .50 Gal/Sq. Yd.

Good surface gravel and road preparation – always the keys

Final Key is good application of the product:

- Should be applied through a pressurized spray bar that gives a uniform application across the road surface.
- Truck travel speed and output of the spray bar must be carefully calibrated for uniform application rate on the entire length and width of the road.
- Unless the rate of application is less than .3 gal per square yard, the product should be applied in two shots with ample time for absorption in between.

Brookings County - Brookings Township -- Remarkable Success With Stabilized Gravel



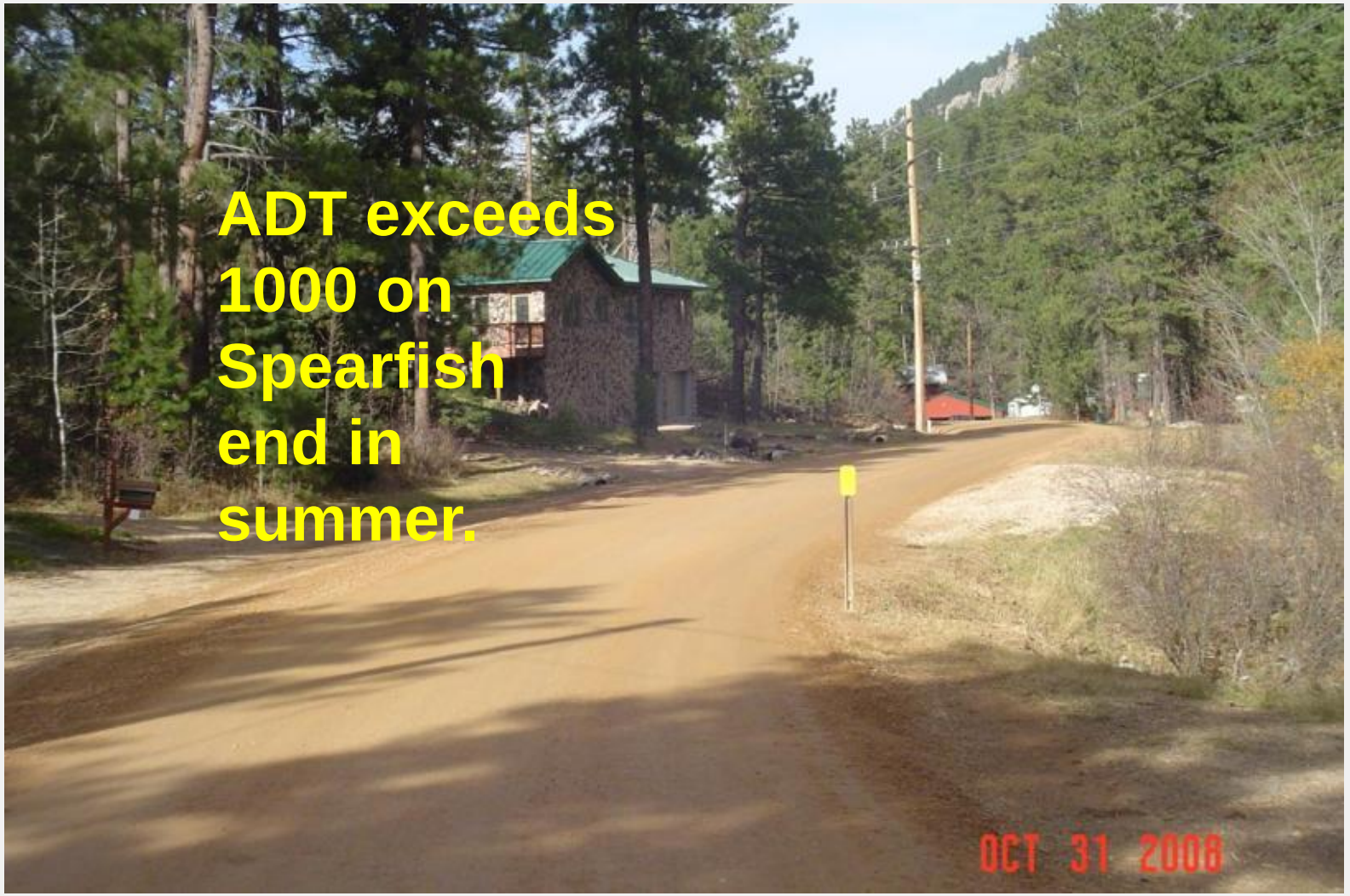
Portland Cement Railcar Offloading Facility

Less than 200 tons of gravel replaced in 14 yrs!

- Ordinary Twp road reshaped in 1998.
- Approximately two to three inches of gravel in place.
- Eight inches good quality surface gravel added.
- Liquid MgCl treatment applied after reshape each year.

Maitland Rd – Lawrence Co, SD

Heavy Residential Traffic & Continued Development



A Model of Successful Gravel Stabilization for 23 Years

One Section Of Maitland Rd With Asphalt Surface Built The "Old Way". Section Thickness Is Approx 2 Inches Of Pavement Over <4 Inches Of Base.

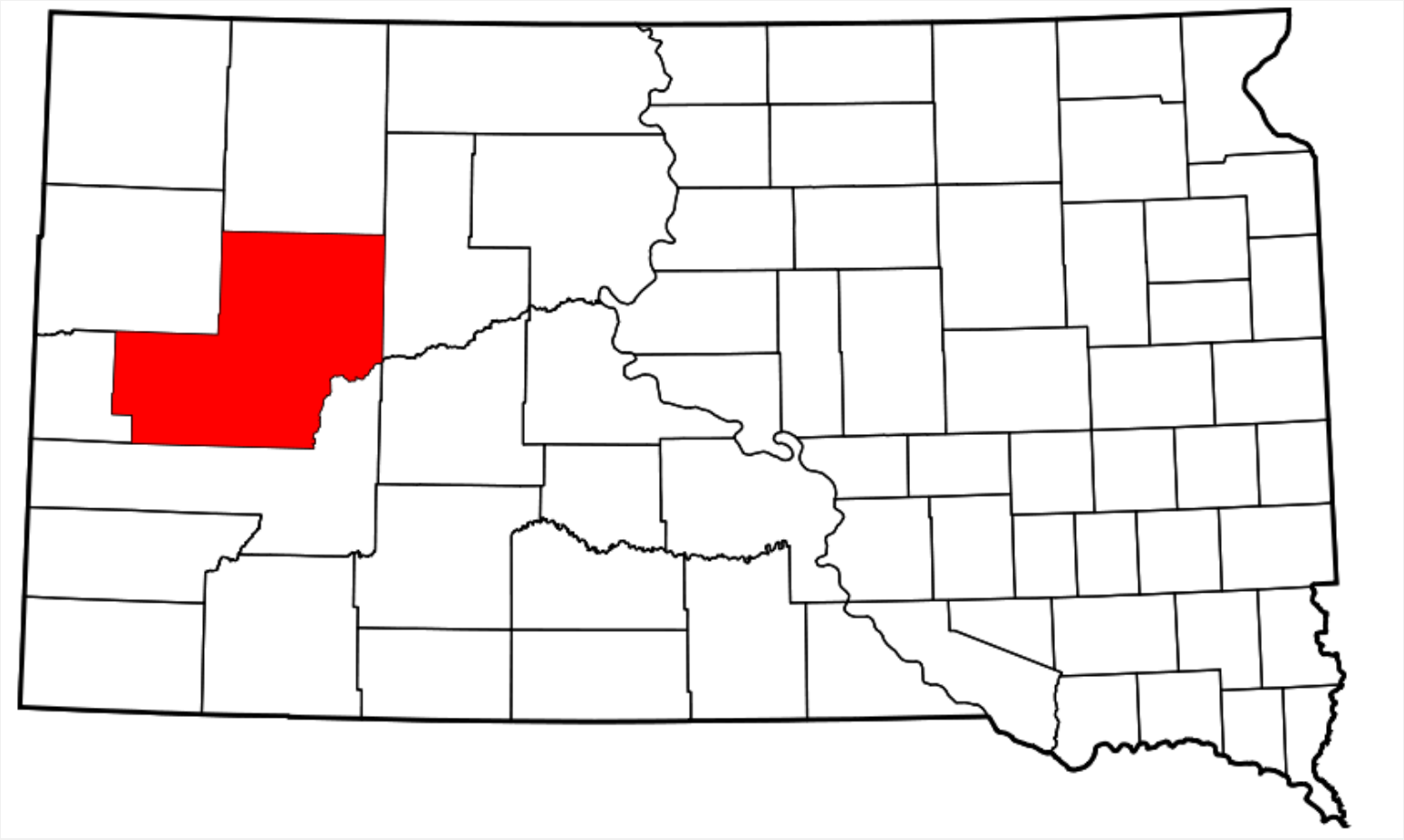
Hillsview Road Entering Spearfish, SD

Case Study From Meade County, SD Experience With Alternatives To Paving

Reason for Turning to Alternatives

- Part of the Meade County is experiencing significant growth.
- Most of the roads in the county do not have good subgrade and base strength – therefore are not suitable for adding paved surface.
- Budget will not support reconstruction.

Meade County Road System:
Total miles maintained by county – 1,040
Total currently Unpaved – 961.3
Paved 78.7



Meade Co. - Case Study Paving Alternative

- Elk Vale Road
  - Located Directly East And North Of Rapid City
  - Serves A Growing Area Just Off Of Exit 61 On Interstate Highway 90
  - Classification: Rural Major Collector
  - Traffic Volume Increased - Became Impossible To Maintain As Gravel Surface

Recent Traffic Count Breakdown

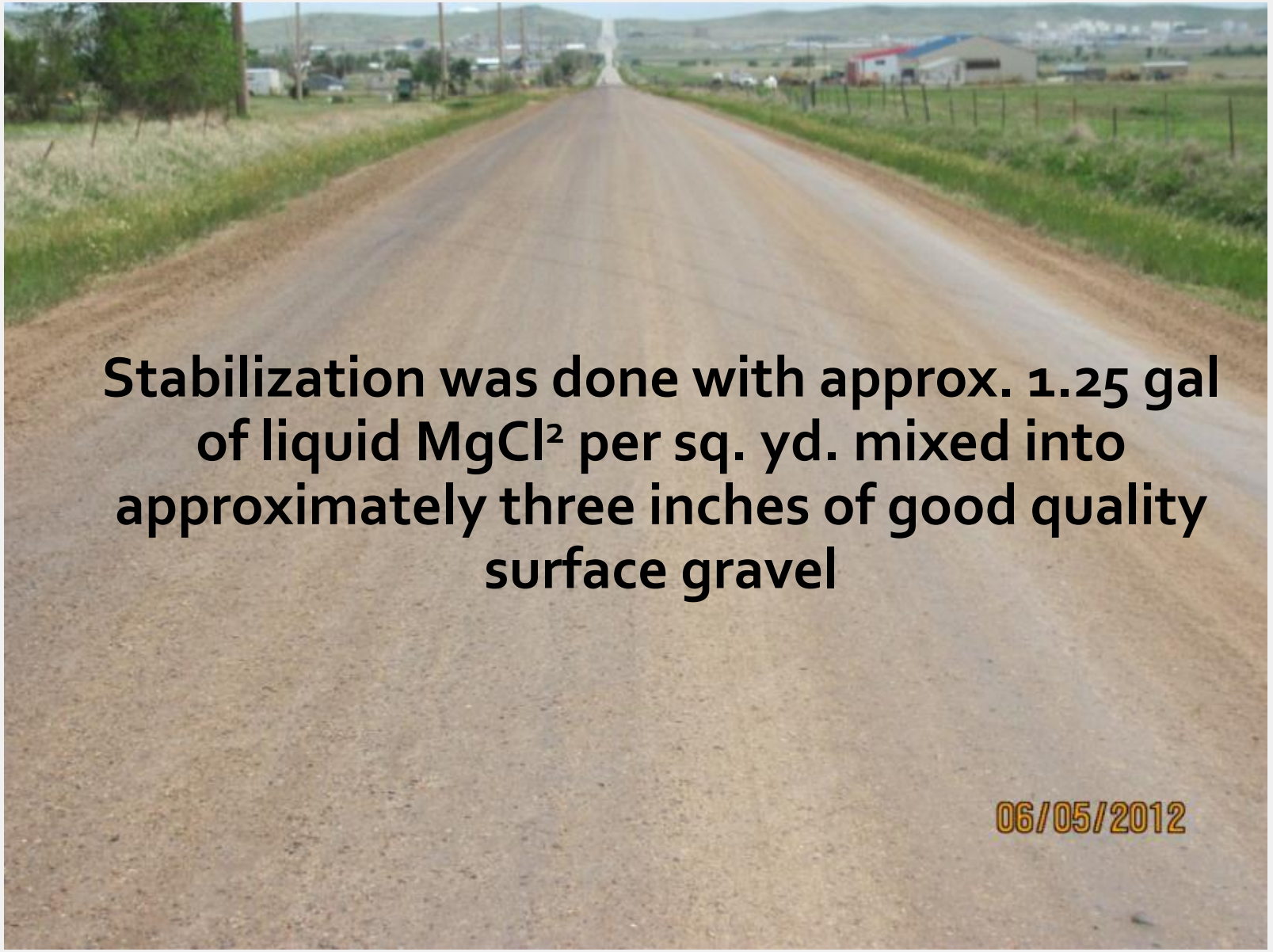
- Northbound
  - 12/04/2012 299 total vehicles 22 trucks
  - 12/05/2012319 total vehicles 28 trucks
  - 12/06/2012 317 total vehicles 22 trucks
- Southbound
  - 12/04/2012 331 total vehicles 69 trucks
  - 12/05/2012339 total vehicles 92 trucks
  - 12/06/2012 319 total vehicles 76 trucks
- **Total***
  - **12/04/2012 610 total vehicles 91 trucks**
  - **12/05/2012 658 total vehicles 120 trucks**
  - **12/06/2012 636 total vehicles 98 trucks**

***Meade County count tallied over 700 vehicles in earlier count with 25% trucks**

Elk Vale Rd Transitions From Pavement In Pennington Co. To Gravel In Meade Co.

Originally Stabilized In May, 2011
Excellent Performance After First Year

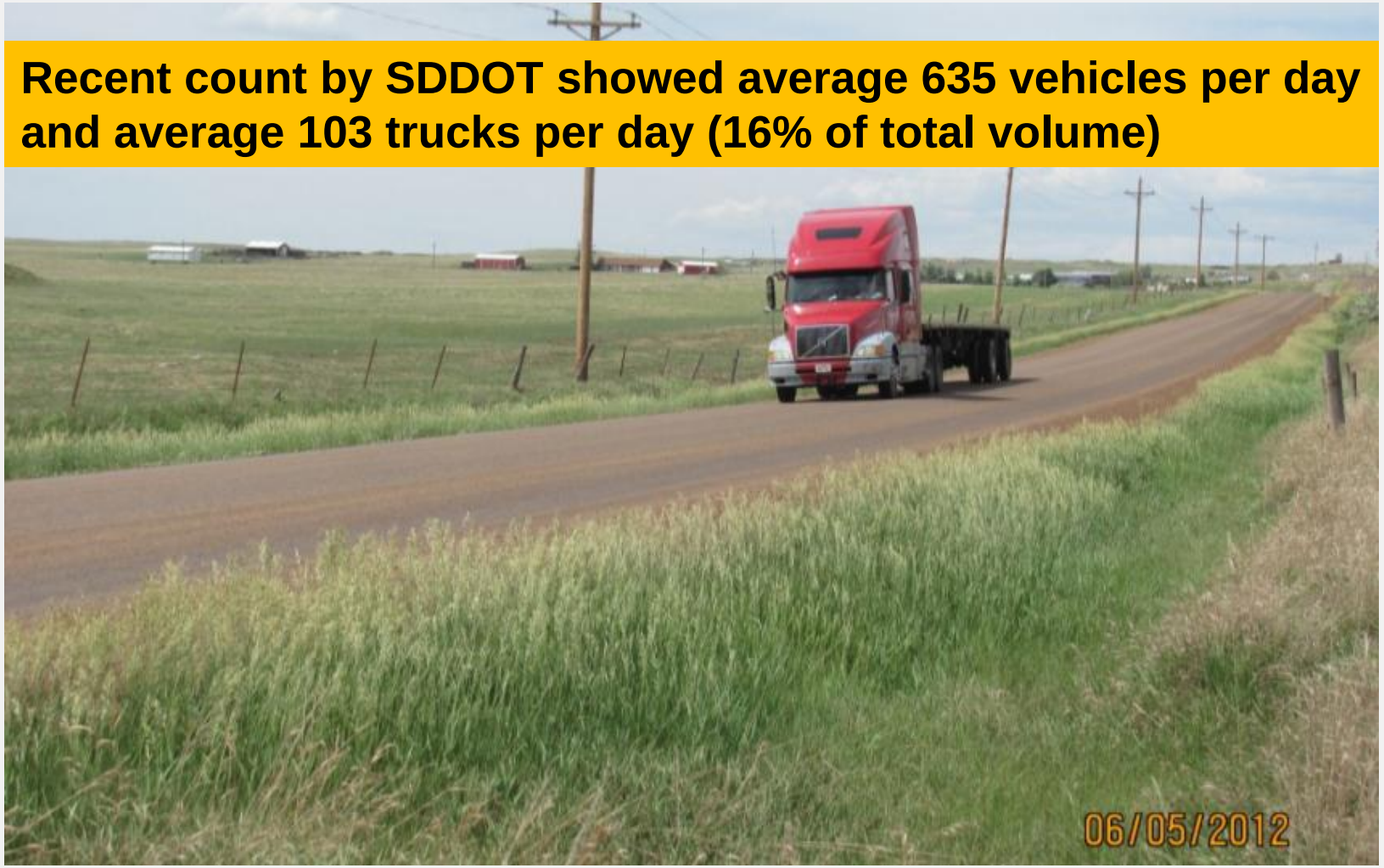
Close-up view of stabilized surface


Stabilization was done with approx. 1.25 gal of liquid $MgCl^2$ per sq. yd. mixed into approximately three inches of good quality surface gravel
06/05/2012

No Significant Loose Aggregate And No Corrugation Even On 6% Grade.

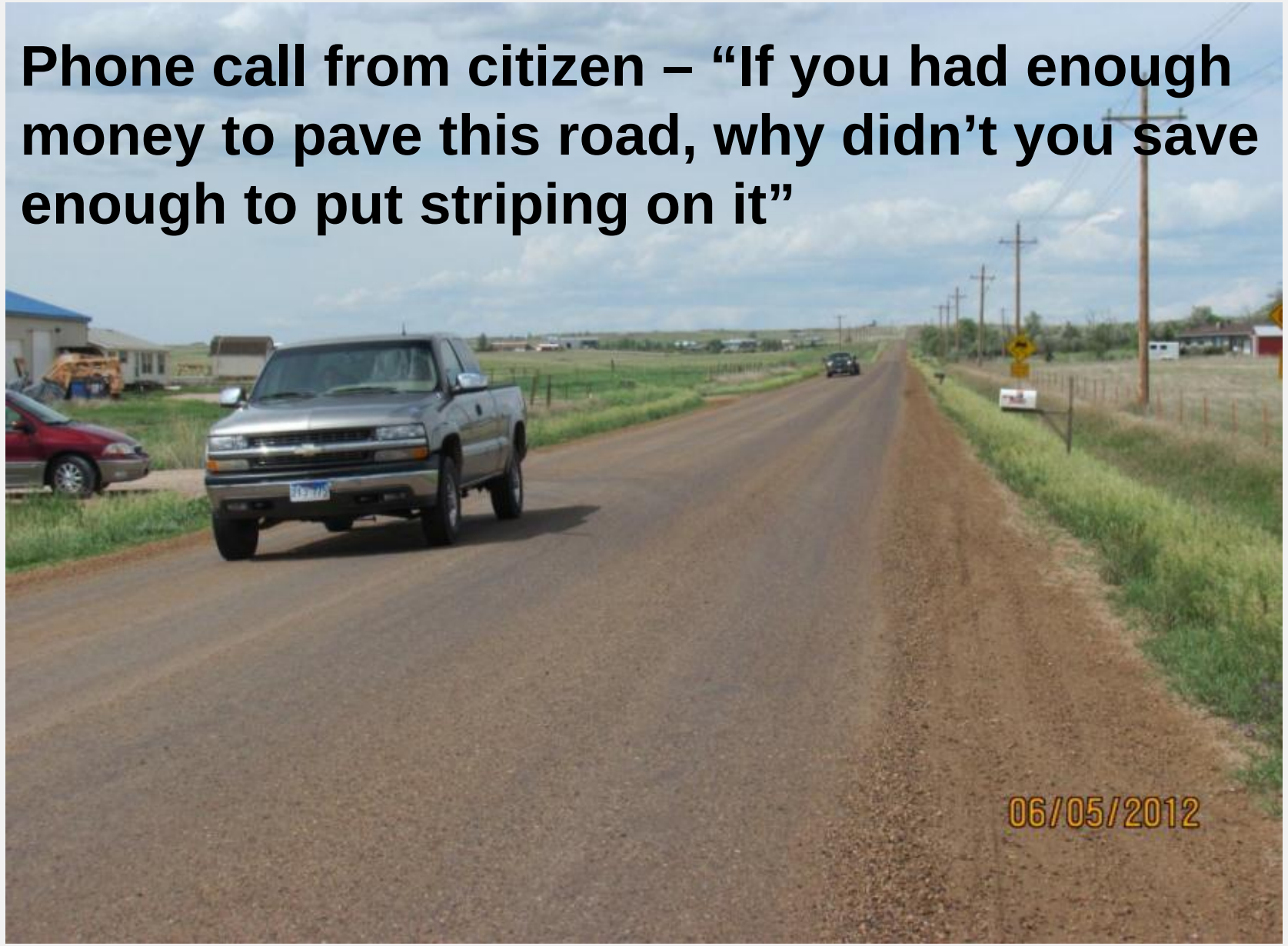
Truck Volume Is Somewhat Uneven: Motor Grader Operator Counted 18 Trucks In One Hour In Summer 2011

Recent count by SDDOT showed average 635 vehicles per day and average 103 trucks per day (16% of total volume)



South Dakota LTAP
Local Transportation Assistance Program

Phone call from citizen – “If you had enough money to pave this road, why didn’t you save enough to put striping on it”



2012 Performance

- Excellent Performance Through June, 2012.
- Late Summer Was One Of Driest On Record.
- Retreatment Was Done In June, 2012.
- After 2012 - Annually Do Reshape And A Lean Treatment Of Chloride @ .25 Gal Sq Yd.

A Positive Point: The Surface Is Reasonably Easy To Rehabilitate – Work Done In Late October

A Little About Retreatment Process

Application Immediately After Final Shaping To Get Good, Even Penetration

Untreated Road In Same Area With Less Than Half The Traffic Volume – Loose Aggregate Is A Big Problem. Stabilized Surface Is Far Superior.

Meade Co. Conclusions:

- Total Reconstruction Of The Road And Paving Would Cost Approximately $800,000 Per Mile.
- Meade County Had To Find An Alternative.
- Total Cost Of New Gravel And Initial Treatment Was $25,000 Per Mile.
- In The Immediate Future, Annual Surface Reshape And Retreatment Is Planned.
- Annual Treatment Cost Is Estimated At $7,000 To $8,000 Per Mile.

A High-End Treated Gravel Alternative: From Richland County, MT

Their Problems – Serving Heavy Oil/Gas Development and Agribusiness

Mixing Bentonite™ Into Top Three Inches Of An Eight Inch Gravel Layer.

South Dakota LTAP
Local Transportation Assistance Program

Also Testing Surface Treatment with $CaCl_2$ in Pellet Form.

Initial Performance Has Been Outstanding on Three Test Sections

Soy Oil Processing Byproduct – Dust Palliative AgFirst Grain Elevator in Aurora, SD

Other Chemical Stabilization Of Gravel

After Four Years Of Performance

Stabilization Good – Dust Control Marginal

Bureau of Indian Affairs Indian Highway Safety Program

Lawrence Robertson, SAC
Program Director
1001 Indian School Road NW
Albuquerque NM 87101
505-563-3780-office
505-563-5375-fax
lawrence.robertson@bia.gov

Indian Highway Safety Program (IHSP)

Mission statement:

- *"To reduce the number and severity of traffic crashes in Indian Country by supporting Education, Enforcement and Engineering as well as Safe Tribal Community Programs"*

Vision:

- *To create a Safe Tribal Community Environment where roadways in Indian Country are safe for all.*

A little about IHSP

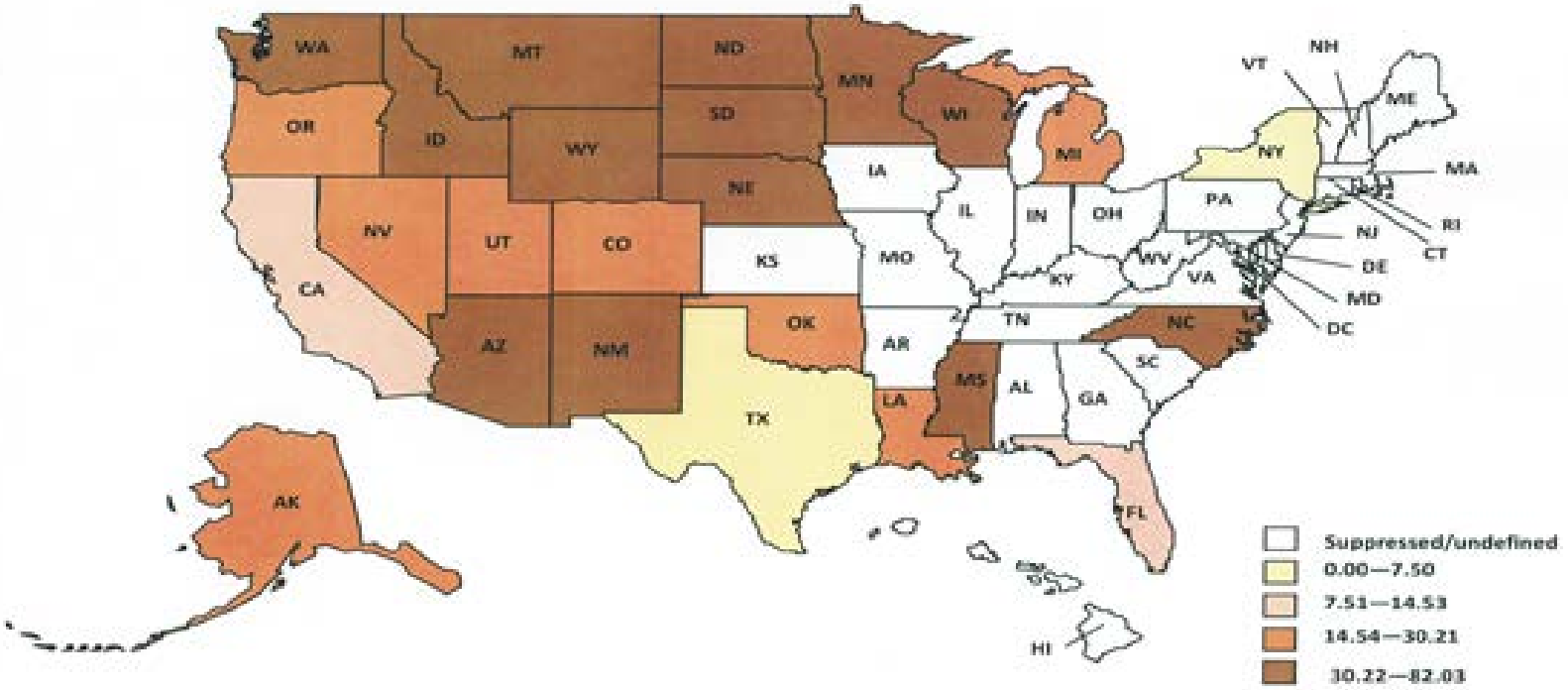
- The Indian Highway Safety Program is responsible for providing services to potentially 567 Native American/Alaskan Tribes in the United States.
- We are located in Albuquerque NM and included in the National Highway Traffic Safety Administration's Region 6.
- Our office staff consists of: Director, Program Coordinator, Financial Analyst, and two Law Enforcement Assistants.

IHSP “Indian State” Demographic

	NATIVE AMERICAN/ALASKA NATIVE (NA/AN)	
	STATE	**POPULATION**
1	California	362,801
2	Oklahoma	321,687
3	Arizona	296,529
4	New Mexico	193,222
5	Texas	170,972
6	North Carolina	122,110
7	New York	106,906
8	Alaska	104,871
9	Washington	103,869
10	South Dakota	71,817
11	Florida	71,458
12	Montana	62,555
13	Michigan	62,007
14	Minnesota	60,916
15	Colorado	56,010
16	Wisconsin	54,526
17	Oregon	53,203

Where is the identified need?

Motor vehicle-related death rates per 100,000 population—American Indian/Alaskan Natives aged 1-44 years, United States, 2003-2007.



Fatal Analysis Reporting System(FARS) data regarding Native American fatalities.

		2010	2011	2012	2013	2014	Total: 2010-2014
Total Traffic Fatalities	a. All Native American Fatalities	438	569	553	511	606	2,677
	b. Native American Fatalities on Reservations	128	207	212	180	207	934
	c. All Fatalities on Reservations	364	388	367	316	359	1,794

State Traffic Safety Information (STSI)

www.nhtsa.gov

Why do we need the Indian Highway Safety Program?

- Of the Indian Country 2,677 total traffic fatalities from 2010 through 2014:
  - 51.2% were drivers
  - 47.4% involved alcohol-impaired driving
  - 47.8% were unrestrained occupants
  - 34.4% involved speeding
  - 58.3% were roadway departure crashes

IHSP Tribal program performance

- 2012-2016 averaged 32 granted tribal programs.
  - 373 fatalities
  - 20,757 motor vehicle crashes
  - 24,405 DUI arrests
  - 18,508 Seat Belt citations issued
  - 166,474 Speeding citations issued
  - 200,255 other traffic citations issued

FY2018 Funded programs

- Alaska
- Arizona
- California
- Colorado
- Idaho
- Michigan
- Minnesota
- Montana
- Nevada
- New Mexico
- New York
- North Dakota
- Oklahoma
- South Dakota
- Wisconsin
- Washington

IHSP fundable programs

Police Traffic Services grants (PTS)

PTS grants are traffic enforcement grants that are awarded to Tribal Police Departments. The performance grant will focus on Impaired driving, Occupant Protection, Speed enforcement and other traffic enforcement/safety activities. A tribal application is required to qualify for all IHSP grants. Grant applications must include population, road miles, land base and traffic data information.

FY2018 South Dakota funded programs

- Oglala Sioux Tribe
- Cheyenne River Sioux Tribe
- Sisseton-Wahpeton Oyate

IHSP fundable programs

Police Traffic Services grants (PTS)

We fund:

- Full time Highway Safety Officers (HSO)
  - Must have sufficient traffic data to support these programs.
  - Required to spend 100% of their time on traffic enforcement/safety activities.
  - Equipment/training/travel
  - High level of documentation is required of the officer/agency.
- *<u>These grants are Performance Based Reimbursable Grants</u>*
- *The IHSP has awarded $1,053,530.00 in grant funding to the tribes of SD for FY2018 in full time programs.*

IHSP fundable programs

Police Traffic Services grants (PTS)

We fund:

- Overtime projects,
  - Salaries paid to existing officers to work traffic enforcement/safety activities.
  - Utilized for national mobilizations and high traffic periods of the agency.
  - Equipment/training/travel-to a lesser degree than full time.
  - High level of documentation is required of the officer/agency.
- *<u>These grants are Performance Based Reimbursable Grants</u>*
- *The IHSP has awarded $0 in grant funding to tribes in SD for FY2018.*

IHSP fundable programs

Occupant Protection grants (CPS)

- IHSP awards Child Passenger Safety (CPS) grants to tribes for the purchase of child safety seats and CPS educational brochures, some equipment and travel. There is a fill-in-the-blank application for CPS that is included in the applications sent to the Tribal Leaders in February. Clearly written Problem Statement and statistical data is required when submitting and application.
  - Car seats, specific equipment related to CPS, training and travel.
  - Documentation required includes information and distribution activities to account for each seat or educational item distributed.
  - *The IHSP has awarded $7,095.00 in grant funding to SD tribes for FY2018.*

IHSP fundable programs

Impaired Driving Court grants

- Tribes may apply for an Impaired Driving Court grant from IHSP to help establish or expand DUI Court programs. Costs may include part-time salaries for a Court Clerk, Probation Officer, etc. DUI Court Training for the DUI Court Team is also an eligible expense. Traffic data must be provided to justify funding, as well as copies of Tribal laws and ordinances that support the establishment of a Tribal DUI Court.
  - High level of documentation on monitoring is required by the program administrator.
  - Some equipment and monitoring costs are available.
  - No funding awarded to SD tribes for FY2018.

IHSP fundable programs

BATmobile

- The IHSP purchased four BAT Mobiles for Tribal use in FY2009 to assist in reducing alcohol related motor vehicle crash injuries and fatalities within the participating Tribes. It was a collaborative effort between the BIA IHSP and BIA OJS. The BAT Mobiles are currently stationed in BIA OJS District I (Aberdeen, SD), District III (Phoenix AZ), District IV (Albuquerque, NM) and District V (Billings, MT).
  - All operating expenses are paid by the IHSP.
  - IHSP will fund CDL training for grant funded tribes.

IHSP BATmobile DUI Mobilization

Thank you

Lawrence Robertson, SAC
Program Director
1001 Indian School Road NW
Albuquerque NM 87101
505-563-3780-office
505-563-5375-fax
lawrence.robertson@bia.gov

Rural Pedestrian Safety

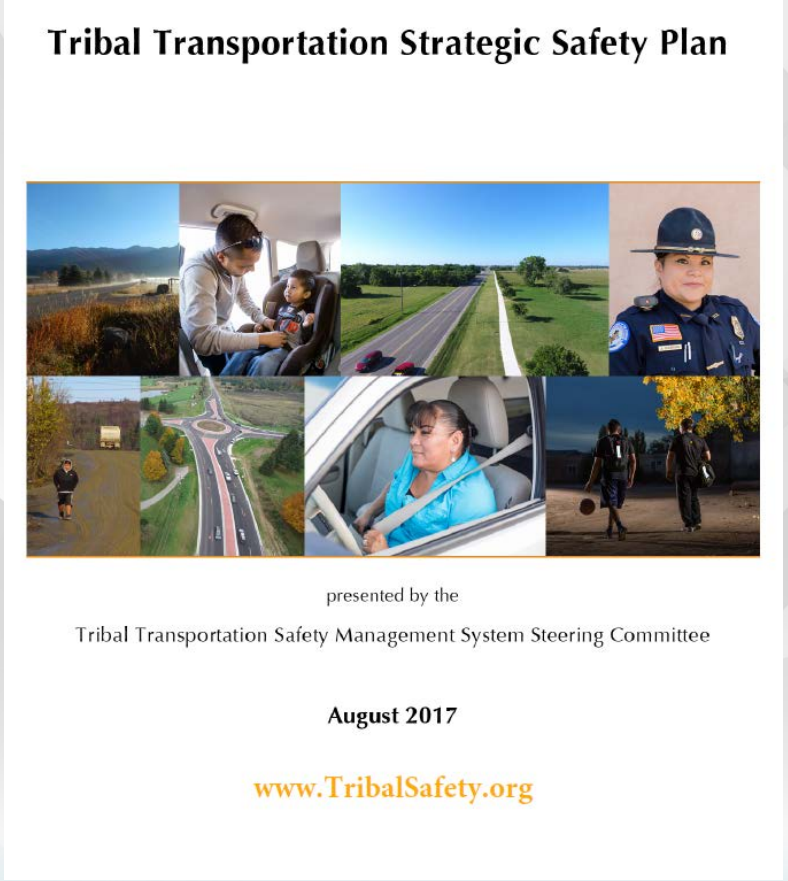
SD Tribal Safety Summit

October 26, 2017

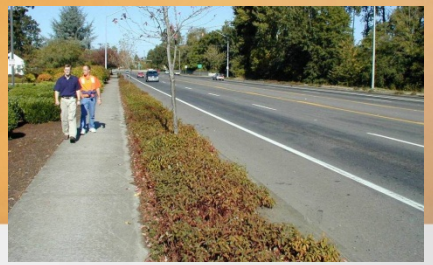
Pedestrians

- 4,654 Pedestrians Killed/year (~12 % of all traffic fatalities)
  - 58% are adults
  - 23% are older citizens
  - 19% are children
- A pedestrian is killed or injured every 4 minutes

Options to Improve Safety



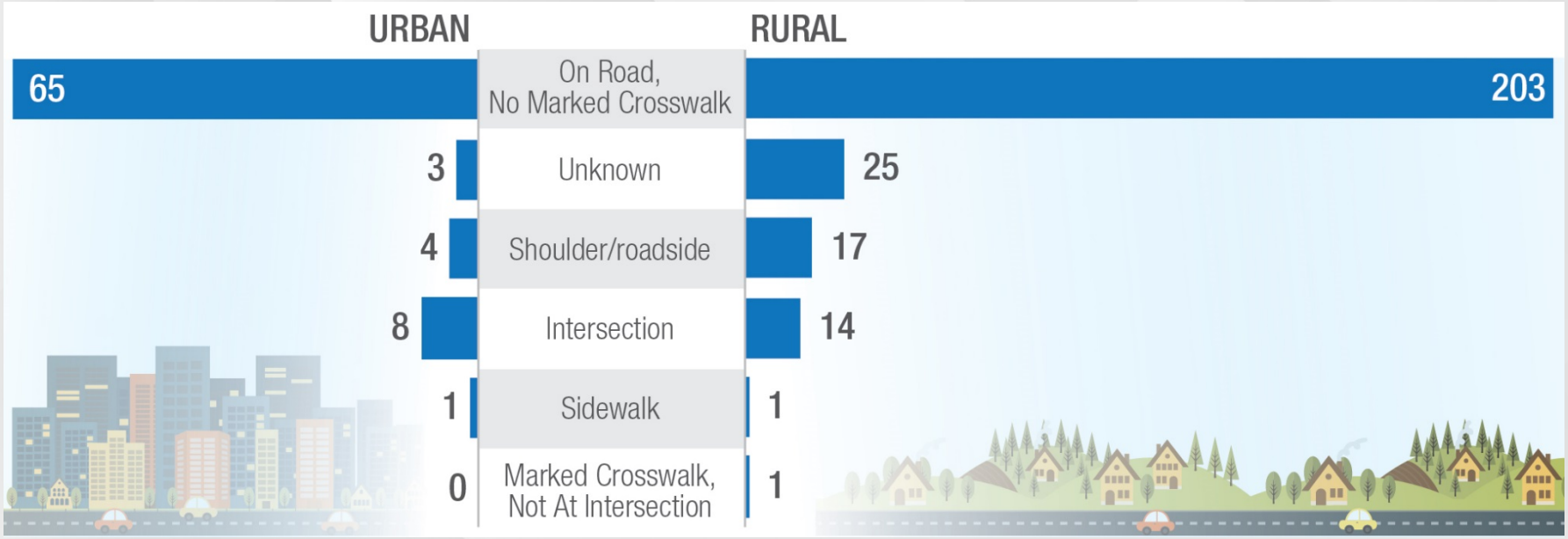
National Data
Shoulders and Sidewalks



- Walking along the road accounts for 10-15% of fatal pedestrian crashes:
  - Fewer in urban areas
  - More in rural areas
- They're easily preventable

- Paved shoulders reduce pedestrian crashes by 70% (CRF)
  - CMF = 0.3
    - Gan et al. study
- Sidewalks reduce pedestrian crashes by 88% (CRF)
  - CMF=0.12
    - McMahon Study

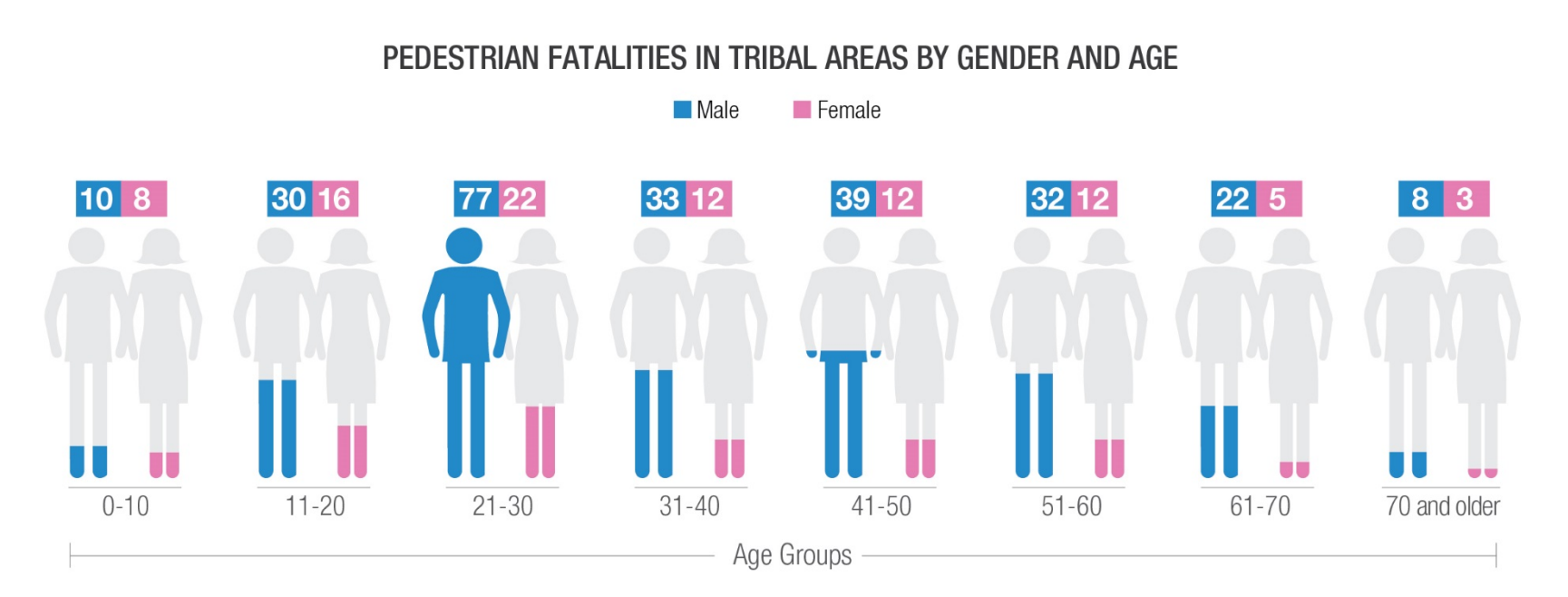
Tribal Areas Data



Only 6% reported as at an intersection

Source: Tribal Transportation Strategic Safety Plan, Aug 2017. TribalSafety.org

Tribal Areas Data



At least 43% of fatality reports showed the involvement of an impaired pedestrian.

Source: Tribal Transportation Strategic Safety Plan, Aug 2017. TribalSafety.org

Shoulders improve safety for all users

Sonoma Co. CA

For motorists: room to avoid crashes

Shoulders improve safety for all users

For bicyclists: a place to ride

Shoulders improve safety for all users

Benton Co. OR

For pedestrians: a place to walk

CMF = 0.3 (CRF = 70%)

Avoid Choke points or gaps

Canyonville OR

At a certain point, sidewalks or paths are needed

Manitou Springs CO

“Goat trail” indicates sidewalks are needed

Defining Space Between Vehicles and Pedestrians

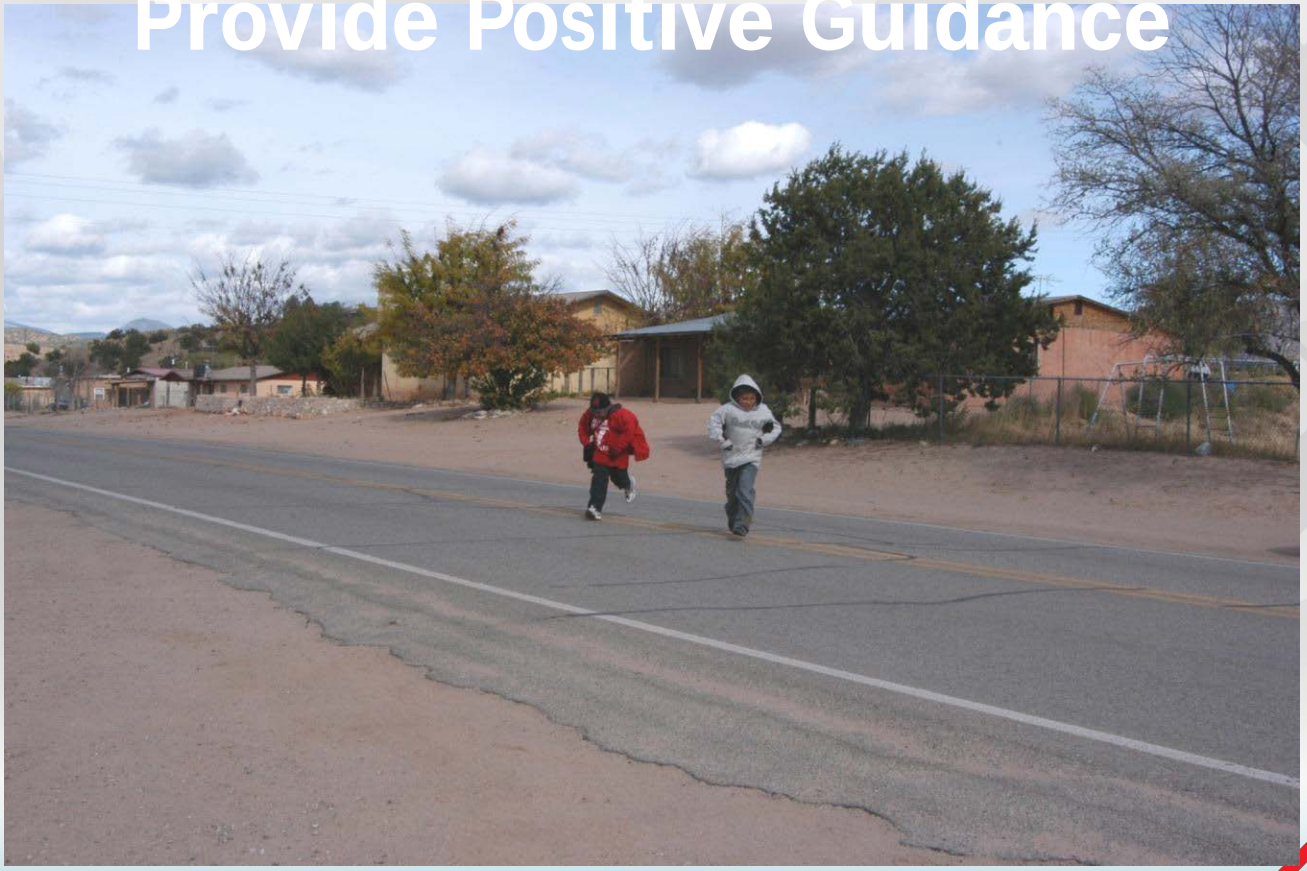
- Lateral clearance - the distance separating a pedestrian from vehicular traffic.
- The greater the separation between pedestrians and vehicular traffic, the better it is for pedestrians.

SD Tribal Projects

Pavement Condition

Where will Pedestrians Cross?

Provide Positive Guidance



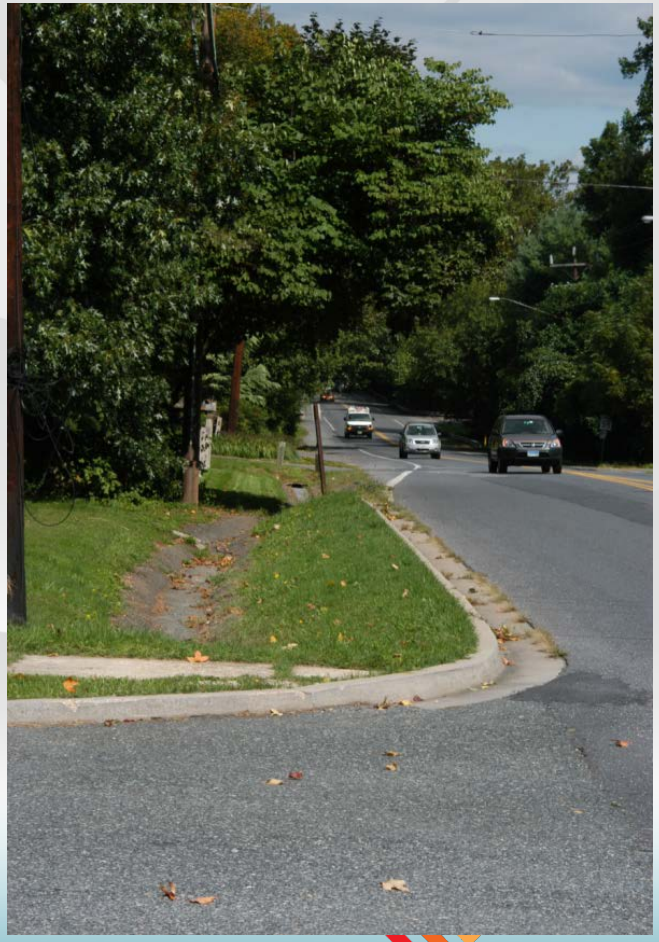
Rural Pedestrian Crossings

- What visual cues help inform a motorist that pedestrian may be crossing at this location?
- What would happen if you take away the sign?
- What attracts a pedestrian to cross at this location?

Sidewalk Widths and Crossing Locations

Transition Points Create Critical Gaps

- Walkable shoulder to sidewalk
- Transition must:
  - Provide separated space
  - Be accessible for all users



Ped Activated Beacons


HERE
TO

Lighting


Before

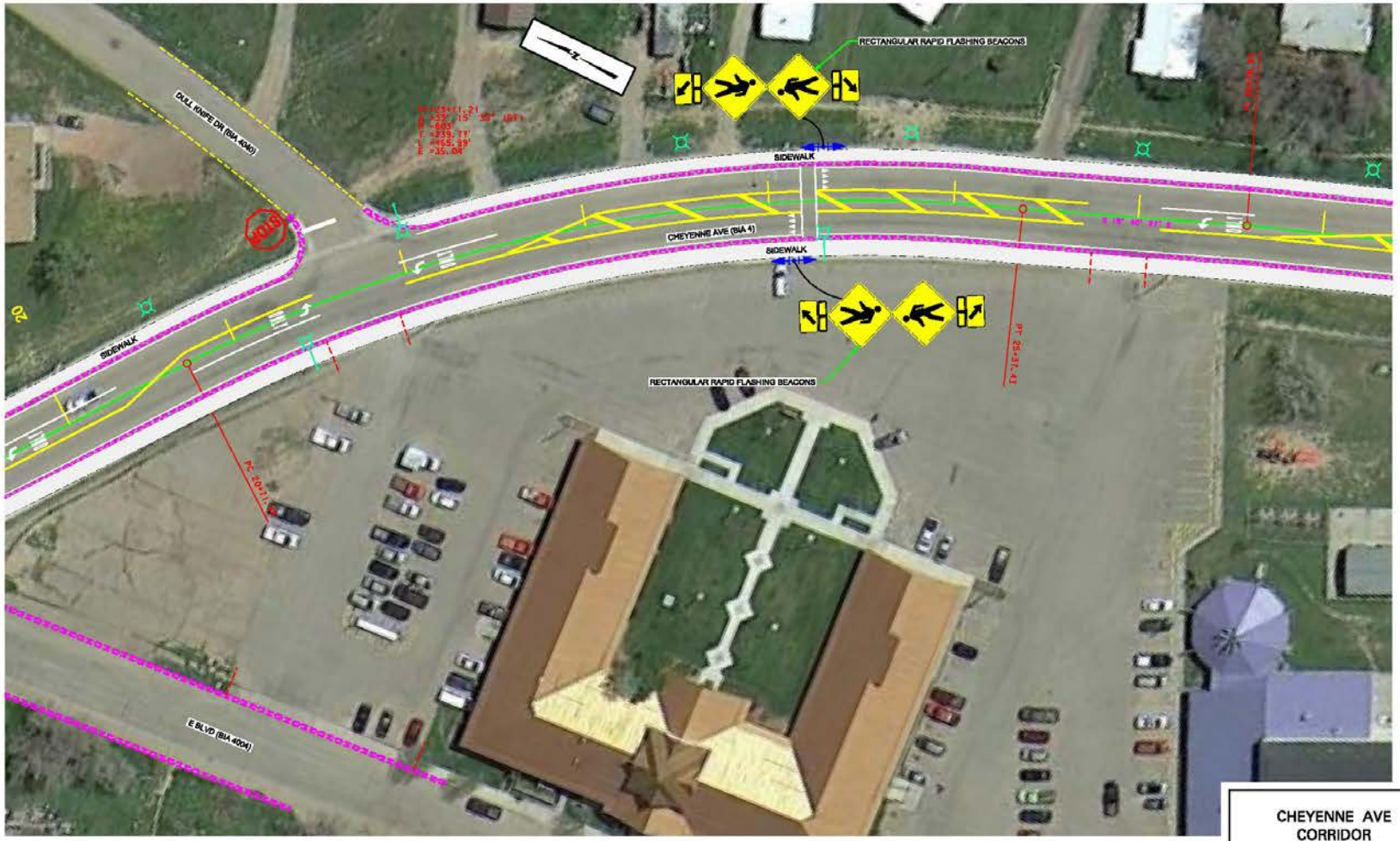

After
07/31/2006

Curbs & sidewalks slow traffic more than speed sign

Coburg OR

Sidewalks define an urban street

Lighting

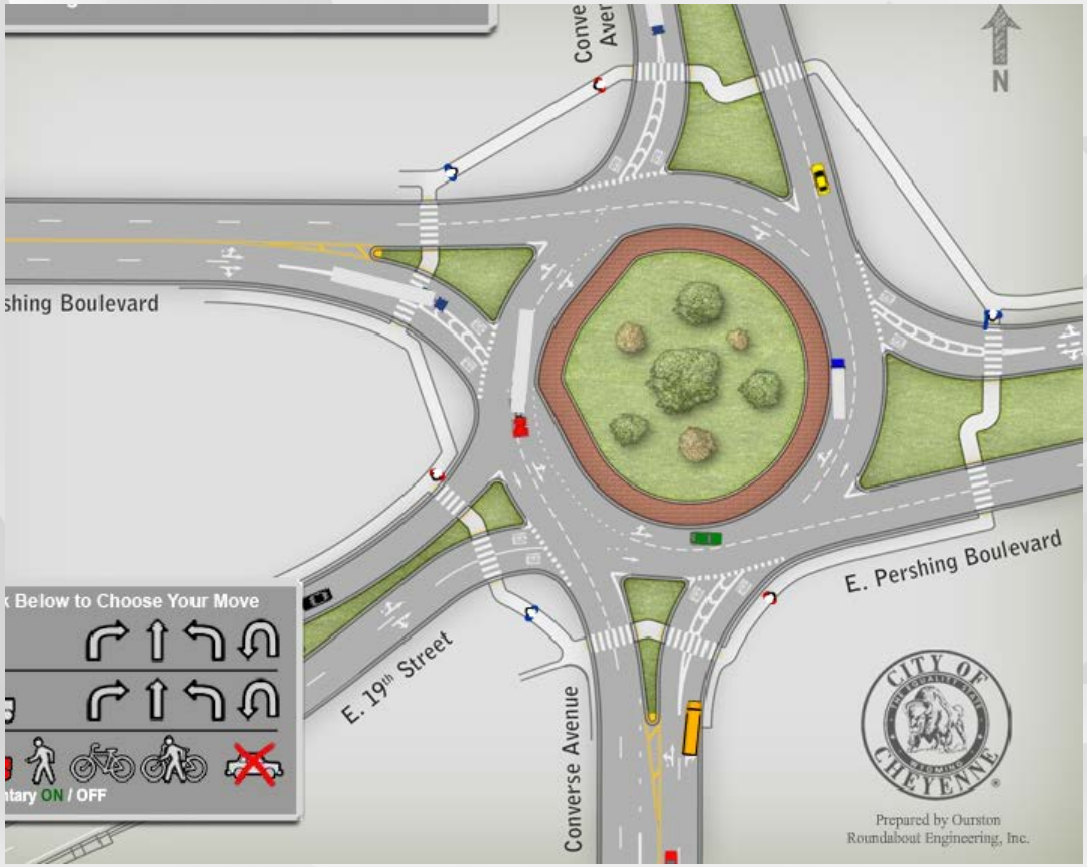


CHEYENNE AVE CORRIDOR GEOMETRICS

SCALE 1:50

3	KLJ	BFILEABBREV8	DESIGNED BY			PLANS	PRELIMINARY	CHEYENNE AVE CORRIDOR SAFETY IMPROVEMENTS	NORTHER CHEYENNE TRIBE
2		$DATE8	DRAWN/RD BY			ROSEBUD COUNTY			SHEET 7 OF 10
1		$TIME8	CHECKED BY						

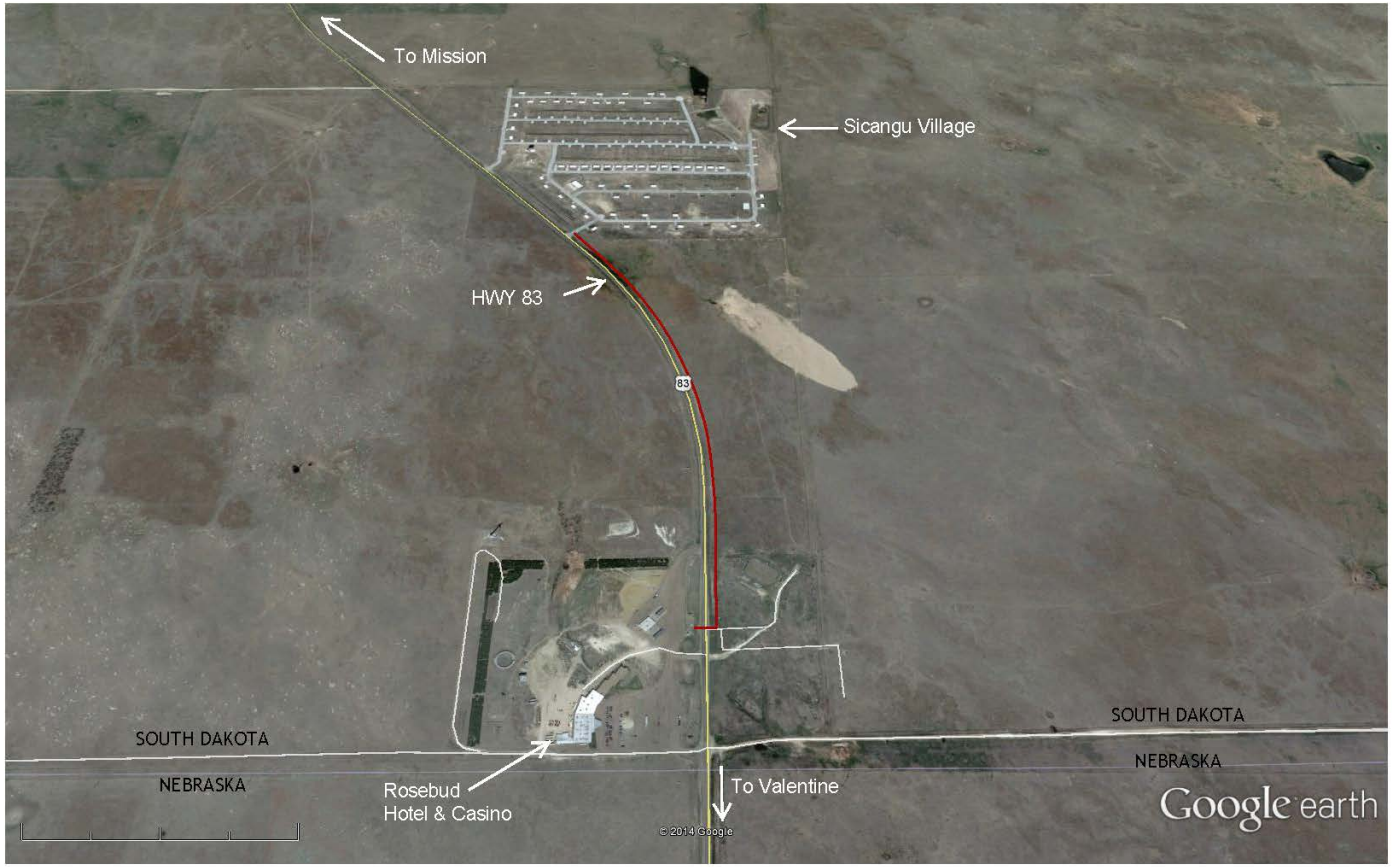
Roundabouts & Peds



SD Tribal Projects

SD Tribal Projects

SD Tribal Projects



SD Tribal Projects

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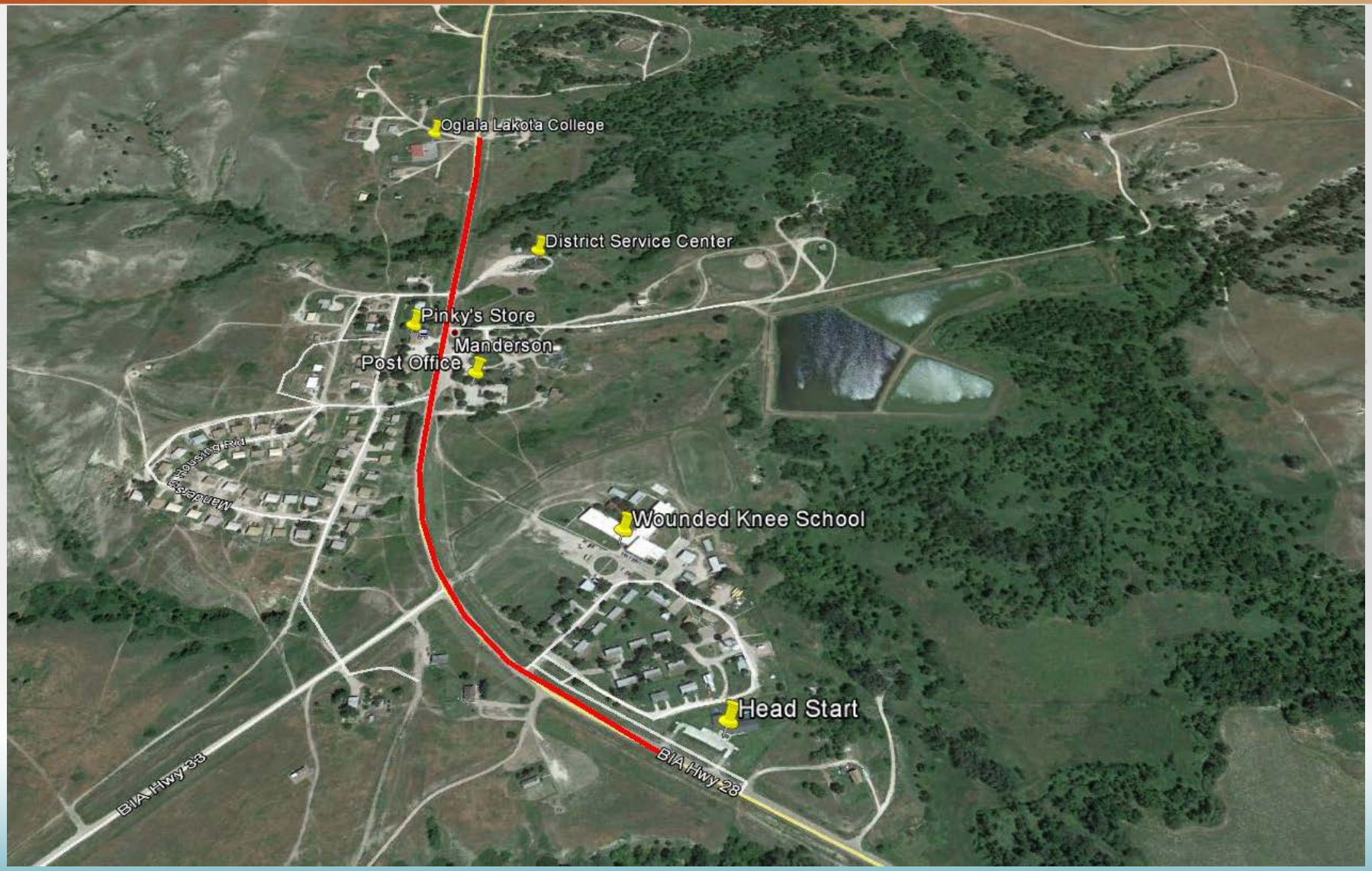
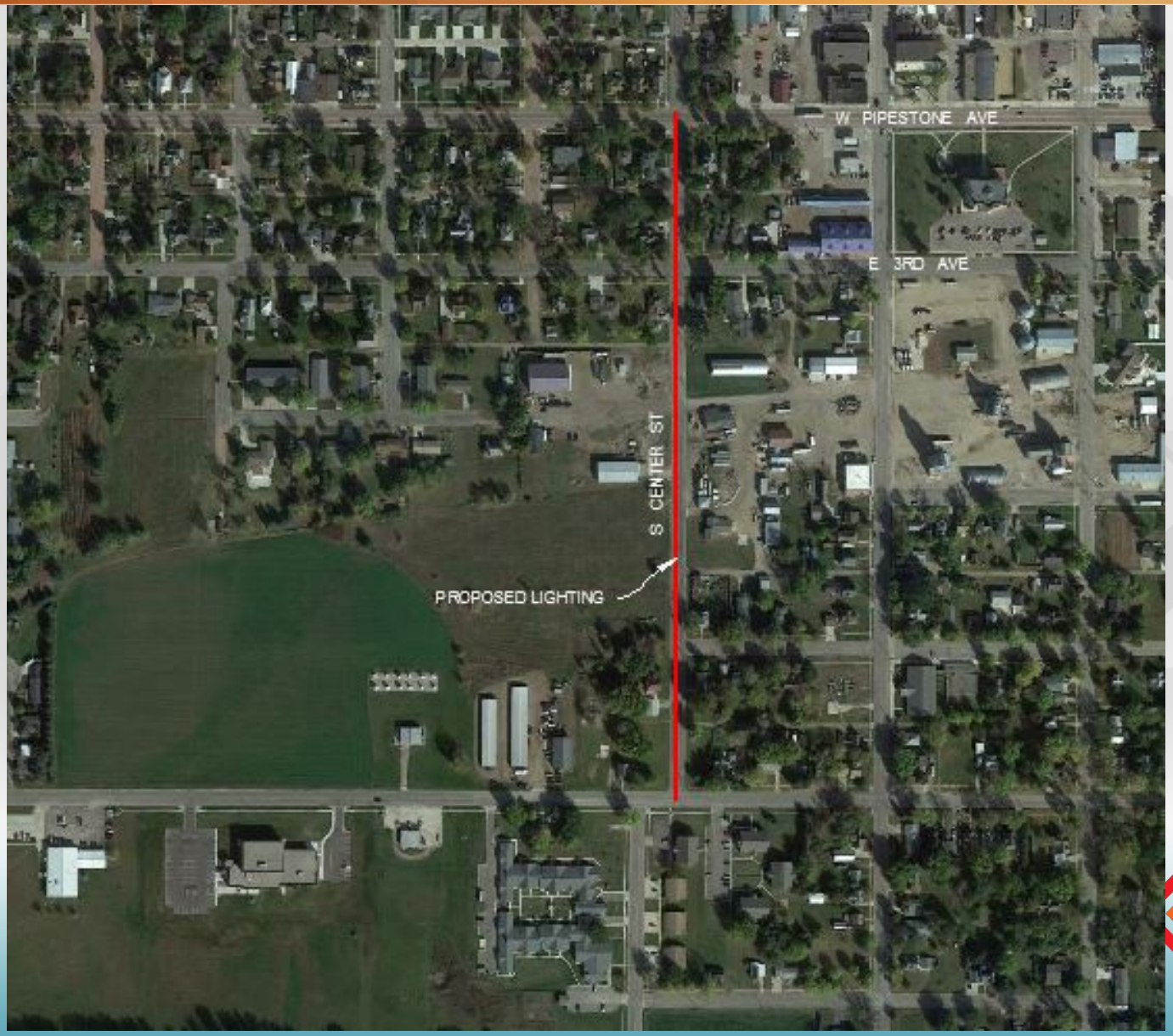


SD Tribal Projects



SD Tribal Projects

Show me the Money

Funding Programs

- Transportation Alternatives Program (TAP)
- TTP Safety Fund
- Highway Safety Improvement Program (HSIP)

Sell your pathway

- Crash data (of any form)
- Exposure data (ADT, Ped/Bike counts)
- Photos
- Safe Routes to School Plans

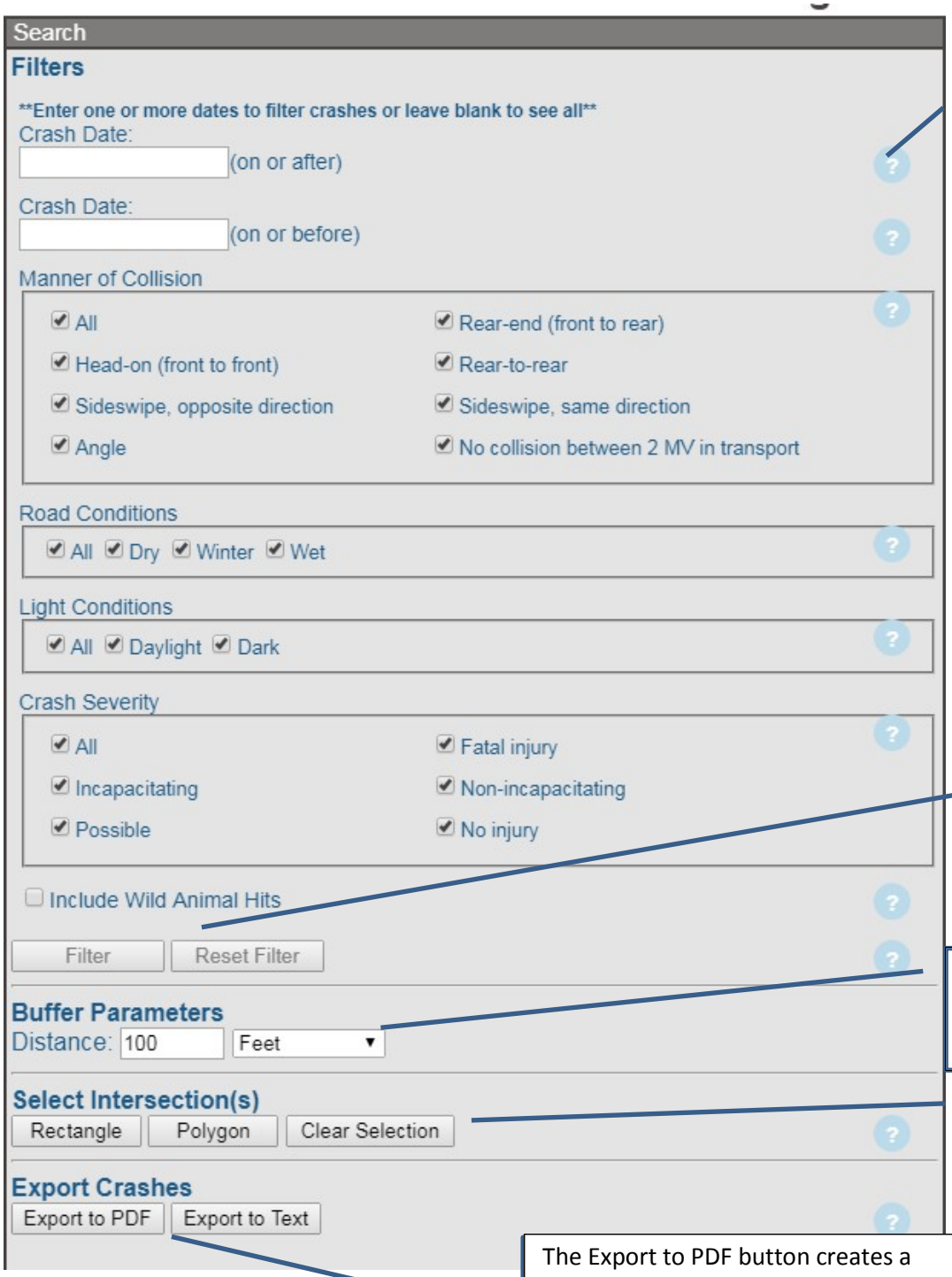
Intersection Crash Diagram Website Guidance

Web address: http://intersectioncrashdiagram.sd.gov

Layout

The left side of the page has panels for setting filters, layers and basemaps and the right side is the map for displaying intersections and crashes. Diagrams are generated after selecting one or more intersection(s).

Search Section



Hover over question marks to see tips about the different filter criteria that can be applied to crashes

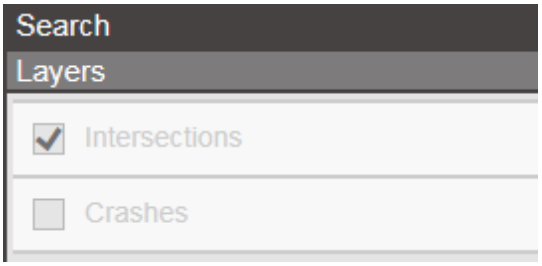
If the crash layer is enabled, use the Filter button to see the effect of the dates and/or checkboxes

Set a buffer around an intersection. 100 feet is the default

Select intersection(s) by drawing a rectangle or a polygon. Clear Selection will unselect intersections.

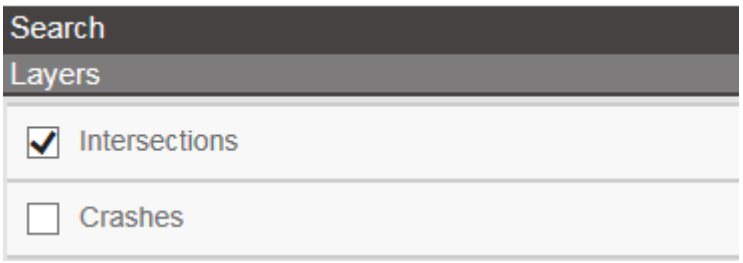
The Export to PDF button creates a PDF with the crash diagram. The Export to Text button creates a text file listing all the crashes selected.

Layers section



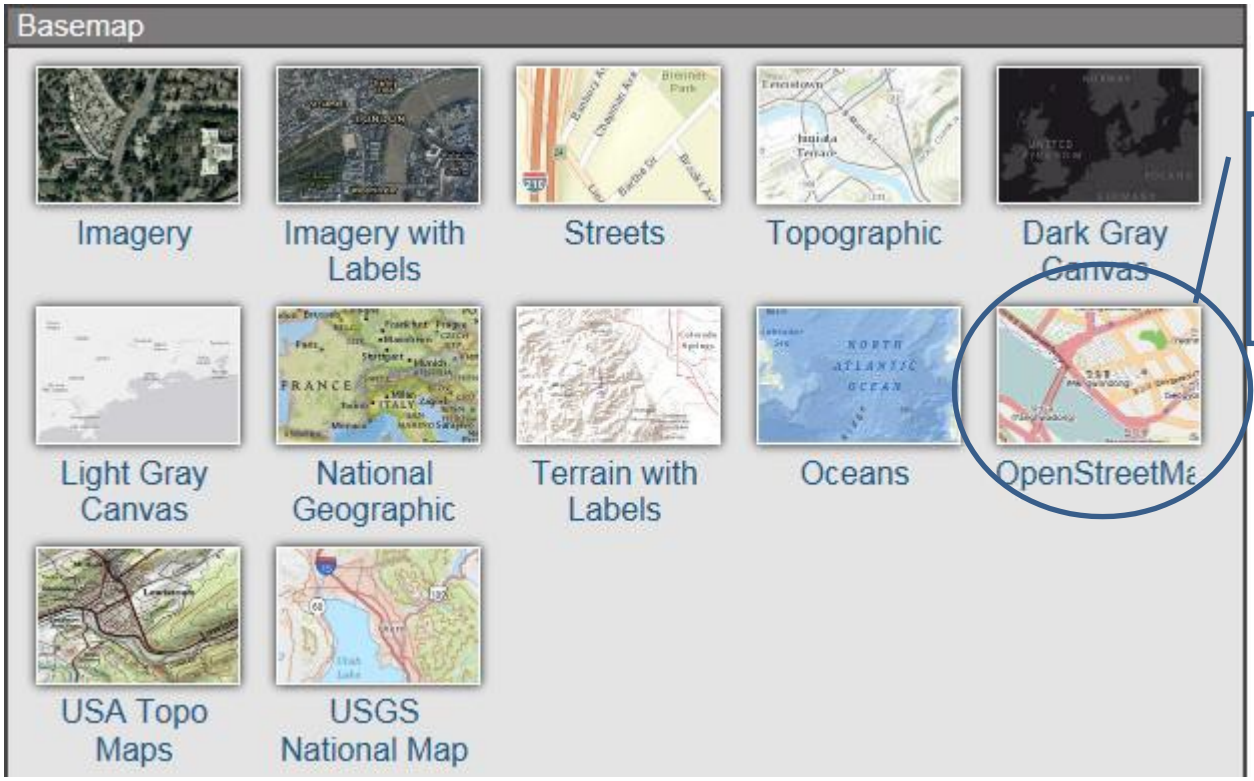
When the page loads both layer options are disabled and the intersection layer is selected by default

Zoom in on the map to enable checkbox for the Intersections layer



Zoom in further to enable the Crashes layer checkbox. It is unselected by default as there is multiple years of crash data

Basemap section

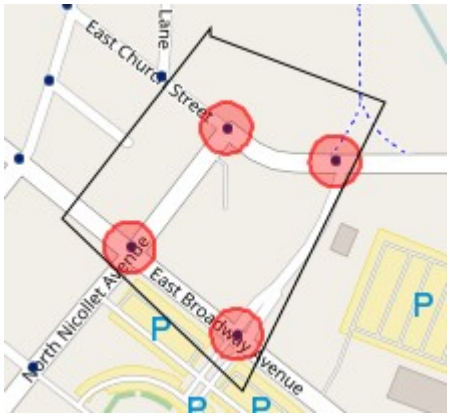


OpenStreetMap is the default basemap. You can change it to whatever you prefer.

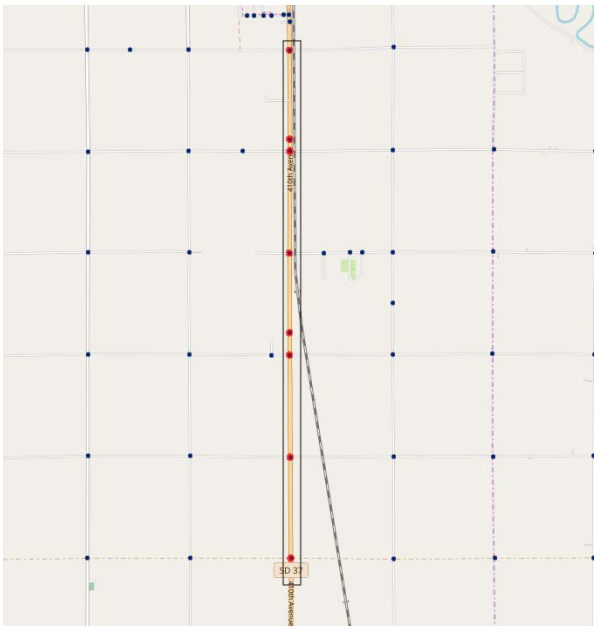
Creating crash diagrams

1. Use the Filters and Buffer Parameters section to set limits on the crashes to be displayed
2. Select intersection(s)
    a. By Rectangle
        i. Click on Rectangle button
        ii. Click and drag mouse to draw rectangle over one or more intersection dots
        iii. A red buffer should surround each dot after letting go of mouse button

    b. By Polygon
        i. Click on Polygon button
        ii. Use mouse to click three or more points; lines will draw around one or more intersection dots and a gray field will show the proposed shape of the polygon
        iii. Double-click to complete the polygon
        iv. A red buffer should surround each dot

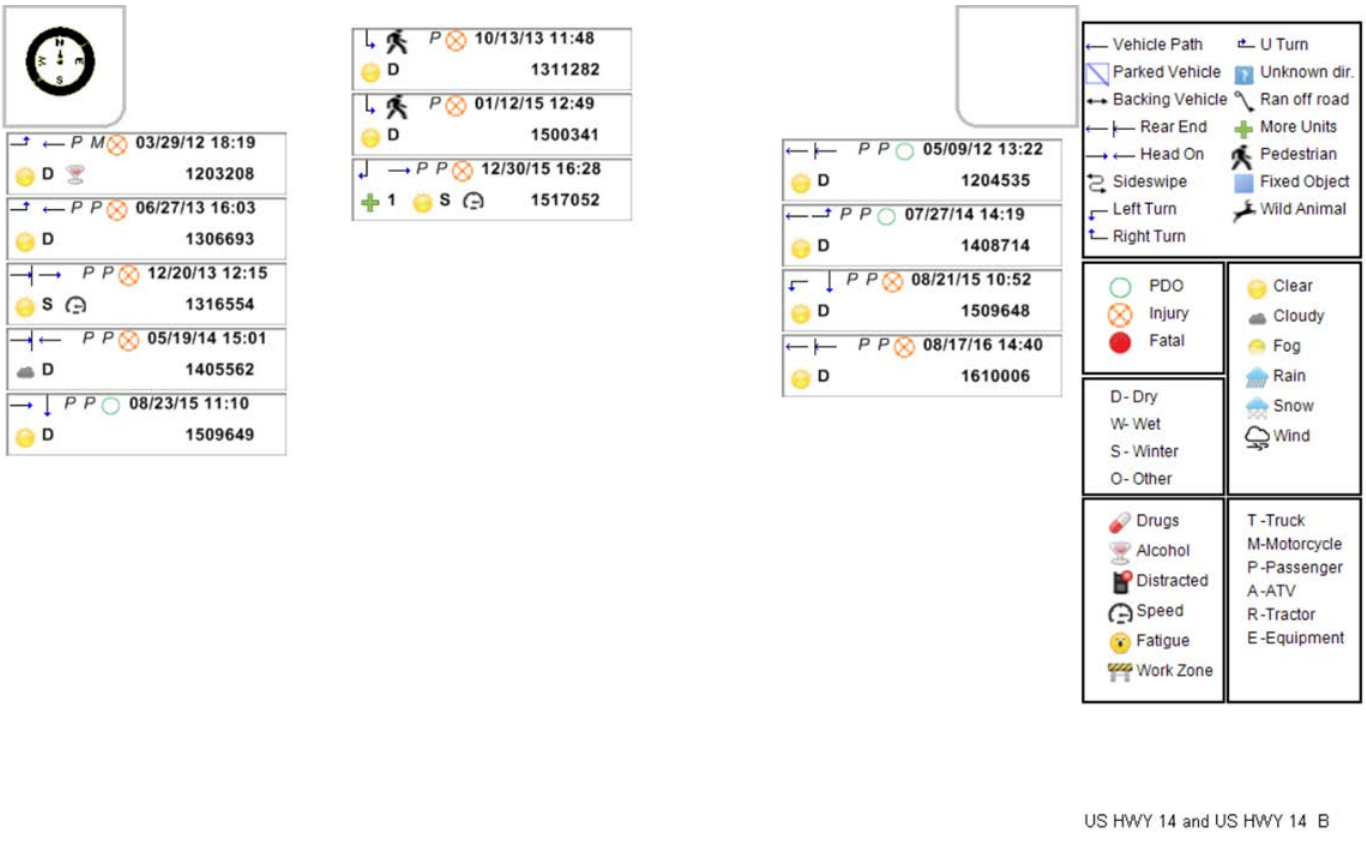


3. Select corridor
    a. Use either the polygon or rectangle to select a corridor which will create a diagram for each intersection as well as a separate diagram for all non-intersection related crashes on the corridor.



4. Click the Export button. Depending on the browser you are using and its settings, a prompt will appear asking where to download the PDF file or the PDF file will automatically download. If you are using a Mac computer and the Safari browser, it will display the diagram, but not in PDF format.

Example Intersection Diagram



U.S. Department of Transportation
Federal Highway Administration

Office of the Administrator

1200 New Jersey Ave., SE
Washington, D.C. 20590

May 24, 2017

The Honorable Tom Carper
Ranking Member, Committee on Environment
and Public Works
United States Senate
Washington, DC 20510

Dear Senator Carper:

Enclosed is the Report to Congress on Tribal Governments and Transportation Safety Data, which is submitted in accordance with Section 1117(b) of the Fixing America's Surface Transportation (FAST) Act.

The report summarizes the quality of safety data available to tribal governments. Also, this report makes recommendations for improving the quality and availability of safety data in tribal areas. Acting on these recommendations will enable safety analyses that will lead to more effective plans, programs, and project decisions that will address the over-representation of American Indians and Alaska Natives in fatalities and crash statistics in many States.

Similar letters have been sent to the Chairman and Ranking Member of the House Committee on Transportation and Infrastructure, the Chairman of the Senate Committee on Environment and Public Works, the Chairman and Ranking Member of the Senate Committee on Indian Affairs, and the Chairman and Ranking Member of the House Committee on Natural Resources.

I hope this information is helpful.

Sincerely yours,

Walter C. Waidelich, Jr.
Acting Deputy Administrator

Enclosure

U.S. Department of Transportation
Federal Highway Administration

Office of the Administrator

1200 New Jersey Ave., SE
Washington, D.C. 20590

May 24, 2017

The Honorable John Hoeven
Chairman
Committee on Indian Affairs
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

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Acting Deputy Administrator

Enclosure

U.S. Department
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**Federal Highway
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Office of the Administrator

1200 New Jersey Ave., SE
Washington, D.C. 20590

May 24, 2017

The Honorable Tom Udall
Ranking Member
Committee on Indian Affairs
United States Senate
Washington, DC 20510

Dear Senator Udall:

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U.S. Department of Transportation
Federal Highway Administration

Office of the Administrator

1200 New Jersey Ave., SE
Washington, D.C. 20590

May 24, 2017

The Honorable Rob Bishop
Chairman
Committee on Natural Resources
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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Acting Deputy Administrator

Enclosure

U.S. Department of Transportation
Federal Highway Administration

Office of the Administrator

1200 New Jersey Ave., SE
Washington, D.C. 20590

May 24, 2017

The Honorable Raúl M. Grijalva
Ranking Member
Committee on Natural Resources
U.S. House of Representatives
Washington, DC 20515

Dear Congressman Grijalva:

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Walter C. Waidelich, Jr.
Acting Deputy Administrator

Enclosure

U.S. Department of Transportation
Federal Highway Administration

Office of the Administrator

1200 New Jersey Ave., SE
Washington, D.C. 20590

May 24, 2017

The Honorable Bill Shuster
Chairman, Committee on Transportation
and Infrastructure
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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Walter C. Waidelich, Jr.
Acting Deputy Administrator

Enclosure

U.S. Department
of Transportation
**Federal Highway
Administration**

Office of the Administrator

1200 New Jersey Ave., SE
Washington, D.C. 20590

May 24, 2017

The Honorable Peter DeFazio
Ranking Member, Committee on Transportation
and Infrastructure
U.S. House of Representatives
Washington, DC 20515

Dear Congressman DeFazio:

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Walter C. Waidelich, Jr.
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Enclosure

U.S. Department of Transportation
Federal Highway Administration

Office of the Administrator

1200 New Jersey Ave., SE
Washington, D.C. 20590

May 22, 2017

The Honorable John Barrasso
Chairman, Committee on Environment
and Public Works
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

Enclosed is the Report to Congress on Tribal Governments and Transportation Safety Data, which is submitted in accordance with Section 1117(b) of the Fixing America's Surface Transportation (FAST) Act.

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Walter C. Waidelich, Jr.
Acting Deputy Administrator

Enclosure

Tribal Governments & Transportation Safety Data

Report by: Federal Highway Administration
Federal Lands Highway
Office of Tribal Transportation

Primary contributors:

Adam Larsen, Federal Highway Administration and Greg Piland, Federal Highway Administration

With significant input from the Tribal Transportation Safety Management System Steering Committee

I. Executive Summary

The American Indian and Alaska Native population is disproportionately represented in fatalities and crash statistics in many States (Washington, 2013). Motor vehicle crashes are the leading cause of unintentional death for American Indians and Alaska Natives (AI/AN) ages 1–44 (Centers for Disease Control and Prevention (CDC), 2014). This report demonstrates crash data is underreported, and if reported the statistics would be even higher.

The circumstances contributing to the underreporting of crashes include but are not limited to privacy concerns, staffing limitations, and lack of equipment and training. This report investigates ways to improve the collection and sharing of crash data so that it is useful for identifying needed improvements to transportation safety in tribal areas.

A survey developed by the Tribal Transportation Safety Management System Steering Committee was made available to all federally recognized Tribes and to the 35 States where these Tribes are located. The Committee received responses from 152 federally recognized Tribes and 22 States; these responses were analyzed to determine the quality of existing tribal transportation safety data, opportunities to improve data collection, options for paperless data reporting, and uses of crash data. This report also documents Federal funding opportunities available to Tribes for crash data improvement.

Proposed action by USDOT agencies is documented below. Implementation of these recommendations will require significant partnership with other Federal agencies. Full implementation of the recommendations will produce safety data, especially crash data, that is useful for planning the programs and projects that will reduce the number of transportation related deaths and injuries in tribal areas.

II. Summary of Recommendations

The following is a summary of the specific actions that USDOT agencies will take to improve the quality and availability of safety data in tribal areas.

- The Federal Highway Administration (FHWA) Tribal Transportation Program Safety Funds, available for federally recognized tribal governments to improve transportation safety, will continue to accept applications based on any form of safety data. However, applicants using data other than police crash reports will now be encouraged to provide a plan showing how the applicant will achieve higher quality data for the future. The process described in National Cooperative Highway Research Program (NCHRP) 788 is one method Tribes could use to assess traffic records.
- The National Highway Traffic Safety Administration (NHTSA) will revise the Traffic Records Assessments Procedures Manual to encourage better coordination between States and Tribes concerning traffic records.
- The FHWA will partner with the BIA Division of Transportation (BIADOT) to investigate incorporating the National Tribal Transportation Facility Inventory (NTTFI) with the All Roads Network of Linear-Referenced Data (ARNOLD) which is being established as a result of the Moving Ahead for Progress in the 21st Century

Act (P.L. 112-141) (MAP-21). A Geographic Information System (GIS) based National Tribal Transportation Facility Inventory would generate roadway data that would be useful for transportation safety studies.

- The FHWA will assist States in communicating with BIA and Tribes when developing annual safety performance targets.
- The FHWA will establish a partnership with the BIA Office of Justice Services to work toward crash data in tribal areas that is more accessible and of higher quality. This partnership will benefit Tribes served by the BIA Law Enforcement Services and tribal police funded by the BIA OJS. This partnership could be in the form of a stand-alone Traffic Records Coordinating Committee or may be a duty of the already established Tribal Transportation Safety Management System Steering Committee. Some of the strategies that this partnership may pursue include the following:
    - Using either the electronic DOI crash form in Incident Management Analysis and Reporting System (IMARS) or a MMUCC-compliant electronic State crash data system. Using State data systems will have advantages in many cases due to integration with other databases (such as location, driver, and vehicle data) and crash data sharing capabilities.
    - Encouraging tribal police to collect data in a format that is compliant with the Model Minimum Uniform Crash Criterion (MMUCC) to the extent possible.
    - Establishing sharing arrangements for crash data to be transferred on a regular basis to tribal and State governments for transportation safety planning purposes. Development of a central database for all DOI law enforcement programs that are using the DOI Crash form. This database could include quality assurance protocols and facilitate streamlined sharing of crash data with Tribes and States.
    - Encouraging Tribal law enforcement agencies to share their crash data (excluding personal identifiers) with other departments of the Tribe and State governments in addition to maintaining databases that are searchable and usable for transportation safety planning purposes.
    - Establishing procedures that ensure the completeness and quality of individual crash reports.
    - Establishing a national crash data clearinghouse for tribal police as an option for those Tribes with concerns about sharing crash data directly with State governments.
    - Documenting guidelines for regular training or guidance to officers on the proper use of the DOI crash form or State crash form.
    - Providing Tribes with clear documentation of the process to establish sharing of motor vehicle crash data under the DOI-10 System of Records Notice.
    - Reviewing processes to centralize and streamline the collection and sharing of crash data.
    - Reviewing the process by which State governments may obtain crash data from BIA Law Enforcement Services for inclusion in the statewide databases and the Fatality Analysis Reporting System (FARS).
    - Documenting the procedures developed by State governments for crash reporting.

Contents

III. Acronyms

AI/AN	American Indians and Alaska Natives
ANSI	American National Standard Manual on Classification of Motor Vehicle Traffic Accidents
ARNOLD	All Roads Network of Linear-referenced Data
BIA	Bureau of Indian Affairs
BIADOT	Bureau of Indian Affairs, Division of Transportation
BIA IHSP	Bureau of Indian Affairs, Indian Highway Safety Program
BIA-OJS	Bureau of Indian Affairs, Office of Justice Services
CDC	Centers for Disease Control
CFR	Code of Federal Regulations
CTAS	Coordinated Tribal Assistance Solicitation
DOI	Department of Interior
DOT	Department of Transportation
EMS	Emergency Medical Services
FAST	Fixing America's Surface Transportation Act
FARS	Fatality Analysis Reporting System
FBI	Federal Bureau of Investigation
FLH	Office of Federal Lands Highway
FHWA	Federal Highway Administration
FOIA	Freedom of Information Act
FY	Fiscal Year
EMS	Emergency Medical Service
GIS	Geographic Information System
HSIP	Highway Safety Improvement Program
IMARS	Incident Management, Analysis, and Reporting System
MAP-21	Moving Ahead for Progress in the 21st Century Act
MIRE	Model Inventory of Roadway Elements
MMUCC	Model Minimum Uniform Crash Criteria
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTTFI	National Tribal Transportation Facility Inventory
OMB	Office of Management and Budget
RSA	Road Safety Audit (also known as Road Safety Assessment)
SAFETEA	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SMS	Safety Management System
SSP	Strategic Safety Plan
TTP	Tribal Transportation Program
TRB	Tribal Research Board
TRCC	Traffic Records Coordinating Committee
USC	United States Code
US	United States
USDOT	United States Department of Transportation
VPSO	Village Public Safety Officers

IV. Introduction

Given the under-reporting of crashes in tribal areas that is described later in this report, one would expect the AI/AN population to be underrepresented in crash statistics. Unfortunately, the converse is true in many States. The limited data that is available often describes a transportation safety picture that has greater impacts on AI/AN than the rest of the United States' general population. One such example is in Target Zero®, Washington State's Strategic Highway Safety Plan, which describes "the traffic fatality rate for Native Americans is 3.9 times higher than for non-Native Americans." (Washington, 2013) Fatal motor vehicle crashes touch nearly every tribal area (Figure 1 is a map showing the locations of fatal motor vehicle crashes in or near tribal areas from 2010-2016). Transportation safety is also a concern for Tribes with few or no roads where tribal members experience injury and loss of life while traveling on trails, winter trails, waterways, and other transportation facilities.

Improved collection and sharing of safety data, especially crash reports, in tribal areas would facilitate more effective transportation safety planning and would afford Tribes improved access to State and Federal funding opportunities to address transportation safety problems. Better quality safety data will enable enhanced analysis of the nature of safety challenges and more effective selection and implementation of transportation safety strategies.

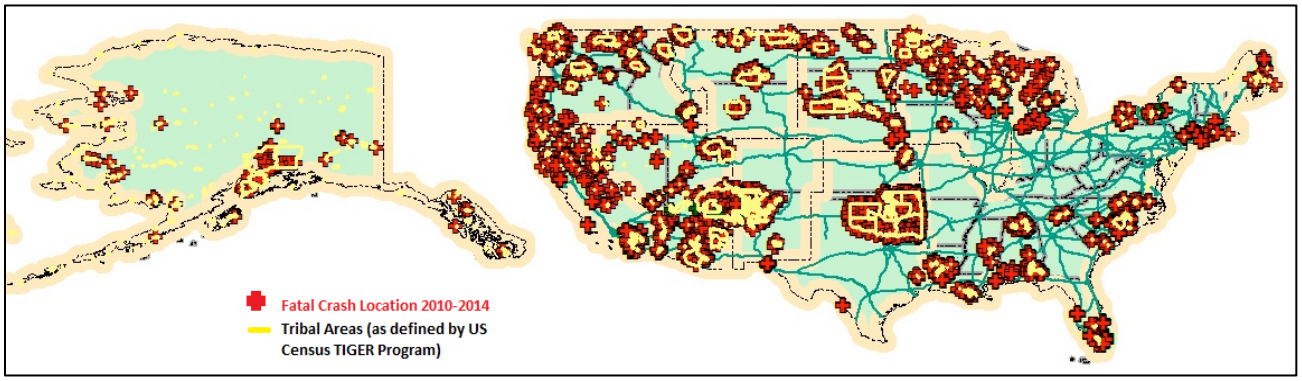

Figure 1. Map showing fatal crash locations reported to the Fatality Analysis Reporting System (FARS) for 2010-2014 within six miles of tribal areas

The Fixing America's Surface Transportation (FAST) Act, enacted on December 4, 2015, directed the Secretary of Transportation to complete this report about tribal governments and transportation safety data. The report was developed in consultation with representatives of the Secretary of the Interior, the Secretary of Health and Human Services, the Attorney General, tribal officials, and others in accordance with the requirements of FAST Act Section 1117(b).

The FAST Act further directs the Secretary of Transportation to develop a second report that identifies and evaluates options for improving safety on public roads in tribal areas. The second report is described in Section 1117(c) and is due by December 2017. The second report will build upon this report relative to transportation safety data and tribal governments of Section 1117.

The content of this report:

- Describes the quality of existing safety data.
- Recommends improvements to the collection and sharing of crash data that can be used to recover damages to tribal property, identify trends in crash data, and allow Tribes to more successfully compete for funding opportunities.
- Identifies electronic crash reporting options available to tribal governments.
- Identifies Federal transportation funding for safety data improvement.

A. Under-reporting of motor-vehicle crash data

State and national crash databases are often used to drive policy, program, and project decisions by State and Federal Governments. Analysis of these databases leads to the selection of roadway safety improvements through the Highway Safety Improvement Program (HSIP), an annual funding program, which made $2.1 billion dollars available to States in Fiscal Year (FY) 2016 (FHWA, 2016). Unfortunately, many Tribes are not adequately represented in these State and national databases because crash data collected by some BIA Law Enforcement Services agency offices and tribal law enforcement is not shared with State governments for a variety of reasons including privacy concerns and inadequate resources. In addition, some incidents go completely undocumented. This report further describes the evidence of under-reporting in the section on data quality.

Previous studies have identified concerns about motor vehicle crash data collection and sharing for tribal areas in specific States. One study found that the South Dakota statewide crash database was severely lacking in tribal areas where tribal and BIA police were not sharing crash data. The underreporting was so significant that the study recommended the State of South Dakota not pursue further safety analysis for tribal areas in the State until data sharing arrangements could be made (Drake, Sparks, & Thomaz, 2005). The Washington Traffic Safety Commission provided documentation showing that from 2004-2015, only 4 of the 29 federally recognized Tribes in Washington State consistently reported crash data.

For crashes that are reported to State and national databases, the identification of ethnicity is an additional concern. For fatal crash victims, this information is usually obtained from a death certificate or as identified by next of kin when available. There is concern that American Indians and Alaska Natives are occasionally incorrectly identified as another race, reported as mixed race, or reported as unknown race. This limitation affects national level research on transportation safety in tribal areas. A research proposal about the identification of race in crash reports is underway by the Transportation Research Board (TRB) subcommittee on Tribal Transportation.

B. Under-reporting of off-roadway incident data

While the focus of this report is on motor vehicle crashes on roadways, it is important to note that many Tribes, primarily those located in Alaska, make significant use of other transportation facilities such as trails, snow machine trails, board roads, and water routes. For these Tribes, transportation safety focuses on different topics than roadway safety but is just as important; these safety efforts can also be enhanced through the collection of incident data. Often there is no method in place by which incident data is collected for off-roadway events. The majority of Tribes in Alaska do not have tribal law enforcement, there is no BIA law enforcement presence

in Alaska, and the Alaska State Troopers are spread very thin with significant logistical concerns. Alaska State Troopers place peace officers known as Village Public Safety Officers (VPSO) in some villages. When VPSO and/or tribal police are present in a village, they do not usually complete crash reports for transportation incidents. If a crash report is completed, it is often the same report form available to any member of the public to report their involvement in a crash where law enforcement was not on scene, rather than the Alaska State law enforcement crash report form.

Some tribal governments have developed filing systems to record incidents at a local level for safety planning and grant application purposes. There is no system in place for these record systems to be shared on a statewide basis. An example is the Native Village of Napaimute. The Tribe's transportation department has coordinated with search and rescue crews in the area who respond when an individual traveling between villages does not arrive as expected. When such an incident occurs, the transportation department gathers information in a narrative format, includes any pictures or news articles, and keeps the information in a filing cabinet for future use.

V. Existing National Safety Databases

Safety data includes many different data types, each of which can enhance data analysis capabilities. This report focuses on crash data with some consideration of roadway and traffic volume data which can then be used to analyze the crash data. Several national databases are discussed in the remainder of this report; a brief description of these national databases is set forth below.

Databases on drivers, injuries, vehicles, and citations are all examples of safety data which may or may not exist in national database or be linked to any individual crash database. These data sources are beyond the scope of this report.

1. Fatality Analysis Reporting System (FARS)

The NHTSA developed a national database, known as FARS, to collect information from multiple State data sources about deaths that occur within 30 days after motor vehicle traffic crashes. This information is used at all levels of government to inform public policy, provide statistical information, evaluate vehicle designs, and influence decisions on projects and programs to improve transportation safety. The FARS data is available at http://www-fars.nhtsa.dot.gov/.

While FARS is generally regarded as being the best available and most complete information on fatal crashes, the research conducted to develop this report found evidence of gaps in this database in tribal areas. All State governments voluntarily submit fatal crash data to FARS. However, Federal agencies and Tribes are not required to share their crash data with State government or FARS. The sharing of fatal crash reports by tribal police varies from Tribe-to-Tribe. The crash reports completed by law enforcement departments under the DOI including BIA Law Enforcement, are usually only included in FARS on a case-by-case basis when the State requests information from the DOI or when the BIA Law Enforcement are notified because the responding BIA agency office is completing State crash forms.

The NHTSA funds a FARS analyst in every State who is responsible for populating fatal crash information into the FARS database. The FARS analysts use multiple data sources to obtain information when they learn that a crash has resulted in a fatality. This includes direct contact with tribal and BIA Law Enforcement.

2. Incident Management, Analysis, and Reporting System (IMARS)

The DOI has implemented a records management system known as IMARS. This system is intended to be used to document all law enforcement actions by the DOI, not just motor vehicle crashes. The IMARS has the capability to document crashes through a narrative report or the DOI crash form. Attachments can be added to either of these formats and some BIA Law Enforcement Services agency offices are completing State crash forms and attaching those to their IMARS entry.

3. National Tribal Transportation Facility Inventory (NTTFI)

The BIA maintains a national inventory of public transportation facilities eligible for expenditures from the TTP to fulfill the requirements of 25 CFR 170. These surface transportation facilities include roadways, trails, board roads, and marine terminals. This inventory includes State, county, city, tribal, and BIA routes of interest to tribal governments. Roadways in this inventory are required to be open to public travel. Geolocation of the inventoried routes is currently not available but would greatly improve the usability of this data for safety studies. Additional information about the NTTFI can be found at https://itims.bia.gov/reports.shtml.

4. Web-based Injury Statistics Query and Reporting System (WISQARS)

The CDC's WISQARS is an online, publicly accessible database of fatal and non-fatal injuries and violent deaths caused by a variety of reasons, including motor vehicle crashes. The WISQARS uses the 10th revision of the International Statistical Classification of Diseases and Related Health Problems medical diagnosis codes to classify injuries. For transportation injuries, these codes provide collision type and whether the injured person was a vehicle occupant, pedestrian or motorcyclist. Death data comes from a national mortality database compiled by CDC's National Center for Health Statistics. This database contains information from death certificates filed in State vital-statistics offices and includes causes of death reported by attending physicians, medical examiners, and coroners. It also includes demographic information about decedents reported by funeral directors, who obtain that information from family members and other informants. American Indian and Alaska Native injury data is found in WISQARS features for fatalities and is available by national, State, and county levels. The WISQARS allows users to sort, search, and review the data and create reports, charts, maps and graphics. The WISQARS data is available online at http://www.cdc.gov/injury/wisqars/.

VI. Safety data quality

A. Roadway Inventory Data Standards & Quality

Roadway and traffic data provide useful information for transportation safety analyses. Using comprehensive crash reporting in combination with adequate roadway and traffic data would enable proven study methods, such as those found in the Highway Safety Manual, to be effectively conducted for tribal areas.

Some Tribes have adequate data to conduct roadway network screening for safety issues but those studies are limited to the Tribe and cannot be conducted on regional or national scales. Tribes that are interested in developing a roadway inventory should consider the Model Inventory of Roadway Elements (MIRE). This roadway inventory standard was established by FHWA in 2010. MIRE describes the elements needed to support advanced safety analysis using analytic tools such as those found in the Highway Safety Manual. More information about MIRE can be found at http://safety.fhwa.dot.gov/rsdp/mire.aspx.

At a national level, the most comprehensive roadway inventory that would indicate a Tribe's transportation interest in specific roadways is the NTTFI. Facilities in the NTTFI are eligible for expenditure of TTP funding. The NTTFI includes several data elements about each roadway. Traffic volumes are included, but they are incomplete for older routes and are not frequently updated. Unfortunately, this data does not include geospatial information necessary to conduct a national-level safety analysis.

Another effort that may prove useful for national-level analysis is the ARNOLD. When completed, ARNOLD will be a complete Geographic Information System (GIS) capable network of all public roadways, including those on Indian Reservations, with the exception of some gravel roadways. The MAP-21 required the Secretary to establish a subset of the Model Inventory of Roadway Elements (MIRE) that is useful for the inventory of road safety under the Highway Safety Improvement Program (HSIP). The FHWA issued a final rule on March 15, 2016, establishing the minimum subset of MIRE roadway data elements to be collected. This data could be useful in combination with NTTFI, ARNOLD, and crash data for conducting national, regional, and tribal safety studies. There may be opportunities for the NTTFI and ARNOLD data sets to be integrated. If a link is established between the data sets, then GIS-based safety studies could focus on the roads that are of interest to Tribes. The FHWA can partner with the BIADOT to investigate opportunities to link these databases.

B. Crash Data Collection Standards

The MMUCC is a guideline that presents a set of data elements that should be used for describing a motor vehicle crash. The MMUCC Guideline is based on two other data standards, American National Standard Manual on Classification of Motor Vehicle Traffic Accidents (ANSI) D16 (for classifying motor vehicle traffic crashes) and ANSI D20 (for promoting uniformity in the transmission of records between jurisdictions) (MMUCC, 4th Edition, 2012). The use of MMUCC data elements generates data that can be employed to make more informed decisions which will lead to improvements in safety at the national, State, local, and tribal levels. States and Tribes are encouraged to adopt as many recommended MMUCC data elements as possible when they next update their Police Crash Report forms.

Through MAP-21 implementation, all States are now required to report serious injury crashes using a single, national definition and coding convention titled "Suspected Serious Injury (A)" as defined by MMUCC 4th Edition. This is the only mandatory MMUCC data element.
The fourth edition of the MMUCC guidelines is the most current available version. This standard includes 77 crash factors that should be recorded on-scene. Another ten data elements can be derived from the on-scene information. Finally, it is recommended by MMUCC that 23 additional data elements be obtained through linkage with other databases.

C. Crash Data Quality

The USDOT defines the quality of crash data in six attributes: timeliness, accuracy, completeness, uniformity, integration, and accessibility. An assessment of an individual database should consider these six factors. This report will address these six items in general terms based on the survey responses but it is important to note that the crash data situation for each Tribe will be unique. Each of the six data quality attributes are defined as follows:

- ***Timeliness:*** Information should be available within a specific timeframe to allow for meaningful analysis of the current status of the issue under investigation (e. g., the number of injury crashes at a specific location within a limited timeframe).
- ***Accuracy:*** Information within the database should be correct and reliable in describing the data element it purports to describe. Accuracy is typically enhanced through the practice of conducting consistency checks and validations on the data being entered into the database.
- ***Completeness:*** Information within the database should be complete in terms of all reportable instances of the event/characteristic being reported and available within the database, and all required data elements within the record should be completed with appropriate responses. Completeness is also typically enhanced through the practice of conducting consistency checks and validations on the data being entered into the database.
- ***Consistency/Uniformity:*** Information collected should be consistent among all reporting jurisdictions using the same reporting threshold and reporting the same information on a standard data collection form(s). Ideally, information will be reported using nationally accepted and published guidelines and standards such as the MMUCC.
- ***Integration:*** By using common data elements, information in one database should be capable of being linked with information from other databases. Common examples of integration are the linkage of crash data with roadway linear referencing systems (maps), driver's license databases, and vehicle databases.
- ***Accessibility:*** Information within the database should be readily available to all eligible users of the information. Without the sharing of crash data between government entities it is difficult to obtain a complete data set. This is particularly true in areas where multiple enforcement agencies may report on crashes. (NHTSA, October 2015) (Pollack, Boodlal, J.Emery, & Souleyrette, 2010)

This report finds that the quality of crash data readily available to tribal governments is generally poor. However, the agency which is reporting crash data greatly influences the quality of the data obtained. Table 1 summarizes crash data quality for the most common crash data collection scenarios in tribal areas.

A tribal government may have law enforcement services provided by multiple entities. Law enforcement jurisdiction in tribal areas can be complex and may vary depending on road ownership, political boundaries, or tribal enrollment status of the individuals involved. It is important to understand the variety of law enforcement providers because each entity may handle crash data in a different manner and various agencies may report crashes to separate databases for any one tribal area.

One of the determining factors for law enforcement service providers in tribal areas is the status of each Tribe under Public Law 83-280 (P.L. 83-280) which transfers jurisdiction over criminal and civil matters from the Federal Government to some State governments. This law was enacted in 1953 and at the time only applied to most Tribes located within five States. Since that time, additional Tribes have entered into P.L. 83-280 status or had a similar transfer of civil and/or criminal jurisdiction from Federal to State government. The P.L. 83-280currently applies to at least some of the Tribes in 23 of the 35 States with tribal areas. The P.L. 83-280 currently does not apply to any Tribes located in Wyoming, Virginia, South Dakota, Oklahoma, North Carolina, New Mexico, Mississippi, Michigan, Louisiana, Arizona, Nevada, and Alabama (Good, 2016). Traffic collisions are typically a civil matter covered under P.L. 83-280 but can become a criminal matter when vehicular assault, vehicular homicide, or other criminal charges are involved.

Although Federal jurisdiction is transferred to States by P.L. 83-280, Tribes continue to have concurrent jurisdiction over civil and criminal matters for tribal members. As a result Tribes in P.L. 83-280 States also have the authority to develop courts and law enforcement departments.

	Timeliness	Accuracy	Completeness	Consistency Uniformity	Integration	Accessibility
BIA Law Enforcement IMARS narrative only	Immediate in IMARS; significant delay for State databases	While the information is accurate it will often not include desired details; Location accuracy often difficult to ascertain.	Does not capture all desired data	Standard data elements often not captured	No integration	Very difficult to access or search
BIA Law Enforcement IMARS with DOI Crash Form	Immediate in IMARS; some delay for State databases	Accuracy typically not evaluated	Completeness not typically evaluated	MMUCC Compliance	DOI crash forms will be linked to IMARS where additional information about an event may be housed.	Not yet accessible but DOI project will add this capability. DOI intends to share data with FARS; Uncertain of sharing with State databases.
BIA Law Enforcement IMARS with State Crash Form	Immediate in IMARS; normal delay for State databases	Accuracy typically not evaluated; State may ask for corrections if report does not pass validation	Completeness may be checked if State software is being used.	MMUCC Compliance	Optimal use of IMARS because of full integration with State data; may include linkage to road and injury data.	Typically accessible through State
Tribal Law Enforcement using Tribe's Database	Typically some lag due to supervisor review	Varies	Varies; standalone databases are often incomplete as they do not capture crashes reported by other agencies (State, county, city)	Varies	Varies	Varies; Tribe typically has access but others do not.
Tribal Law Enforcement using State Crash Form	Typically some normal lag due to supervisor review; often no sharing with State databases	Typically supervisor checks completeness and must pass database validation	Typically supervisor checks completeness and must pass database validation	MMUCC Compliance	Integrated if tribe shares reports with State; use of State form does not obligate sharing.	Typically accessible through State or tribe
State and County Law Enforcement	Typically some normal lag due to supervisor review	Typically supervisor checks completeness and must pass database validation	Typically procedures in place to evaluate completeness but often willing to accept partially complete reports as long as critical details are provided.	MMUCC Compliance	Typically reports are submitted directly to the State database	Typically accessible through State

Table 1. Summary of Data Quality by Data Source

1. Federal Bureau of Investigation (FBI)

For some Tribes in non-P.L. 83-280 States, the FBI may conduct an investigation when a crash appears to result in serious injury or death. When the FBI conducts an investigation, it does produces a detailed narrative report. However, FBI is not usually the first responder and is not always on scene to investigate. Thus, completing a standard crash report form would still be the responsibility of the other responding law enforcement agency (BIA or tribal police). This is similar to the way in which many State police operate. The primary crash form is completed by the responding officer but further investigation may be conducted by a crash reconstructionist or investigator and documented in a separate report. A long-standing Memorandum of Understanding exists between BIA-OJS and the FBI that determines which entity will generally be assigned an investigation.

2. BIA Law Enforcement

Several survey respondents indicated that BIA did not share crash data with the State or Tribe except on a case-by-case basis for ongoing investigation or adjudication. Others report that some BIA Law Enforcement Services agencies are using a State crash form and submitting that document to both the State crash database and IMARS.

While nationwide studies on crash data availability are limited, one study conducted on the Wind River reservation identified a significant lack of crash sharing between BIA Law Enforcement Services and the Wyoming DOT. The study determined that data was only available on six roads on the reservation. Further, the study shows 32 percent of the reported crashes did not have sufficient information to determine the crash location. (Shinstine D. S., 2013)

While crash data available from BIA-OJS may be adequate for law enforcement purposes, many Tribes and States have had difficulty gaining access to that data and have found the reports may not be of the necessary quality to be useful from the perspective of engineering and planning studies. The BIA law enforcement officers are required by BIA-OJS to record all incidents with an incident description in IMARS.

The process for crash reporting varies from one BIA Law Enforcement agency office to another. There are three known practices in place: IMARS narrative only, IMARS using DOI Crash Report form, or IMARS using State Crash Report form. The data produced by each of these BIA IMARS practices differ in quality according to the six FHWA/NHTSA crash data quality attributes that were introduced previously. Each of the three known crash data collection practices utilized by BIA Law Enforcement Services will be discussed separately below.

a) IMARS Narrative Only

For some BIA Law Enforcement Services agency offices, the policy is to only complete a narrative incident report in IMARS. These reports contain several standard attribute fields that are applicable to a police report for any type of incident, with the rest of the documentation being purely narrative. Among the three BIA crash data collection methods examined, this is the least useful for safety planning purposes because there is no consistency and conclusions on crash trends would be very difficult to extract.

Data from IMARS narratives is not available in any crash database unless another agency also responds and completes a report or significant post-processing is done to transfer the report to a crash database. It is common for BIA Law Enforcement to call on another agency, typically State law enforcement, to assist in investigation and reconstruction of fatal and serious injury crashes. This results in more complete reporting of fatal and serious injury crashes to State and national databases than those that are less severe (Huft, 2008).

The Standing Rock Sioux Tribe realized the importance of sharing crash data with the North and South Dakota State DOTs. The BIA is the primary enforcement agency on the reservation and uses a different electronic crash reporting system than the States. The BIA's narrative crash reports in IMARS are not readily compatible with the States' Traffic and Criminal Software (TraCS) systems, and to release the reports, the BIA also needs an approved Freedom of Information Act (FOIA) request. The Tribe partnered with BIA Law Enforcement and the State Highway Safety Offices to arrange transfer of the IMARS reports into TraCS. The process involved the Tribe writing a FOIA Routine Use Agreement for the release of the reports, BIA Law Enforcement staff printing each of those reports and releasing them to the Tribe's Traffic Safety Coordinator, and the Tribe's Traffic Safety Coordinator manually translating them into the TraCS system. The States provided the TraCS software and offer training and technical support to the Tribe's Traffic Safety Coordinator. While the procedure could be more efficient, the effort is laudable to ensure complete crash data is then available in a format that is useful for safety programs and analyses.

As stated previously, the process for crash reporting varies from one BIA agency office to another. The data produced by when only IMARS narrative reports are used to record crashes is evaluated below according to the six crash data quality attributes previously identified.

- **Timeliness**
  - Reports are submitted directly into IMARS when an officer completes them. The reports are available to BIA in IMARS almost immediately. Incidents are tracked from initial entry through final investigation.
- **Accuracy, Completeness, and Consistency/Uniformity.**
  - The interviews and surveys completed for this report did not identify any procedures by which BIA IMARS narrative reports are being checked for accuracy or completeness.
  - When the incident is recorded only by narrative, the accuracy and completeness cannot be evaluated because there is a limited set of information being collected. In addition, it is extremely difficult to integrate narrative reports into a usable database format. The uniform information collected in this format usually includes: incident time/date, reported time/date, people involved (name, gender, birthday, address, driver's license number), addresses involved, vehicles involved (year, make, model, registration, VIN), and type of accident i.e., (property damage only, injury, or fatality). All additional information is in the form of a narrative written by the reporting officer and the dispatcher.
  - The Standing Rock Sioux Tribe recently evaluated 2015 data collected by BIA Law Enforcement in an effort to share that data with the State of South Dakota's database. The comparison between the BIA narratives and the State crash report

form concluded that many elements must be marked “unknown” in the State system.
The effort found that although officers are trying to be descriptive, they often leave out details that are not intuitive if the form does not prompt them. This includes information such as latitude/longitude, relation to roadway, intersecting street names, harmful event info, weather conditions, light conditions, road conditions, driver behaviors, occupant protection use, and other data elements that would be captured on a MMUCC compliant crash form.

- **Integration**
  - No integration currently exists between the BIA IMARS narrative reports and any other data sets.
- **Accessibility**
  - According to the surveys and interviews that were conducted, crash data collected by the DOI is generally not accessible by other organizations or can only be obtained after following an arduous process. This topic is discussed further later in this report.
  - Narrative reports are filed using general categories that do not serve well when trying to retrieve data. The BIA provided 2014 crash data from IMARS where each individual event was categorized by either crash severity or contributing factor, not both. For example, one crash might be categorized as "Accident investigation – Injury” while the next is categorized with no mention of severity as “Accident Investigation – DWI.”

b) IMARS using DOI Crash Form

The IMARS recently added the ability to collect uniform crash criteria using the DOI Investigator’s Traffic Crash Report form (herein “DOI Crash Report”). A copy of this form is included as Appendix A. Although the DOI crash report can be used, it is not mandatory for all BIA law enforcement officers. Some agency offices are requiring officers to use the report while others are not. A coding guide for the form was not immediately available, but the crash criteria being collected appear to be at least partially compliant with MMUCC standards.

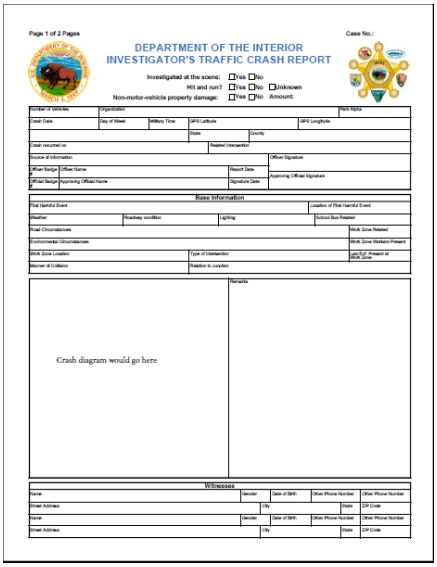

Figure 2. DOI Investigator’s Traffic Crash Report Form (see Appendix A)

Below is an evaluation of the data produced by the DOI Crash Reports according to the six crash data quality attributes previously identified.

- **Timeliness**
  - Reports are available in IMARS immediately after being completed by an officer.
- **Accuracy**
  - The interviews and surveys completed for this report did not identify any procedures by which DOI crash reports were checked for accuracy. A guidebook or training could be developed to assist officers in understanding the intended use of the crash form.

- **Completeness**
  - All fields are optional on the form. However, use of the form is anticipated to produce much more complete descriptions of the incidents than the narrative method previously described because the officer is being prompted to report on uniform crash criteria.
  - The report does allow for a narrative description of the incident and the creation of a crash diagram.
- **Consistency/Uniformity**
  - The DOI crash form uses uniform crash criteria that are substantially compliant with the MMUCC standard. This should result in some uniformity between State data and BIA data. However, when different forms are used by different agencies, the result can be that the same criteria is interpreted differently when it is intended to collect the same uniform data. The continued use of State crash report forms may be preferable to the DOI crash form and States may be able to write software that provides regular updates to the DOI database if that is desired.
- **Integration**
  - The DOI crash form is not integrated with other data sets such as driver, vehicle, or linear referencing systems.
- **Accessibility**
  - Crash data collected by the DOI is generally not readily accessible by other organizations. This topic is discussed further later in this report.
  - The BIA-OJS indicated that no database is currently available which would assemble the uniform data fields from all crash reports into a tabular format.
  - The BIA-OJS also indicated that no integration between the DOI crash report form and state crash databases currently exists.
  - Institutional barriers and staff availability to retrieve crash data may still need to be addressed to permit timely sharing of crash data with Tribes and States.

c) IMARS using State crash form

Some BIA Law Enforcement Services agency offices complete a State crash report form and then simply upload an electronic copy as an attachment to their entry in IMARS. Using this approach to crash data collection allows the BIA to share crash data with the State database while simultaneously fulfilling the requirement to report in IMARS. This approach currently results in the highest quality crash data collection by BIA Law Enforcement.

It is unclear if this method of crash data collection will continue to be allowed or if all BIA Law Enforcement Services Agencies will be required to transition to using the DOI crash form. At this time, this is the best practice available for the collection and sharing of crash data by BIA Law Enforcement in a way that is available for safety studies.

Finally, the data that is produced when BIA Law Enforcement officers use a State crash form is evaluated below according to the six crash data quality attributes that were previously identified.

- **Timeliness**
  - As with the other IMARS methods, the data is available immediately in IMARS. If State crash forms are being provided to the State then normal delay would occur in validating or entering the information into the State database. Additional

delay can occur if the State rejects a report or requests clarification due to incompleteness or validation issues.

- **Accuracy**
  - Typically BIA officers submit their data to IMARS without supervisory review. However, State DOTs have completeness and data validation procedures in place to ensure that the crash reports contain sufficient and logical information.
- **Completeness**
  - As mentioned there are benefits of the State database checking for completeness of the required fields on individual reports. In addition, the use of the State crash form enables the statewide databases to be complete with reports from all law enforcement entities.
- **Consistency/Uniformity**
  - All State crash forms collect crash criteria that are at least partially compliant with MMUCC. When all reporting law enforcement agencies use the same form, there are additional enhancements to the consistency.
- **Integration**
  - Integration with other data sources (such as driver's licenses, vehicle databases, and linear referencing) should typically be available if BIA Law Enforcement officers are able to use the State's crash reporting software. For example, many State electronic crash reporting systems are integrated with a mapping solution that allows precise identification of crash locations and may even aide in the development of a crash diagram. In some instances, BIA Law Enforcement Services agency offices have been unable to benefit from integrated State software due to information technology security protocols.
- **Accessibility**
  - All 18 State governments that responded to a survey question asking about tribal access to crash data in the statewide database indicated that there is a process by which Tribes can obtain data from the statewide database. Some States also indicated that they have analysis tools which Tribes could use. Some of these are computer systems that the Tribe can access directly via a website or software. Others require a written request be sent to the State. In some cases, automated reports can be generated for Tribes from a State database on a regular, reoccurring basis. Tribes with BIA Law Enforcement that are using the State crash report form should be able to obtain crash statistics for the tribal area from the State crash database or BIA.

3. Tribal Police

Tribal governments most commonly establish police departments through a self-determination contract (Public Law 93-638) with BIA-OJS. Others in law enforcement are employed directly by the Tribe. Tribes create police departments for many different reasons and in some cases the responsibilities of these officers do not cover motor vehicle crashes. However, many tribal police departments do respond to and report on motor vehicle crashes. The methods used by Tribes to collect crash data vary greatly. The observations below are the results of the survey that was conducted for this project. This does not necessarily represent all tribal police departments.

Seventy-two of the responses to the survey indicated that the responding Tribe had a tribal law enforcement department. Of these, 63 percent indicated that they do not share crash reports with the State DOT. Some respondents indicated that crash reports are only shared with the State when the crash occurs on a State-owned road.

Some tribal police departments indicated that they do not have a crash reconstructionist on staff and rely on other law enforcement agencies (typically State police) to conduct the crash investigation when a fatality or serious injury occurs. This can result in higher severity crashes being more likely to be reported to statewide databases than lesser severity crashes. Several Tribes further indicated that they intend to train officers in crash reconstruction so that all crash investigations could be handled in-house.

Tribal police may have limited authority for various reasons. In the optimal situation, law enforcement officers are cross-deputized with tribal, State and county law enforcement which provides the authority to also enforce State and local laws. In addition, a cross-deputized officer can take action with traffic law violators regardless of tribal membership or reservation boundaries, and may be able to more readily utilize State crash reporting systems. Several survey participants indicated that tribal and BIA police are unable to enforce traffic law violations with individuals who are not members of a Tribe. One tribal police department provided this comment: *"[Tribal police are] not allowed to pursue offenders beyond the reservation boundaries. Offenders know this now and run recklessly and at high speeds for the reservation line.*"

Tribal police departments are not required to share crash data with any other government and often avoid sharing data due to a variety of concerns which are addressed later in this report. The result is that the State and national databases which drive policy, program, and project decisions are incomplete in tribal areas. Without complete data sets, it is difficult for State and Federal programs to make informed decisions about programs and projects which have the potential to improve transportation safety for tribal governments. State-managed Federal funding sources, such as the Highway Safety Improvement Program (HSIP), require a data-driven process be followed to identify programs and projects to be implemented. The HSIP specifically requires the inclusion of tribal roads in the data-driven process. However, if crash data is not shared with the State, then safety data in analyzed tribal areas inaccurately appear to have the safest roads in the State and therefore may be overlooked when program and project decisions are made.

One example of crash data not being shared occurs on the Salt River Indian Reservation in Arizona. The Salt River Police Department collects all crash data unless the incident occurs on a State-owned roadway. The Salt River Police Department does not share crash data with the State of Arizona. A comparison of fatal crash dates and locations between FARS and data provided by tribal police confirmed that between 2010 and 2014, six fatal crashes occurred on the reservation that were not recorded in FARS.

Similar significant under-reporting of fatal crashes occurred on the Colville Indian Reservation in Washington. A study looked at fatal crash locations between 2007 and 2013 to determine completeness of crash reporting on the reservation. Sixteen fatal crash sites were identified by

the study, with six of those fatal crash sites being undocumented in FARS, State, and tribal police crash databases. Interviews were conducted with the families of the crash victims to obtain an understanding of what occurred in these six cases and to confirm that the crashes occurred during the study time period. (Amundson, 2015)

As a third example, from 2011 to 2013 the Rosebud Sioux Tribe Law Enforcement Services recorded 421 injuries and 18 fatalities from motor vehicle crashes. During the same time period, the South Dakota DPS database shows 12 injuries and one fatality resulting from motor vehicle crashes. These differences in data highlight the lack of data sharing that is occurring between the Tribe and the State of South Dakota. (KLJ, 2014)

As done previously with other sources of crash data, the following is an evaluation of crash data collected by tribal police according to the six FHWA/NHTSA data quality attributes.

- **Timeliness**
  - Crash data can be available in a database as soon as an investigation has concluded.
  - Some tribal governments have a supervisor review or data entry process that must be completed before their crash reports are entered into a database.
  - For Tribes that have opted to use software provided by State governments, the availability of crash reports can be delayed if a report is returned to a Tribe because it is incomplete.
  - Some Tribes do not utilize any type of crash report database.
- **Accuracy**
  - Tribes were asked about the training provided to officers on crash reporting. The majority of Tribes indicated that basic training had occurred through a police academy, on the job training, or regular trainings regarding completing the State crash form. Some Tribes have officers who have received advanced training in crash reconstruction, while several other Tribes indicated an interest in training their officers in crash reconstruction. In many cases, State law enforcement is called when a crash involving serious injury or fatalities occurs. In these cases the Tribe usually does not have a crash reconstructionist on staff to handle the investigation. The level of crash investigation training can influence the accuracy with which crash forms are completed.
  - Tribes were asked if a process was in place to evaluate the accuracy and completeness of crash data in the crash database. While 45 percent of the Tribes with police departments responded that they were uncertain on this question, another 38 percent indicated that some method was in place.
  - In addition, for the Tribes that share crash data with State governments, the crash report often undergoes additional checks for completeness and accuracy. Eighteen States indicated that a data quality process was in place for the State crash database. Most States indicated that reports submitted to their database undergo a validation check to ensure that critical fields are completed and that the coded information passes logical tests.

- **Completeness**
  - Survey responses indicated that 70 percent of the respondents with tribal police departments had a policy in place for supervisors to review crash reports to ensure all data elements were completed.
- **Consistency/Uniformity**
  - In some cases (20 percent of survey respondents) no crash report form is used and a narrative incident report is completed in the same fashion as would be done to document any other law enforcement incident.
  - Many Tribes (80 percent of survey respondents) are using a partially MMUCC compliant crash report form that is the same or similar to the crash report used by a State law enforcement agency.
- **Integration**
  - Tribes were not surveyed on integration with other data sets. It is known from the State survey responses that Tribes using electronic State crash reporting systems are able to take advantage of integration with other data sources such as driver licensing databases, vehicle records, and linear referencing systems (maps).
- **Accessibility**
  - A question was asked on the survey "Does your Tribe share crash data with the State?" In nearly equal proportions, Tribes indicated that they share no data, share all data, or share some data with a State. (42 percent do not share, 20 percent share some data, and 38 percent share all crash reports). Common barriers to crash data sharing are covered later in this report.
  - Another study conducted in 2015 found that only 25 percent of the participating Tribes shared crash data with a State agency. (Noyce, 2015)
  - Tribes that are sharing only some data indicated that crash data sharing occurs in one of two situations. The first is when a State or county road is involved. The second is when a crash appears to be a serious injury or fatal crash and an expert crash reconstructionist is needed.
  - Tribes that share all crash reports may still redact some portions of the report such as enforcement action and personal identifiers.

4. State and County Law Enforcement

State or county law enforcement are sometimes responding to crashes in tribal areas either as a routine part of their duties, because a crash occurred on a State or county roadway, or when invited by BIA or tribal law enforcement to participate in an investigation of a crash that appears to be resulting in serious injury or fatality.

All State governments have a central database where crash reports are housed. In most cases, county law enforcement follows the crash reporting procedures established by the State. All of the States that responded to survey questions about crash data collection indicated that county law enforcement reports to the statewide crash database. This report assumes that county law enforcement crash reporting is similar to the State procedures.

As done previously with other sources of crash data, the following is an evaluation of crash data collected by State and County Law Enforcement according to the six FHWA/NHTSA data quality attributes.

- **Timeliness**
  - During the survey, most States indicated there was a policy in place which sets a timeframe for the submission of crash reports but that there is no penalty for late reports. The timeframe varied from 24 hours to 30 days. The most common policy is to have crash reports submitted within 10 days of the incident.
- **Accuracy**
  - State law enforcement agencies typically have an officer trained in advanced crash reconstruction and also conduct regular refresher training on crash reporting for all officers.
  - All States responding to the survey indicated that quality assurance and quality control procedures are in place to ensure the accuracy and completeness of crash reports.
- **Completeness**
  - Many States indicated that their officers are using crash reports which require critical fields to be completed, thereby ensuring at least a minimum level of completeness.
  - In some States, reports are not recorded in the statewide database when they occur in tribal areas, but are instead treated as if the crash occurred on private property.
- **Consistency/Uniformity**
  - All States have a crash report that prompts officers to complete uniform crash criteria fields that are at least partially compliant with MMUCC.
- **Integration**
  - Although not specifically reviewed by the survey some States did volunteer information indicating that their crash reporting software is integrated with driver's licensing databases, vehicle records, or linear referencing systems (maps).
- **Accessibility**
  - Most States indicated on the survey that there was a process by which tribal governments (and other governments) could request crash data from the statewide database. In some cases, there is software available that a tribe could obtain to view crash data. In other cases, State crash data is available on a public website with personal identifiers removed. No matter the procedure, in all cases there is a process by which a Tribe could obtain crash data reported by State police for the tribal area.

In California, a P.L. 83-280 State, absent a specific contract or request, the California Highway Patrol (CHP) investigates collisions on Federal tribal lands only if the collision occurs on State or county maintained roadways within Federal territorial boundaries. Collisions occurring on State or county maintained roadways on Federal tribal lands are classified by CHP policy as reportable and subject to regular collision reporting requirements. Collisions occurring on federally maintained roadways are classified as non-reportable collisions and are not subject to regular collision reporting requirements.

When non-reportable collisions are investigated, the Primary Collision Factor is coded as Other Improper Driving unless the driver is under the influence of alcohol or drugs. A solution to this gap in collision data will soon be deployed whereby CHP Commanders will consult with each tribal government and offer to document future collisions through a formal traffic collision

report. Data generated from collisions occurring on federally maintained roadways would be collected and archived by the CHP and separated for future discretionary use. Non-reportable collision data would be stored in a CHP database and not forwarded to the Department of Motor Vehicles for administrative purposes.

Alaska is also a P.L. 83-280 State where motor vehicle crash response is a concurrent responsibility of the State. However, the vast roadway network and sparsely populated areas present challenges for law enforcement coverage by the Alaska State Troopers. A Road Safety Audit of Alaska's Elliott Highway that was conducted in 2013 identified through a public meeting that the community was aware of a fatal crash site which was not documented in the statewide crash database. It is unknown how many other motor vehicle crashes go unreported in Alaska. In addition, many Alaska Native villages face unique transportation safety issues related to winter trail, board road, marine, and ice road travel for which data collection systems do not currently exist on a statewide basis.

VII. Crash Data Collection and Sharing: Barriers and Opportunities

In the previous section there are several references to the sharing of crash data with statewide crash databases. All of the States that responded to the survey indicated that a process was available whereby tribal and BIA law enforcement could share data with the statewide database. However, as stated previously, in many cases tribal police and BIA law enforcement do not share crash reports with the State. Without high quality crash data collection and analysis, it is difficult to determine the most effective projects and programs to implement and even more difficult to acquire funding for these activities.

The Gila River Indian Community of the Gila River Reservation developed a transportation safety plan in 2014 and has established a crash data sharing process. Because crash data has been shared with the State of Arizona, Gila River's planning efforts were able to benefit from a detailed data analysis performed by Arizona DOT at no cost. The data analysis helped the Tribe determine the crash factors that should be addressed by the plan (Gila River Indian Community Department of Transportation, 2014).

Despite the benefits of crash data sharing, there are several barriers that were identified by Tribes and States which inhibit the sharing of crash data between some Tribes and States. These barriers include tribal-state communication, resources required to collect and share crash data, and Federal policy for crash reports.

A. Paperless Data Collection Options & Best Practices for Tribes

There are a variety of options for paperless reporting of crash data. Various software packages offer the ability to submit crash reports electronically from mobile or desktop computers to a central database. In many cases, these software packages may be available from a State agency under a statewide license that allows use by all law enforcement entities within a particular State at no software cost to a Tribe.

For some Tribes, electronic crash reporting may not be practical if there are a low number of crashes occurring on a small roadway network. This data is still critical to collect, but the method must be appropriately scaled for each situation. In cases where elaborate electronic

crash reporting systems are not practical, it may be possible to coordinate with a State government to complete paper crash report forms, submit them to the State, and then obtain the crash data electronically from the State at a later date. This can have the added benefit of obtaining crash information from the State database which was entered by law enforcement entities other than tribal police.

The specific solution that a Tribe should select depends on a number of factors. Tribes interested in improving crash data collection and/or sharing is encouraged to develop an action plan using the self-assessment method described in NCHRP Report 788. The action plan can then guide the process, assist in establishing communication with safety partners such as State and local governments, and be a basis for requesting funding assistance from the grant sources identified later in this report. The guide can currently be found at http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_788.pdf

Some electronic crash report collection software allows the user to perform various data analysis tasks with relative ease. Many statewide databases have these analysis capabilities built-in and the tools are often freely available to the governments who are reporting data using these electronic solutions.

Arizona is making efforts to have all law enforcement agencies send crash data electronically to the State. The State has purchased access to the TraCS software that they can share with all law enforcement agencies within the State of Arizona. The software is available to governments at no cost. Use of the TraCS Program software does require the tribal and local law enforcement to cover costs for computer hardware and staffing capacity to oversee management of the crash data collection and sharing processes before it is transferred to the State database. Although complete reports are preferred, tribal governments and local agencies can redact personal identifier information from their crash reports. To help in this effort, the Arizona DOT Traffic Records Section developed a template of the State crash report form that highlights the data elements (less personal identifiers) that represent the minimum data that a report must contain so that it can go into the State database.

Similarly, Nevada is implementing a new electronic crash reporting system known as Brazos. The State has a five-year plan to make the system available to all law enforcement agencies in the State. Tribes will be invited to use and share their data as part of the new system. The State is planning to provide all required hardware and software but will consider prioritizing those enforcement agencies that offer to purchase their own computer hardware. One Tribe has already been successfully set up in the new electronic crash reporting system. This Tribe has agreed to share all crash data with the State and has the ability to use analysis tools available in the State system.

Currently, Tribes may opt to develop their own crash report databases and not share the information with other governments. In these cases, it is still advantageous to collect MMUCC compliant crash data because the data elements that are collected ensure high quality data that can be used by the Tribe for a variety of reasons. In addition, for a complete picture of the crash history, the Tribe may need to combine its data with crash information from overlapping

jurisdictions. This is most readily accomplished when both agencies are collecting the same set of standardized data elements.

When a solution for electronic crash reporting is chosen by a Tribe, the following factors may be evaluated:

- Accessibility for combining with State and local data – both for sharing and analysis.
- Ability to query all crash data in a tabular format.
- Ability to pull individual reports at the Tribe.
- Ability to redact data elements before sharing, if desired.
- Consideration of staff time to manage database.
- Availability of training opportunities.
- Ability to record data offline if connectivity is an anticipated issue.
- Collection of standardized data elements (consider MMUCC standard).
- Diagraming capabilities for officer's in-field.
- Quality control capabilities that allow supervisor review and logical validation (for example, if rain is present and pavement cannot be dry).
- Analysis capabilities.

B. Tribe-State Communication

The most common reason provided by Tribes and States to explain why crash data is not shared is tribal sovereignty. As sovereign nations, tribal governments are not required to share crash data with State government agencies. However, many tribes have found ways to ensure tribal sovereignty is respected while still benefiting from the sharing of crash data. While tribal sovereignty allows Tribes to choose what data they are willing to share, the reasons for not sharing crash data are often more complex than asserting tribal sovereignty. Instead, several survey participants indicated that sovereign status is used to prevent sharing of crash data because of a lack of communication about how the data will be stored and used, concerns about privacy and adjudication for tribal members, and uncertainty in how the Tribe can benefit when crash data is shared.

These barriers can be addressed if Tribes and States better establish two-way communication about transportation safety and crash data improvements. These discussions can start at the staff level with tribal employees and State employees assessing the current situation and determining what future improvements would be beneficial. Then the State government employees could be invited by tribal staff to speak with leadership about their concerns and the benefits of crash data sharing.

Several Tribes who do share crash data with the State indicated that personal identifiers and citation/conviction information is redacted from crash reports before they are provided to the State. Several States identified that communication with tribal governments has resulted in modification of policies such that personal identifiers, citations, and conviction information are not shared. Other States indicated that redacted reports could be received if communication occurred identifying the barrier. The survey response from one State indicated:
"This [State agency] will accept any electronic [crash data] from any tribal agency because the information is critical to people's well-being and safety."

Through communication, additional concerns that Tribes may have about the sharing, storage, and use of crash data can be identified and incorporated into Memorandums of Agreement. For crash analyses that are critical to safety planners, program managers, and project engineers, it is not critical to identify individuals involved in crashes but rather to understand the factors which contribute to the occurrence of crashes.

As part of the communication with tribal leadership, it is imperative that the benefits of sharing crash data be conveyed. Some of these benefits include:

- State-provided crash data analyses to support the Tribe's safety plans, projects, and programs.
- Availability of information to support tribal grant applications.
- Enabling the State to include tribal areas in funding programs that require data-driven decisions such as the federally funded Highway Safety Improvement Program.
- Improved ability to retrieve reports when attempting to recover damages to tribal property.
- Acquiring assistance from the State in analyzing crash contributing factors and problem locations.
- More effectively identifying and addressing transportation safety issues.
- Enabling the generation of regular reports to tribal council on crash trends.
- Crash report quality control and data validation procedures established in the State reporting software and database.
- Inclusion in complex statewide analyses.

One tribal DOT in Arizona worked with the local council of governments to compare crash data available from tribal law enforcement with the statewide database. Upon realizing how incomplete the statewide database was for the reservation, the tribal DOT began conversations with tribal leadership and the State to improve the sharing of crash data collected by tribal law enforcement. As a result, the tribal DOT is now implementing several million dollars of grants (from the State-managed Federal program known as High Risk Rural Roads) in cooperation with the State DOT to address critical safety needs on the reservation with the expectation that fatal and serious crashes will be reduced significantly in coming years.

Also, strategic planning efforts for 2016, the Washington Traffic Safety Commission's Tribal Traffic Safety Advisory Board determined its number one priority was improving data in Indian Country. As a result, the Advisory Board produced a 10-minute video, *Recording Our Past, Protecting Our Future*, which encourages tribal data collection and sharing: http://wtsc.wa.gov/programs-priorities/tribes/ or https://www.youtube.com/watch?v=VDrTQNLH2-g . Another project was the establishment of a Work Group, comprised of tribal and State representatives, to make contractual and technology changes to Washington's electronic ticketing and crash reporting system that will meet the Tribes' needs regarding sovereignty issues. Additionally, this prioritization of tribal data in Washington led to a significant expansion in the "Tribes and Target Zero" chapter of Target Zero®, Washington's Strategic Highway Safety Plan. The chapter update, led by tribal representatives, has one of Target Zero's more complex data schemas. (FHWA, 2016)

In addition, Tribe-State communication in Wisconsin has been effective at changing the way in which Tribes are asked to share data with the State. Tribes now provide crash data to a third party, the University of Wisconsin. The university purges personal identifiers from the crash data before sending it to the statewide database. This provides additional separation between the raw crash data and the statewide databases. This additional separation adds assurance that State agencies cannot use the personal identifiers contained within the raw crash data in a negative way.

States are now required to collect and submit performance measure information to FHWA on: number of motor vehicle crash-related serious injuries and fatalities; and serious injuries and fatalities per vehicle miles traveled (VMT); and number of fatalities serious and injuries of non-motorized users. A final rule was published in the Federal Register on March 15, 2016, that requires States to establish and report on annual targets for each performance measure. States that do not meet or make significant progress toward meeting their targets must develop an implementation plan and must use a specified amount of HSIP funding only for HSIP projects. The rule also requires all States to report serious injuries using a single, national definition and coding convention: "Suspected Serious Injury (A)" as defined in the MMUCC 4th Edition. The key to States establishing safety performance targets is for stakeholders to work together to share data, review strategies and understand outcomes. States are encouraged to communicate with BIA and Tribes regarding efforts to improve the collection and reporting of fatality and serious injury data as well as efforts to improve data sharing. By working with BIA and Tribes, State DOTs can include BIA and tribal efforts in their considerations when establishing data-driven safety performance targets. The FHWA will work with State governments so they collaborate with BIA and Tribes and consider the impact of data that was not previously recorded in FARS and statewide data systems when establishing performance targets.

USDOT action will also be taken to encourage State governments to initiate or continue discussions with tribal governments concerning crash data sharing. The Traffic Records Coordinating Committees (TRCCs) are the NHTSA-led teams review State safety data on a regular basis (usually every 5 years or as requested by States). These reviews follow the Procedures Manual for State Traffic Records Assessments which contains 391 questions used to evaluate the safety databases of a State government. The manual does not contain any information about tribal governments and does not include assessment of tribal records (NHTSA, October 2015). The manual does mention local governments and individual States may have included Tribes in their assessment following the sections of the manual about local governments.

While Tribes are sovereign nations and public authorities they are not local governments. The Procedures Manual for State Traffic Records Assessments is expected to be updated in 2017 and the NHTSA will add consideration for tribal governments including evaluation of communication between the State and Tribal governments concerning traffic records.

C. Tribal Law Enforcement

Tribal law enforcement is encouraged to collect crash data using a crash report form with uniform crash criteria based on the MMUCC standard. In addition, Tribal law enforcement is

encouraged to share crash data with State crash databases directly or via a national clearinghouse, if established.

Because Tribes are sovereign nations and not sub-units of State governments, some Tribes may reject sharing crash data, even if personal identifiers are redacted, with State governments. When discussing traffic records improvements, FHWA and BIA OJS could discuss establishment of a national crash data clearinghouse which would give Tribes the option of reporting crash data to the clearinghouse in lieu of reporting to State crash databases. Similar to the arrangement in Wisconsin (see previous section), any crashes submitted to this national clearinghouse would be shared on a regular basis with State governments and FARS after personal identifiers and citation information were removed.

D. Resources for Crash Data Collection and Sharing

Once a tribal government has made the decision to share crash data, additional challenges may need to be addressed. These may include:

- Cost of software and hardware to collect electronic crash data.
- Cost of hiring staff to oversee crash data collection, management, and sharing.
- Inconsistency in crash report forms among tribal, county and State law enforcement.

There are several funding sources where Tribes may obtain the necessary equipment, software, and staff to collect and share crash data. Funding opportunities for crash data improvements are addressed later in this report. In addition, many States indicated that they would provide software and, in some cases, hardware to Tribes in support of crash data collection.

The MMUCC standard for crash data collection is described later in this report. Tribes are encouraged to review this standard when revising their police crash report forms and to consider the data elements being collected by enforcement agencies with overlapping jurisdiction. Developing a crash form that contains the MMUCC elements will help to facilitate safety analyses by planners and engineers as well as crash data sharing.

One State provided this anecdotal information: *"Unfortunately, tribal law enforcement may be using crash report forms that are not consistent with the State crash report form and they may often provide data in narrative format versus a codified format. Due to the time required to decipher/transfer that type of data into the database, not to mention the potential for error in transferring the information, the State may not be able to accept certain reports."*

E. BIA Crash Data Sharing

The crash data collected by and shared with State governments is critical to effective management of Federal funding programs which could benefit tribal areas. Many comments were received from States about the difficulty of obtaining crash data from DOI. The DOI-10 Privacy Act Statement for IMARS does allow sharing of crash data for "routine use" or under a FOIA request as long as personal identifiers are removed. However, even when "routine use agreements" have been established it can be very difficult to obtain the crash reports from BIA Law enforcement offices mainly due to staff availability to produce the reports. The survey received numerous statements from States and Tribes demonstrating that the lack of crash data

sharing from BIA Law Enforcement has been detrimental to Federal, State, and Tribal transportation safety programs. The following are direct quotes from the survey (redacted for privacy):

- From a State DOT: *We have been unsuccessful in getting … crash data that is managed and documented by the BIA. . . . For [one Tribe the State DOT] has requested [BIA] crash data to assist in support of seeking a traffic signal warrant … The Tribe has been unable to provide tribal crash data to [the State DOT].*
- From a State DOT: *[Tribes] want to do this [share crash data] but have been limited by the BIA.*
- From a tribal DOT: *Our local [BIA] office, for example, is very short-staffed, so even though we have this [routine use agreement] in place, it is sometimes hard to get printed copies of reports in a timely manner.*
- From a tribal DOT: *Tribe does not have access to any crash data gathered by BIA Law Enforcement Services.*
- From a tribal DOT: *BIA crash data should include the same information as the [State] system does, and redacted data should be exported to other agencies on a monthly basis.*
- From a State governor's highway safety office: *A huge sore point for FARS analysts is the low level to zero cooperation we receive from the FBI, BIA officers, and national park rangers. FARS is owned by a Federal agency and, it's infuriating that Federal law enforcement agencies refuse to give us crash reports. FARS analysts have to submit FOIA requests and eventually received heavily redacted reports.*

For Tribes that have crash data collected by BIA Law Enforcement Services, the barriers to crash data accessibility are different than with tribal police departments. Communication is encouraged between BIA Law Enforcement Services, affected Tribes, and the State to arrange crash data sharing. In some cases the BIA, Office of Justice Services, Operations Directorate may need to be involved to assist with arranging crash data sharing agreements.

A few barriers to crash data sharing were identified which may be resolved through clarifications of existing policy or BIA Office of Justice Services policy changes. The issues identified were information technology policies at DOI, inconsistent crash reporting policy, variations in interpretation of the Privacy Act, and staffing levels.

One barrier to the sharing of BIA crash data is the use of only narrative reports to collect crash information instead of using a crash report form with uniform crash criteria recorded for each crash. When crash data is received by States from the DOI, it is often in this narrative format and may not include enough information to be entered into the State database.

The information technology (IT) barriers primarily pertain to the use of State crash data collection software on Federal Government computers. Current BIA IT policy prevents the use of State crash reporting software on Federal Government computers. Use of State crash reporting software can have many benefits for database integration, crash data sharing, and safety data analysis.

Another identified barrier is that the interpretation of the Privacy Act requirements seems to differ from one BIA Law Enforcement Agency office to the next. In some cases, Tribes and States reported that BIA Law Enforcement has interpreted current policy to mean that they may not share crash data with tribal governments for planning purposes. In other cases, including the interpretation of the Operations Directorate at BIA-OJS, routine use agreements can be established between the BIA and Tribes or States. These agreements enable the sharing of crash data without personally identifying information on a regular basis. The collection of crash data on a standard crash form, such as the DOI crash form or State crash reporting software, would enable BIA-OJS to more readily provide the desired crash data and more quickly redact personal identifiers.

Finally, staffing levels at many BIA Law Enforcement Services offices are low. The retrieval of crash reports may not be a priority for staff because of the multitude of other issues that law enforcement must address on a daily basis. Here again, use of State or DOI crash forms could enable staff at a State or central DOI office to address all crash data requests.

F. Tribal Transportation Safety Grants

The FHWA Tribal Transportation Program Safety Funds, available for federally recognized tribal governments to improve transportation safety, will continue to accept applications based on any form of safety data. However, applicants using data other than police crash reports will now be encouraged to provide a plan showing how the applicant will achieve higher quality data for the future. The process described in National Cooperative Highway Research Program (NCHRP) 788 is one method Tribes could use to assess traffic records. Other options for assessing traffic records may be available by contacting the appropriate NHTSA region.

In 2001, a series of traffic records assessments were conducted at four reservations by the NHTSA Technical Assessment Team using a procedure similar to that used when assessing State traffic records. Each of those assessments produced a document that the Tribe could use to work toward higher quality safety data sets.

VIII. Uses of crash data

In general, complete and accurate data are needed to raise awareness about the magnitude of road traffic injuries, and to convince policy makers to support interventions that effectively address the highest priority needs for action. Reliable and accurate data are also needed to correctly identify problems, risk factors, and priority areas, and to formulate strategy, set targets, and monitor performance. Ongoing, data-led diagnosis and management of the leading road traffic injury problems enables appropriate action and resource allocation. Without complete data on where crashes are occurring and the factors contributing to the crash causation, we cannot be sure that investments to improve roadway engineering, enforcement, emergency medical services, and driver education are being applied where they will have the greatest impact. Without being able to analyze the causes of crashes, we cannot be sure that well-intended improvements in policy or public education programs will actually address the root of the problem. In other words, without better use of data, there will be no significant sustainable reductions in exposure to crash risk or in the severity of crashes.

Data relevant to road safety are collected every day in most countries, but for this data to be useful for informing road safety practices, it must be properly coded, processed, and analyzed in a computerized database system. (World Health Organization, 2010) In addition, there is a need for more capacity-building for data collection, data sharing, and data analysis at the tribal and local (county) level. In fact, the highest-quality crash data is typically found at the local level. Since this is the site of the original crash location and typically a local investigator takes the report, firsthand knowledge of the crash area and details are known and familiarity with the circumstances improves the ability to provide valuable intervention strategies. However, the agency that provides emergency response or does law enforcement may not be well connected with the agency with primary responsibility for improving the roads. In that case, there will be a gap between collecting the data and responding to it.

The information flow may not be working if another government is the emergency responder, or even between units inside a government. Tribes should seek to improve their access to crash data and improve and use the databases maintained by their departments and departments of the State(s) where they are located prior to seeking information from national databases as this firsthand knowledge provides for a more accurate evaluation of the problem. It also provides the autonomy to institute policies and programs at the grass roots level which allows any actions taken to be culturally and situationally appropriate and tested locally. The national databases are necessary but should be more useful in national-level studies and policymaking than for safety analysis by any one Tribe.

An illustration comes from a survey response from a Tribe in Arizona. It affirms the value of good data analysis for cost-effective interventions, but also points to the need for staff training and support:

> "*[The Tribe] in the past has not used crash data in this manner, because road maintenance was the responsibility of the BIA. [The Tribe], through the Office of Grants and Contracts (A 638 Program), has now developed a Strategic Safety Plan (SSP) and integrated the SSP in the [Long Range Transportation Plan] () Plan and update. We understand the importance of not just collecting crash data, but analyzing that data and*

targeting crash reduction strategies. Doing all of these things costs money and time. Staffing and knowledge in these areas needs to be developed within all tribal governments and the appropriate funding levels to accomplish these goals needs to be made available."

Road safety related data are used by a variety of stakeholders –law enforcement, transportation departments, health facilities, and insurance companies – as well as policymakers and transportation planners. Reliable data can be important in making traffic injuries a priority issue. This data can also be used to make the general public more aware of changes in behavior that will improve their safety. Road traffic crash data are crucial to identifying risks, developing strategies and interventions to address those risks, and evaluating the impact of interventions.

Analysis of complete and accurate crash data is extremely effective in providing strategies for the reduction of needless roadway crash fatalities and injuries. The following "data use" categories provide a summary but are not to be considered totally comprehensive.

A. Enforcement / Adjudication / Legislation

1. Adjudication & Insurance Companies

The most obvious use of crash reports is for adjudication for parties involved in an individual incident. Police, courts, insurance companies, and the involved parties all depend on an accurate account of the event in a police crash report.

2. Targeting Law Enforcement Strategies

Some law enforcement agencies conduct regular review of crash data. These reviews enable a focus of efforts in traffic safety enforcement to address any trending problems (i.e., speeding, drinking and driving, driver distraction, and seat belt usage) and to locate enforcement activities in the needed areas.

3. Legislation

Data is needed that can identify the causes and magnitude of road traffic crashes and assist in prioritizing remedial action. This is particularly relevant in relation to risk factors that can be reduced by legislation and its enforcement (i.e. distracted driving, impaired driving, speeding, motorcycle helmet usage, seat belts, and child restraint usage).

B. Funding and Resource Allocation

1. Safety Planning and Allocation of Resources

Crash data can be used to identify trends in the factors involved in transportation crashes. Many State and Tribal governments have used this information to develop transportation safety plans. These plans help to forge partnerships between departments and focus on common goals. At the time of this writing, the FHWA has provided funding through the Tribal Transportation Program Safety Fund to over 50 percent of federally recognized Tribes to develop safety plans and has published a toolkit to assist tribes in the development of safety plans at https://flh.fhwa.dot.gov/programs/ttp/safety/stsp-toolkit.htm.

Also, some governments develop partnerships between departments where a regular report on transportation safety trends is developed and distributed for leadership review and action. These transportation safety reports are commonly distributed to leadership, law enforcement, transportation, and injury prevention departments. Often these reports must aggregate data for three to five years to avoid over-emphasis on a topic based on the occurrence of a single event.

2. Grant Applications

Most transportation safety funding opportunities offered by Federal and State governments to tribal governments and local public agencies require crash data to justify any funding request. The typical information required for an infrastructure improvement project is site-specific crash data detailing the types of collisions that have occurred at the site and any contributing factors that can be derived from the police crash reports. Applications for behavior modification projects (law enforcement, education, and etc.) need to show trends in crash data contributing factors from year-to-year. These data needs are easily fulfilled when all of the crash data is in one uniform format or database. However, these data needs become complex quickly when multiple databases are used by various law enforcement agencies.

In many cases, the required crash data is found in police reports which are available in a statewide database. One notable exception is the TTP Safety Fund which encourages eligible applicants to justify their funding requests using the best available data, to include first responder call logs or citizen testimony about past incidents.

C. Promotion and Coordination

1. Communication with Leadership

A well-functioning safety management system will involve regular updates on transportation safety trends. Such reports are typically aligned with a transportation safety plan to track performance measures that are identified by the plan. These leadership reports also establish some accountability among the various departments that are charged with implementation of a transportation safety plan.

2. Communication with other Governments

Adequate crash data in a useable database also allows communication among all stakeholders. The first way that this communication occurs is when statewide assessments of crash data are conducted in support of data-driven safety programs such as the Highway Safety Improvement Program and the NHTSA programs. These assessments identify high-risk locations and trends in comparison with all other areas in a State. When crash data is collected by tribal or BIA Law Enforcement and not shared with the State, the result is that the tribal governments are at a disadvantage for statewide assessments.

The second form of communication that can occur with good crash data is the development of data-driven transportation safety plans by tribal governments. These plans establish a means of communication with State and local governments about the priorities of the tribal government. This written form of communication by the Tribe establishes a need that is adequately documented based on crash data and can now be considered by State and local governments as

they program resources. The FHWA strongly encourages tribal governments to develop transportation safety plans. Funding and a toolkit for developing safety plans are available through the Tribal Transportation Program in the FHWA Office of Federal Lands Highway (FLH).

3. Public Advocacy Campaigns

An aware and informed public can better request responses from the appropriate government entity. Advocacy campaigns can also influence widespread beliefs and attitudes that affect people's behavior on the road. For example, data collected from Minnesota about key roadway safety risks on reservations indicates that front-line law enforcement officers are extremely concerned about texting and other cell phone use by drivers, which suggests this, is a priority for public advocacy in the area (Narváez & Quick, 2016). Advocacy and awareness campaigns can address public misconceptions, such as the belief that it is less important to use seat-belts when travelling in rear seats in cars. Campaigns that accompany the introduction of new laws and policies can enhance their effectiveness.

D. Research and Development

1. TRB Subcommittee on Tribal Transportation

One of the many institutions that use crash data to conduct research is the Transportation Research Board (TRB). As with any research, the quality of available data influences the quality of the end product. The TRB committee on tribal transportation is aware of several research topics that will be proposed for 2017 including:

- Accuracy and completeness of race data in FARS.
- Effectiveness of driver education tribal communities.
- Human factors and tribal transportation safety.
- Traffic codes in tribal areas.

2. Vehicle Safety Standards

Federal Motor Vehicle Safety Standards set minimum performance requirements for those parts of the vehicle that most affect its safe operation (brakes, tires, and lighting) or that protect drivers and passengers from death or serious injury in the event of a crash (air bags, safety belts, child restraints, energy absorbing steering columns, and motorcycle helmets). These Federal standards are applicable to all vehicles and vehicle-related equipment manufactured or imported for sale in the United States (including U.S. territories) and certified for use on public roads and highways (NHTSA, 2011).

3. Roadway Design and Traffic Engineering

Crash data can help to identify hazardous routes and road design problems. When partnered with the use of a GIS, crash data analysis can be especially effective in achieving visible, short term results. Network screening and the systemic safety approach are two examples of crash data analyses that require the availability of crash data (FHWA, 2014).

Crash data is also used by engineers when designing or evaluating a specific section of roadway. Crash reports can help the engineer understand how drivers are interacting with the roadway. Crash data may also play a role in determining if a roadway design will vary from standards.

4. Driver Training and Testing

Many driver training programs have begun or are being enhanced following the review of crash data. These reviews can uncover trends which can assist in enhancing training and testing for not only the general population of drivers but also can target specific groups of drivers.

E. Safety Improvement with Limited Crash Data

Safety measures can be implemented without the availability of formal crash data. However, the effectiveness of safety decision-making processes is greatly enhanced when crash data is available and is considered. Several methods that have been used to identify safety improvements when crash data is inadequate or unavailable are summarized in this section. When Tribes submit grant applications for safety improvements, it may be beneficial to demonstrate to the funding agency that efforts are underway to improve crash data in the future.

1. Road Safety Audits

A Road Safety Audit (RSA) is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users. The FHWA works with State and local jurisdictions and tribal governments to integrate RSAs into the project development process for new roads and intersections, and also encourages RSAs on existing roads and intersections.

2. Systemic Safety Improvement

The systemic approach to safety involves widely implemented improvements based on high-risk roadway features correlated with specific severe crash types. The approach provides a more comprehensive method for safety planning and implementation that supplements and compliments traditional site analysis. It helps agencies broaden their traffic safety efforts and consider risk as well as crash history when identifying where to make low cost safety improvements.

While the systemic approach is most effective when implemented with good crash data, it is possible to infer high-risk roadway features based on the experience in nearby jurisdictions that do have adequate crash data.

3. Other Sources of Crash Data

In its simplest form, a surrogate for crash data is the concept that a substitution for lack of actual crash data can be made to assist with an analysis of possible crash causes. Some suggest that these alternative data sources can also provide insights when good quality crash data is available (Jovanis, 2011). Crash data surrogates are a way to assess a situation to give another perspective on the problem at hand but it should not be used as the primary means of analysis over actual crash data, when it is available.

The lack of crash data in a tribal area should not prevent a Tribe from beginning safety planning. Safety plans that are developed in the absence of formal incident data should include an assessment of the available data and actions that will lead to improved data availability. As previously identified, one option for Tribes to conduct crash data assessment is by using the

process described in NCHRP Report 788: Guide for Effective Tribal Crash Reporting. Some Tribes have successfully started safety plan development using alternative sources of data.

Alternative data sources can provide new views into the problem. It was mentioned above that road safety related data are used by a variety of stakeholders –law enforcement, transportation departments, health facilities, and insurance companies – as well as policymakers and practitioners. Conversely, these stakeholders are also often invaluable, highly informed sources of new kinds of data that may reveal important safety risks that do not turn up in traditional crash reports. For example, the TTAP Circuit Safety Riders and injury prevention coordinators have information about safety restraint usage. Finally, brief social science surveys of residents at major community events can provide information about key areas of concern for pedestrians, children, and other vulnerable populations. The additional kinds of data mentioned above are robust and compelling, provided they are carefully collected (Narváez & Quick, 2016).

The University of Wyoming's Local Technical Assistance Program has developed a method for assessing roadway risk by evaluating the roadway features where crash data may be limited. The method has been deployed with several counties in Wyoming and at the Wind River Indian Reservation. This five-step process involves analyzing any data that is available, conducting field assessments of roadways, determining risks, countermeasure identification, and benefit-cost analysis. This process allowed recommendations for safety improvements on roadways where crash data was not available by inferring that the risks found on similar county roadways where data was available (Shinstine D. , 2014).

Another Tribe used traffic citations to determine some of the most common behavioral risks (speeding, DUI, driving without a license). The Tribe now focuses its efforts in those areas until better data is available. This Tribe is also conducting an observational seat belt study and has plans to conduct a qualitative roadway safety study.

Other Tribes indicated that they have utilized citizen's reports or surveys as well as the observations of staff such as maintenance and transit drivers to help inform the Tribe's safety planning efforts. In some cases information on crashes was collected from the public and staff by asking them to mark locations of risks and undocumented crashes using large maps.

Some efforts have been made to use injury data collected by hospitals and clinics or the Indian Health Service to inform decision making related to transportation safety (Ragland, 2016). If this is the best available data or if the data is linked with crash reports, there is potential benefit of using this data. There is some concern over the validity of hospital/clinic data since it is self-reported by the injured party. An individual may claim their injury was caused by a vehicle crash to avoid legal ramifications of the actual event which caused the injury. Also, injury data typically does not record much information about the location or factors contributing to a crash.

Where crash reports are scarce, some Tribes have successfully acquired grant funding using records from the Emergency Medical Services (EMS) provider. While EMS reports would help to document where crashes occur, they are unlikely to record contributing factors information since the EMS personnel must focus on treating the injured parties instead of determining the reasons why a crash occurred. The EMS personnel could make injured parties aware of the self-

reporting requirements established by State governments although these duties would not be high on their priority list. In some States, it may be possible for EMS personnel to file the State report that is intended for parties involved in a crash where law enforcement does not respond. High quality crash records would establish a relationship between crash reports and EMS or injury reports. Further research could investigate the possibility of using injury data, especially the reports completed by EMS personnel, to provide more complete data coverage for injuries and fatalities caused by motor vehicle crashes in tribal and rural areas.

IX. Funding for Improving Crash Data Collection

Several funding programs are available from which Tribes may obtain funding to implement improved electronic crash data systems. These budgetary resources are available from the DOT, the DOI, and the DOJ.

A. TTP and TTP Safety Fund (23 U.S.C 202(e))

The Tribal Transportation Program is a formula-driven program that is available to federally recognized Tribes to assist in the construction, operation, and maintenance of facilities that have been accepted into the National Tribal Transportation Facility Inventory (NTTFI). Eligible activities for expenditure of TTP funds include all items eligible for the TTP Safety Funds (TTPSF) and more.

Each year under the FAST Act, 2 percent of the available TTP funds are set aside to address transportation safety issues through a competitive, discretionary grant program. Awarded annually, projects are chosen where outcomes will address the prevention and reduction of death or serious injuries in transportation related crashes. The TTP Safety Fund recognizes that traffic fatalities and injuries severely impact the quality of life in tribal areas. Statistics are consistently higher than the rest of the nation as a whole; they advocate the development of Strategic Transportation Safety Plans as a means for Tribes to determine how transportation safety needs will be addressed in tribal communities.

It is the policy of the TTPSF that crash data improvements result in a system that allows the sharing of information on fatal crashes for the purposes of inclusion in the FARS, but these projects are only encouraged to share lesser severity crashes (FHWA-FLH).

Projects eligible for the TTP Safety Fund are safety planning, infrastructure improvements, and safety data improvement projects as described in 23 U.S.C. 148(a)(4). Additional information about the TTPSF can be found at https://flh.fhwa.dot.gov/programs/ttp/safety/ttpsf.htm.

B. HSIP (23 U.S.C 148)

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which was signed into law on August 10, 2005, (Public Law 109-59) established the HSIP as a core Federal-aid program administered by State DOTs. The overall purpose of this program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads through the implementation of infrastructure-related highway safety improvements. The SAFETEA-LU established extensive new resources and opportunities to

advance highway safety throughout the country in a comprehensive, strategic manner. The HSIP has continued with some modifications through MAP-21 and the FAST Act. Core requirements for the HSIP are that projects be data driven and consistent with the State's Strategic Highway Safety Plan (SHSP) which is to be developed in partnership with State, tribal, and local entities. The requirements for the HSIP are codified in 23 U.S.C 148. Crash data improvements are an eligible item under 23 U.S.C 148.

C. BIA Indian Highway Safety Program (23 U.S.C 402)

The Highway Safety Act of 1966, 23 USC 402, provides USDOT funding to assist federally recognized Tribes with implementation of traffic safety projects, including crash data improvement, in tribal areas of the United States. The program is administered by the BIA Indian Highway Safety Program (IHSP) under an agreement with NHTSA.

D. State Administered NHTSA Highway Safety Plan Funding (23 USC 402 and 405(c))

The State Highway Safety Program, commonly referred to as Section 402, was initially authorized by the Highway Safety Act of 1966 and has been reauthorized and amended a number of times, including most recently under the FAST Act.

Section 402 supports State highway safety programs, designed to reduce traffic crashes and resulting deaths, injuries, and property damage. Section 405(c) supports the development and implementation of effective State programs that evaluate or improve safety data quality. A State may use these grant funds only for highway safety purposes; at least 40 percent of these funds are to be used by or for the benefit of tribal governments and political subdivisions of the State to address local traffic safety problems. States are required to provide a 20 percent match for this funding. The program is administered by NHTSA at the Federal level and by the State highway safety offices at the State level. Crash data improvements are eligible under 23 U.S.C 402 and 405(c).

E. DOJ Coordinated Tribal Assistance Solicitation (CTAS)

Through the CTAS, federally recognized Tribes and tribal consortia are able to submit a single application for most of DOJ's tribal grant programs. The DOJ designed this comprehensive approach to save time and resources and allow Tribes and DOJ to gain a better understanding of the Tribes' overall public safety needs. The first coordinated tribal grant process was launched in FY 2010, through the collaborative efforts across many department components, bureaus, and offices. Tribal police could propose a CTAS project intended to improve records management systems, including electronic crash data reporting. Additional information can currently be found at http://cops.usdoj.gov/Default. asp?Item=2489

X. Methodology

This report was developed by FHWA's, FLH office. The Tribal Transportation Safety Management System Steering Committee (SMS Steering Committee) assisted in the development and distribution of a survey to support this project. The SMS Steering Committee was further involved in review and compilation of the final report. The SMS Steering Committee consists of representatives from four Tribes (Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation; the Zuni Tribe of the Zuni Reservation; the Karuk Tribe; and the Cherokee Nation); a consortium of Tribes (the Association of Village Council Presidents); BIA Division of Transportation; FHWA-FLH; FHWA, Office of Safety; FHWA Resource Center; BIA Office of Justice Services Indian Highway Safety Program, Centers for Disease Control, Indian Health Service; NHTSA; BIA Indian Highway Safety Program; and, Tribal Technical Assistance Centers. Although not a member of the SMS Steering Committee, the DOJ's Office of Tribal Justice was also involved in the development and review of this report.

The OMB approval was obtained to conduct the survey under the Paperwork Reduction Act document control number 2125-0649. Tribal and State government officials were asked to respond to a set of survey questions asking about their crash data collection, sharing, and use. The survey was made available through a web-based form, an email questionnaire, and by inviting tribes to call FHWA's TTP. Responses were received that represented 152 tribal governments and were primarily from tribal police, BIA Law Enforcement, and tribal departments of transportation. Also, 22 State governments responded to the survey. In addition, interviews were conducted with BIA-OJS Operations Directorate, the Federal Bureau of Investigation, and State government officials.

All questions were optional so the total number of Tribes or States responding to any given survey question does fluctuate where the results are documented throughout this report. Although the surveys and interviews are the primary source of information for this report the authors also reviewed existing literature about tribal governments and crash data. Limited research has been conducted pertaining to crash records available to tribal governments on a national scale. However, some statewide studies have broached the topic.

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REPORT 788

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

NCHRP REPORT 788

Guide for Effective Tribal Crash Reporting

David A. Noyce
Zhixia Li
UNIVERSITY OF WISCONSIN-MADISON
Madison, WI

Kevin Chesnik
CHESNIK TRANSPORTATION GROUP
Madison, WI

Alyssa Macy
INDIGENIUS COMMUNICATIONS
Portland, OR

Xiao Qin
SOUTH DAKOTA STATE UNIVERSITY
Brookings, SD

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Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

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Dr. David A. Noyce, P.E., Professor of Civil and Environmental Engineering at the University of Wisconsin-Madison, was the project director and principal investigator. The other authors of this report are Dr. Zhixia Li, Assistant Researcher at the University of Wisconsin-Madison; Kevin Chesnik, P.E. at Chesnik Transportation Group; Alyssa Macy at Indigenius Communications; and Dr. Xiao Qin, P.E., Associate Professor of Civil Engineering at the South Dakota State University.

Brian Kowalkowski, Dean of Continuing Education at the College of Menominee worked in conjunction with the other team members in developing the data collection tool and conducting data collection. Dr. Jeremy R. Chapman, Assistant Professor of Civil Engineering at Rose-Hulman Institute of Technology and Dr. Ghazan Khan, Assistant Professor of Civil Engineering at California State University, Sacramento, both contributed to the data collection and literature review during the initial project phases. Graduate and undergraduate students John Ash, Whitney Schroeder, Lang Yu, and Timothy Klockziem of the University of Wisconsin-Madison were involved in the data collection and analysis phases.

The research team wishes to thank all participants in this study. Their contribution was critical for the development of the guidebook. The research team gives special thanks to all tribes and state agencies that actively participated in the data collection process by providing their responses.

FOREWORD

By Christopher J. Hedges
Staff Officer
Transportation Research Board

This guidebook presents guidance for state agencies and tribal leaders in effective crash reporting. The guidebook is developed based on best practices, success stories, lessons learned, published literature, and data from tribes and states that were involved in the data collection and analysis phase of this project. This guidebook will provide valuable knowledge to both tribal law enforcement and state transportation agencies to better understand the extent and causes of crashes on tribal lands in order to develop more effective safety programs and countermeasures.

Safety is a major concern for roadway practitioners across the United States. In many states, the Native American population is disproportionately represented in fatalities and crash statistics. Native Americans' risk of motor-vehicle related death is about 4 times that of the general population. The risk is even higher for the population between 4 and 44 years old. Improved crash reporting by tribal law enforcement agencies would enable tribes to apply more successfully for state and federal funds for safety improvements. Some of the causes behind the underreporting include tribal law enforcement capacity (e.g., staffing shortages and turnover, and lack of equipment, software, and training), lack of standardization in crash reporting forms and protocols, and issues of relations between the state and tribes. Improving crash reporting systems requires a relationship with the state agencies built on trust and effective collaboration.

Without accurate reporting of all crashes on tribal lands, it is difficult or impossible to fully understand the nature of the problem and develop appropriate countermeasures. These may include effective transportation safety planning and programs aimed at DUI prevention, pedestrian safety, roadway safety improvements, seat belt usage, child restraints, etc.

Under NCHRP 17-49, a research team led by University of Wisconsin-Madison conducted a critical review of the root causes of the issues and deficiencies related to tribal crash reporting systems and programs as well as best practice and success stories. In addition, this review identified those methods which have been successful in any aspect, i.e., beyond crash data, and illustrated how these successes can be utilized in the area of tribal crash reporting. The research team also did a nationwide query-based data collection, which gathered first-hand data from tribes and state agencies along with their success stories and lessons learned in practicing tribal crash reporting. The research led to the development of a guidebook with three main components. Part 1 provides self-assessment tools for state agencies and tribes. The self-assessment tools are designed to provide a quick assessment of the effectiveness of existing crash data collection and management, and the current level of communication and collaboration between tribes and state agencies. Part 2 of the guidebook provides information to both states and tribes to help identify solutions to issues associated with (1) establishing

and maintaining communication and relationship between tribes and states; (2) building tribal crash data collection system; (3) implementing state-tribal crash data sharing; and (4) improving tribal traffic safety with crash data. Part 3 contains reference and source materials.

The guide is accompanied by a CD containing a supplemental report documenting the research approach and findings, as well as color PDF copies of case study flyers meant to be used as handouts and reference material at meeting, conferences, and events. The CD also contains a double-sided three-fold flyer designed to promote the use of this guidebook via graphical presentation of function and summary of the guide.

CONTENTS

Note: Photographs, figures, and tables in this report may have been converted from color to grayscale for printing. The electronic version of the report (posted on the web at www.trb.org) retains the color versions.

SUMMARY

Guide for Effective Tribal Crash Reporting

Tribal transportation safety summits held across the country consistently identify crash data as being inadequate and a significant barrier in developing effective safety programs. Underreporting (or no reporting) of crash data that involves crashes on tribal lands creates a significant void in data necessary to support state department of transportation (DOT) and tribal safety programs. Underreporting can also lead to tribes receiving disproportionate resources from state and federal programs that identify and target transportation safety issues. Comprehensive tribal crash reporting would allow tribes to gain the support and resources they need to develop necessary safety countermeasures, and enable tribes to apply more successfully for state and federal safety improvement funds when available.

Questions remain as to why crashes continue to be underreported in many tribal communities. Without accurate reporting of all crashes on tribal lands, it is difficult to fully understand the size and nature of the safety problem and develop appropriate programs and countermeasures. It is imperative to identify and facilitate the implementation of complete, accurate, and timely tribal crash reporting systems and to document how these systems can contribute to more effective transportation safety programs.

Native American Terminology

Terms used to describe Native Americans have been mixed in the literature. At least three terms can be found including Native American, American Indian, and American Indian and Alaska Native. "American Indian" has been in use for the longest time, with the first documented use of American Indian dating from the late fifteenth century (Walbert 2013). A more detailed discussion of the term American Indian is reported in *American Indian Politics and the American Political System* (Wilkins 2006). In the 1960s and 1970s, Native American was considered a more respectful and inclusive alternative to American Indian (Walbert 2013). More recently, American Indian and Alaska Native has been used by the U.S. Census Bureau as a race name in census surveys (U.S. Census Bureau 2010). To provide consistency in presentation, this guide uses Native American to represent American Indian, Native American and American Indian and Alaska Native.

Overview of the Guidebook Content

The guidebook development is based on best practices, success stories, lessons learned, published literature, and data from tribes and states that were involved in the data collection and analysis phase of this research. Figure 1 presents the general outline of the guidebook.

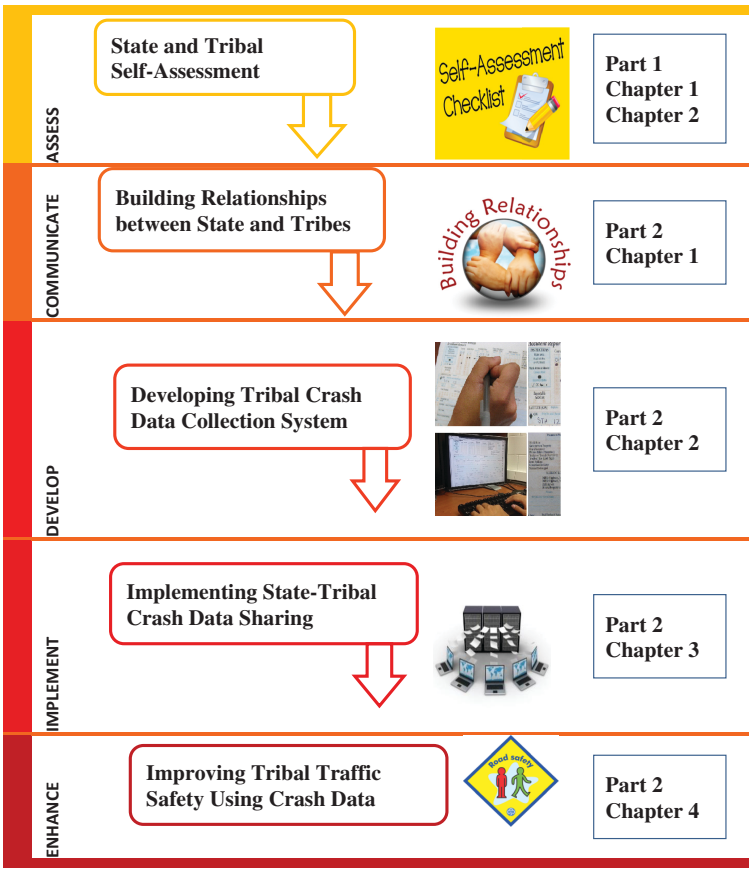


Figure 1. Guidebook outline.

The guidebook is developed in three parts. Part 1 provides self-assessment tools for state agencies and tribes. The self-assessment tools are designed to provide a quick assessment of the effectiveness of existing crash data collection and management and the current level of communication and collaboration between tribes and state agencies. Results of the self-assessment lead users to the appropriate chapters in Part 2 of the guidebook.

Part 2 of the guidebook provides information to both states and tribes to help identify solutions to the following:

1. Root causes of the issues and deficiencies related to tribal crash reporting systems and programs;
2. Methods to convey the importance and benefits of implementing better crash reporting to tribal members;
3. Effective methods of communication, cooperation, and collaboration between state and tribal governments;
4. Recommendations on how to implement the crash reporting programs identified in this research;
5. Methods that state and federal agencies can use to assist tribes on the implementation of programs identified in this research, including methods to access appropriate funding sources;
6. Recommendations on how the implementation of effective tribal crash reporting systems can be used to improve transportation safety planning and programs, based on current best practices among tribes in the United States;
7. Applicability to tribes across the United States, taking local laws, regulations, and cultural and political differences into account; and
8. Methods to evaluate and communicate the effectiveness of the programs identified in the guide.

As outlined in Figure 1, Part 2 contains a series of chapters focused on establishing, building and maintaining communicative relationships between tribes and states, establishing an effective crash data collection system, creating a state-tribe crash data sharing system, and improving tribal traffic safety using the crash data. At the end of each chapter in Part 2, case studies are included, which can be useful to provide practical information to tribes and states during the process of implementing an effective tribal crash reporting system. The guidebook is designed to provide an easily followed step-by-step process to improving tribal crash reporting programs.

Part 3 provides references and source materials used in Parts 1 and 2.

Intended Audience for the Guidebook

The guidebook is an informational tool designed for tribal communities and state agencies that collect and process statewide crash data and use these data for funding and safety improvement decisions. The intended audience is any tribal member involved in law enforcement, crash data collection, crash data dissemination and analysis, or communication with state agencies. The intended audience also includes any member of a state DOT or crash data collection agency who is assigned to work with tribal communities in obtaining crash data and supporting safety improvements.

How to Use the Guidebook

The guidebook can be used in several different ways. It is recommended that the reader begins with completing the self-assessment tool included in Part 1. Completing the self-assessment tool simply involves answering a few questions designed to identify areas of strength and areas that need improvement when evaluating an effective tribal crash reporting system. The results of the self-assessment will also lead readers to the appropriate chapters of the guidebook. A more random approach can also be implemented by simply referring to the summary tables at the beginning of each chapter in Part 2 of the guidebook, or immediately referring to the case studies included at the end of each chapter of Part 2, and beginning to identify information that can apply. Regardless of how the guidebook is used, readers will find useful information that will lead them in a successful direction in improving crash reporting. For those who are interested in additional detailed information, a supplemental report has also been created that provides a comprehensive literature review and describes the data collection and analysis summary that provided the foundational material used in the guidebook. This is available on the accompanying CD.

Guidebook Limitations

While the guidebook is intended to provide comprehensive guidance to effective tribal crash reporting, certainly some limitations may apply. It is impossible to address every potential scenario and creative solution that may exist within each state and each tribal community. The development of this guidebook is based on data from 48 individual tribes, partial responses from approximately 10 tribes, and information from other tribal resources, state agencies, and literature. Other states and tribes may have unique and effective ways in effective tribal crash reporting that are not captured in the data collection process. Additionally, some recommendations and best practices included in the guidebook may not be effective for all tribes. Time-sensitive information presented in the guide, such as information related to grant applications and other programs, should be reconfirmed before using this guidebook.

PART 1

Overview and Self-Assessment

CHAPTER 1

Self-Assessment for State Agencies

The following self-assessment tool has been developed to assist state agencies in proactively identifying strengths and weaknesses in their current tribal relationships and the sharing of crash data and information to develop an effective crash reporting system. Three dedicated checklists have been designed to identify potential issues that may be encountered during the processes of (1) effective communications with tribes; (2) state-tribal crash data sharing; and (3) tribal traffic safety improvement. Appropriate sections of the guidebook are referenced based on the results of the self-assessment questions. At the end of each chapter in Part 2, case studies are provided, which can be useful to provide first-hand information to tribes and states during the process of implementing an effective tribal crash reporting system. The guidebook is designed to provide an easily followed step-by-step process to improving tribal crash reporting programs.

Self-Assessment for Effective Communications with Tribes

Effective communication with tribes is critical to the success of effective tribal crash reporting. This section includes a checklist of three questions that the state agency can use to assess the effectiveness of their current practice of communication with tribes. Self-assessment questions are listed below.

Assessment Question 1. Does the state agency have a standard method or process for state agency/tribal interactions?	**Answer**	**Response**
	No	Part 2: Chapter 1
	Yes	Continue

Assessment Question 2. Does the state agency have a designated tribal Liaison?	**Answer**	**Response**
	No	Part 2: Chapter 1
	Yes	Continue

Assessment Question 3. Does the state agency maintain a tribal contact database?	**Answer**	**Response**
	No	Part 2: Chapter 1
	Yes	Continue

If you selected 'no' to any of the questions above, please go to Part 2, Chapter 1: Establishing and Maintaining Communication and Relationship Between Tribes and States. This chapter provides information and guidance on further improving the state's practice in communications with tribes.

Self-Assessment for State-Tribal Crash Data Sharing

State-tribal crash data sharing is regarded as the core of an effective tribal crash reporting system. This section includes a checklist of seven questions which the state agency can use to assess the effectiveness of their current practice of supporting the implementation of state-tribal crash data sharing. Self-assessment questions are listed below.

Assessment Question 1. Has the state agency conveyed the benefits of tribal crash report system and sharing crash data within the state agency and tribes?	**Answer**	**Response**
	No	Part 2: Chapter 3
	Yes	Continue

Assessment Question 2. Is there a statewide database to collect and store all crash reports?	**Answer**	**Response**
	No	Part 2: Chapter 3
	Yes	Continue

Assessment Question 3. What method(s) are supported by the state agency for tribes to submit crash records?	**Answer**	**Response**
	None	Part 2: Chapter 3
	Paper	Part 2: Chapter 3
	Electronic/ Online	Continue

Assessment Question 4. Is there a process for evaluating accuracy and completeness of submitted records?	**Answer**	**Response**
	No	Part 2: Chapter 3
	Yes	Continue

Assessment Question 5. Does the state agency provide software, equipment, and funding application assistance to tribes to help them implement the tribal crash data collection and sharing system?	**Answer**	**Response**
	No	Part 2: Chapter 2 Part 2: Chapter 3
	Yes	Continue

Assessment Question 6. Does the state agency provide training in filling out the crash report forms and use of the crash data collection and sharing software?	**Answer**	**Response**
	No	Part 2: Chapter 2 Part 2: Chapter 3
	Yes	Continue

Assessment Question 7. After a tribal crash report is submitted, does the state provide tribes with access to the submitted crash data?	**Answer**	**Response**
	No	Part 2: Chapter 3
	Yes	Continue

If you selected 'no' to any of the questions above, or have not been instructed to continue, please go to Part 2, Chapter 3: State-Tribal Crash Data Sharing. This chapter provides information and guidance on further improving the state's practice in supporting and implementing state-tribal crash data sharing. Additional information on state's assistance in improving tribal crash data collection is available in Part 2, Chapter 2: Tribal Crash Data Collection System.

Self-Assessment for Assistance in Tribal Traffic Safety Improvement

The ultimate goal of effective tribal crash data reporting is to use tribal crash data for highway safety improvement on tribal lands. This section includes a checklist of four questions that the state agency can use to assess the effectiveness of their current practice of assisting tribes in identifying and addressing traffic safety issues on tribal lands.

Assessment Question 1. Are any tribal-specific crash data analyses performed by the state agency or with assistance from the state agency?	**Answer**	**Response**
	No	Part 2: Chapter 4
	Yes	Continue

Assessment Question 2. Does the state agency actively work with tribes to evaluate and address traffic safety issues on tribal lands?	**Answer**	**Response**
	No	Part 2: Chapter 4
	Yes	Continue

Assessment Question 3. Does the state agency provide tribal agencies with shape/tailor proffered engineering solutions/countermeasures to best suit tribes?	**Answer**	**Response**
	No	Part 2: Chapter 4
	Yes	Continue

Assessment Question 4. Does the state agency have experienced and/or designated personnel to train tribe members to properly leverage the tribal crash data to obtain grants or other aid to make safety improvements?	**Answer**	**Response**
	No	Part 2: Chapter 4
	Yes	Continue

If you selected 'no' to any of the questions above, please go to Part 2, Chapter 4: Improving Tribal Traffic Safety Using Crash Data. This chapter provides information and guidance on state's assistance in identifying and addressing traffic safety issues on tribal lands.

CHAPTER 2

Self-Assessment for Tribes

The following self-assessment tool has been developed to assist tribes in proactively identifying strengths and weaknesses in their tribal crash reporting methods. Tribes have three dedicated checklists that are designed to identify potential issues that may be encountered during the processes of (1) implementing a tribal crash data collection system; (2) state-tribal crash data sharing; and (3) tribal traffic safety improvement. Appropriate sections of the guidebook are referenced based on the results of the self-assessment questions.

Self-Assessment for Implementing Tribal Crash Data Collection System

Establishing a tribal crash data collection system is the first step to implement effective tribal crash reporting. This section includes a checklist of 10 questions which the tribe can use to assess the effectiveness of their current practice of implementing the tribal crash data collection system.

	Answer	Response
Assessment Question 1. What is your current crash data collection method(s)?	Data not collected	Part 2: Chapter 2
	Paper form	Part 2: Chapter 2
	Computerized—at time of incident with laptop in vehicle	Continue
	Computerized—completed later	Continue

	Answer	Response
Assessment Question 2. Is there a crash report form used for data collection? If yes, was the form based on state's crash report form?	No	Part 2: Chapter 2
	Yes, not based on state crash form	Part 2: Chapter 2
	Yes, based on the state crash report form	Continue
	Yes, same as the state crash report form	Continue

	Answer	Response
Assessment Question 3. Does your tribe have a "mutual aid agreement," providing or receiving emergency services with neighboring law enforcement agencies?	No	Part 2: Chapter 2
	Yes	Continue

Assessment Question 4. Is the initiation and completion of a crash report form dependent on who is involved in the crash?	Answer	Response
	No	Continue
	Yes	Part 2: Chapter 2

Assessment Question 5. Is there a method documenting the location of the crash? If yes, what is it?	Answer	Response
	No, crash location not documented	Part 2: Chapter 2
	Yes, street address/ highway mile markers	Part 2: Chapter 2
	Yes, Geo-referencing latitude and longitude	Continue

Assessment Question 6. Is there formal training available for tribal police officers to fill out crash reports or to use the crash data collection software?	Answer	Response
	No	Part 2: Chapter 2
	Yes	Continue

Assessment Question 7. Does your tribe have a tribal crash report database?	Answer	Response
	No	Part 2: Chapter 2
	Yes	Continue

Assessment Question 8. Are paper copies of each crash report kept/ stored in addition to the tribal crash database?	Answer	Response
	No	Part 2: Chapter 2
	Yes	Continue

Assessment Question 9. Are there methods in place to evaluate the accuracy and completeness of crash data in the crash database?	Answer	Response
	No	Part 2: Chapter 2
	Yes	Continue

Assessment Question 10. Is your tribe involved with the state's Traffic Records Coordinating Committee?	Answer	Response
	No	Part 2: Chapter 2
	Yes	Continue

If you have not been instructed to continue, please go to Part 2, Chapter 2: Tribal Crash Data Collection System. This chapter provides information and guidance on further improving the practice of implementing a tribal crash data collection system.

Self-Assessment for State-Tribal Crash Data Sharing

State-tribal crash data sharing can facilitate state's assistance in addressing tribal traffic safety issues. This section includes a checklist of seven questions which the tribe can use to assess the effectiveness of their current practice of state-tribal crash data sharing.

Assessment Question 1. Does your tribe share the tribal crash data with the state agency?	Answer	Response
	No	Part 2: Chapter 3
	Yes	Continue

Assessment Question 2. In what format does your tribe submit the crash data to the state agency?	Answer	Response
	Paper/hard copy of the crash reports	Part 2: Chapter 3
	Electronic/database integration/online	Continue

Assessment Question 3. Is there an established timeframe requirement for submission of crash reports to the database? If yes, what is the timeframe?	Answer	Response
	No	Part 2: Chapter 3
	Yes, semi-annually or annually	Part 2: Chapter 3
	Yes, quarterly	Continue

Assessment Question 4. Does your tribe withhold any data elements from crash reports submitted to state agencies?	Answer	Response
	No	Continue
	Yes	Part 2: Chapter 3

Assessment Question 5. Is your tribe able to access the state crash database for purposes of accessing the submitted crash data at a later time?	Answer	Response
	No	Part 2: Chapter 3
	Yes, with request	Continue
	Yes, without request	Continue

Assessment Question 6. Is there an agreement (e.g., MOU) in place between your tribe and the state agency for crash data sharing?	Answer	Response
	No	Part 2: Chapter 3
	Yes	Continue

Assessment Question 7. Is government-to-government relationship and communication between your tribe and a state agency prohibiting your tribe's sharing of crash data?	Answer	Response
	No	Part 2: Chapter 1 NCHRP Report 690: Chapter 4
	Yes	Continue

For Assessment Questions 1 through 6, if you selected 'no' to any of the questions above, or have not been instructed to continue, please go to Part 2, Chapter 3: State-Tribal Crash Data Sharing. This chapter provides information and guidance on further improving the practice of implementing state-tribal crash data sharing. For Assessment Question 7, if you selected 'no,' please go to Part 2, Chapter 1: Establishing and Maintaining Communication and Relationship Between Tribes and States. Additional information on improving communication and a

supporting evaluation checklist can be found in NCHRP Report 690, Chapter 4 (ATR Institute et al. 2011).

Self-Assessment for Tribal Traffic Safety Improvement

The ultimate goal of effective tribal crash data reporting is to improve traffic safety on tribal roads. This section includes a checklist of three questions that the tribe can use to assess the effectiveness of their current practice of improving traffic safety issues on tribal roads.

Assessment Question 1. Does your tribe use crash data to identify the locations with a high number of crashes?	**Answer**	**Response**
	No	Part 2: Chapter 4
	Yes	Continue

Assessment Question 2. Does your tribe work with the state agency or other agencies to evaluate and improve the problem areas?	**Answer**	**Response**
	No	Part 2: Chapter 4
	Yes	Continue

Assessment Question 3. Has your tribe requested federal/BIA/state support for improving the traffic safety issues on tribal roads?	**Answer**	**Response**
	No	Part 2: Chapter 4
	Yes	Continue

If you selected 'no' to any of the questions above, please go to Part 2, Chapter 4: Improving Tribal Traffic Safety Using Crash Data. This chapter provides information and guidance on further improving tribe's practice of tribal traffic safety improvement using crash data.

PART 2

Guide for Effective Tribal Crash Reporting

CHAPTER 1

Establishing and Maintaining Communication and Relationship Between Tribes and States

The key to an effective crash reporting system lies in the establishment and maintenance of open communication and formal relationship between tribes and the state agency. This section is dedicated to providing guidance on how a state agency and tribe can maintain effective communication and develop mutual understanding. The primary components of this first step in developing more effective crash reporting systems are presented in Table 1. In addition, a case study of tribal liaison and a case study of maintaining state-tribal partnerships are included at the end of the chapter to provide best practices that are associated with the topics covered in this chapter.

Topic 1.1: Creating Tribal Liaisons

Tribal liaisons at the state agency play an important role in building and maintaining the relationship with tribal agencies. Tribal liaisons typically serve as a point of contact for tribes within the state agency, providing policy support and coordinate with the state agency regions as well as other tribal liaisons to ensure constant and effective communications with each tribe. Tribal liaisons also assist in program development regarding tribal policies and procedures related to state agency practices and are often responsible for organizing annual consultation meetings. Based on Washington DOT's practice, typical responsibility of a tribal liaison should include (Washington DOT 2013-1):

- Serving as a point of contact for tribes within the state agency, and identifying additional decision makers and technical staff who can also assist tribes with their questions or issues.
- Recommending, in consultation with the state Office of Indian Affairs, tribes and other state and federal agencies such as BIAs, the most effective communication practices with tribes.
- Training state agency staff on best practices in working with tribes.
- Providing policy support to the agency.
- Developing, updating and helping implement state agency's centennial accord if applicable. For instance, in the state of Washington, on August 4, 1989, the accord between the federally recognized Native American tribes of Washington and the state of Washington was developed in order to better achieve mutual goals through an improved relationship between their sovereign governments. The accord provides a framework for that government-to-government relationship and implementation procedures to assure execution of that relationship.
- Assisting the state agency regions and divisions as they develop programs that impact tribal policies and procedures.
- Coordinating with the state agency regions and tribal liaisons assigned to regional and local offices to ensure constant and effective communication with tribes. When needed, the tribal liaison can facilitate meetings, negotiate intergovernmental agreements and help reconcile differences between the state agency and tribal governments.
- Coordinating tribal/state transportation conferences between the state agency and tribes.

Table 1. Steps to establish and maintain state/tribe agency communication.

Number	Topic	Objective
1.1	Creating Tribal Liaisons	Establish a state agency point of contact for tribe/state communication and cooperation.
1.2	Develop and Maintain Tribal Contact Database	Know who to contact and the roles key tribal members have related to crash reporting.
1.3	Standard Procedures for Communications and Meetings	Create a standard procedure that outlines the communication and meeting process with tribes; this is beneficial to keeping a consistent tribal communication practice within the state agency.
1.4	Communicating Interests and Concerns	Encourage tribes to express and convey their interests or concerns to the state agency through formal meetings with the state agency or informal communication with the tribal Liaisons. One of the most significant barriers in developing effective tribal crash reporting systems is a tribe's concern about sharing crash data with state agencies.
1.5	Employing the Transportation Agency/ Tribal Collaboration Guidebook	Use the principles presented in a recently developed guidebook (ATR Institute et al. 2011) to provide additional insight into successful communication, cooperation, and coordination strategies between transportation agencies and tribal communities.

Figure 2 briefly illustrates the role of the tribal liaison within the whole communication network of the state agency and tribal governments.

Some states have designated full-time tribal liaison positions while other states have personnel at different positions who serve as tribal liaisons as part of a broader job description. For example, the Director of the Montana DOT is the official tribal liaison for that state. Similar with the practice within Washington DOT, in Minnesota, the tribal liaison coordinates with the Minnesota DOT regions and tribal Liaisons located in regional offices to ensure constant and effective communication with Minnesota tribes. The tribal liaison facilitates meetings, negotiates intergovernmental agreements, and helps reconcile differences between the Minnesota DOT and tribal governments (Minnesota DOT 2013). Particularly, statewide tribes and transportation conferences were organized by the tribal liaison and were held annually at different tribal locations in Minnesota. Holding the conferences at these sites demonstrated Minnesota DOT's desire for partnership and participation. Minnesota DOT's leadership attended these conferences, along with staff from the FHWA's Minnesota Division, engineers from the BIA regional and agency offices, and county commissioners and engineers. Tribal authorities, BIA, and Minnesota DOT leaders had opportunities to communicate at administrative levels. A detailed case study of the Minnesota practice is included in the end of this chapter.

The Wisconsin DOT established a tribal liaison position in 2004 following Executive Order #39 which re-affirmed the government-to-government relationship between the state and the 11 federally recognized tribes in the state. In the first few years, several initiatives were created to facilitate communication and develop relationships with tribes including annual consultation meetings and establishing a tribal task force and a tribal historic preservation project. The tribal task force continues to meet every other month, serving as a policy advisory group for the Wisconsin DOT, and consisting of tribal government appointed representatives, tribal liaison and other state and federal employees. This forum, in addition to the annual consultation meeting, identifies many issues of concern on projects, cultural preservation, economic development, labor, and safety issues.

Like other states, Wisconsin recognized that in order to facilitate effective communication, it was necessary to designate points of contact at the regional levels. Thus, in addition to the statewide

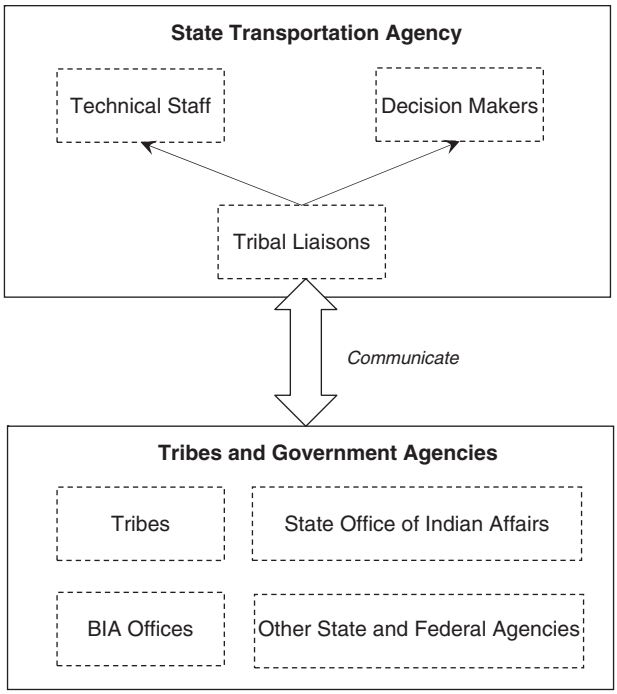


Figure 2. Role of Tribal Liaison within the communication network.

tribal liaison, the Wisconsin DOT identified regional tribal liaisons tasked with working directly with tribes on regional issues in addition to specific duties related to their job descriptions. In instances where there are numerous tribes in a region, these responsibilities can take up significant time. In 2010, the Wisconsin DOT brought on another staff position to assist the statewide tribal liaison, creating a two-person team based in the state headquarters in Madison.

What makes the Wisconsin experience unique is that the Office of Tribal Affairs had programmatic funding to assist in the development of programs to address concerns raised through consultation efforts and other program areas. This funding was, in some cases, designated by the Secretary, in other cases, leveraged from state and federal funding resources. The Wisconsin DOT tribal affairs staff worked with tribal community partners to manage and implement projects at the local level. The tribal task force has been managed by the College of Menominee Nation since its inception. The Tribal Historic Preservation Project has been managed by the Lac du Flambeau Tribal Historic Preservation Office and the recent Transportation Safety Project by the Lac Courte Oreilles Tribal College. The liaison has significant support from the Wisconsin DOT leadership and regions.

In 2005 and again in 2010, the Wisconsin DOT, FHWA and the 11 federally recognized tribes in the state entered into a historic partnership agreement to "implement the concept of the government-to-government relationship." The partnership agreement provided all "parties with protocols to enhance collaboration, a timeline for measurable results and specific contact staff for timely communication." The partnership agreement includes both guiding principles and a dispute resolution process, both intended to facilitate communication. A copy of the partnership agreement can be found online: http://www.dot.wisconsin.gov/localgov/aid/Tribalaffairs/docs/partnership.pdf.

In the partnership agreement, all parties agreed to the following:

- Reflect and support the government-to-government relationship among the tribes of Wisconsin, federal government, and the state of Wisconsin;

- Recognize the importance of collaborative partnerships and respect the knowledge, experience, perspectives, and needs of the other partners;
- Move forward the shared goals of the stakeholders and constituents through improved working relationships and partnership building;
- Work together to develop an effective and efficient consultation framework, ensuring the long-term prosperity of this agreement;
- Agree to dedicate the appropriate level of resources to achieve success;
- Recognize and support the need to engage the shared strength, skills, and expertise in a collaborative effort to achieve success in transportation related activities; and
- Pledge to work together in a proactive and cooperative manner.

Also within the partnership agreement, the parties identified "areas of partnership emphasis with the goal of defining means to measure partnership achievements." These areas include:

- Partnership;
- Transportation safety;
- Economic development;
- Building capacity of tribally run businesses;
- Native American labor development;
- Training; and
- Cultural resources.

A FHWA publication has made some general conclusions on the state Agency's tribal liaison programs (FHWA 2010):

- The role of the tribal liaison is worthwhile and is producing positive results that could not have been achieved without a liaison in this function;
- Tribal Liaisons from different states used different approaches and tools; and
- In the long-term, the functions of tribal liaison are critical and should be institutionalized within the state agency and other planning agencies to ensure that, even in the absence of current liaisons (incumbents), these functions are still carried out.

Despite many success stories, tribal liaisons often face challenges that require further consideration. These challenges can include (FHWA 2010):

- Difficulty in engaging the BIA at higher levels even though the state DOT tribal liaisons have established strong relationships with regional BIA offices;
- Exercising tribal jurisdiction in a transportation planning context as part of overall tribal transportation planning;
- Finding new methods to better advocate for getting additional funding for tribal transportation issues;
- Closing gaps in data collection;
- Methods to institutionalize the functions of the state-tribal liaisons within state DOTs and other planning agencies; and
- Challenges with coordination across other federal and state agencies.

Topic 1.2: Develop and Maintain a Tribal Contact Database

An essential step towards the effective communication with tribal agencies is developing and maintaining a tribal contact database, which includes contact information of tribes within the state agency's region. With the contact database, tribal liaisons, state traffic safety engineers, and other safety personnel can quickly locate the right persons to contact along with their phone

numbers, email addresses, and mailing addresses when they need to consult with the tribal agency. Typical practice of maintaining a tribal contact database includes:

- The state agency creates and maintains a tribal contact list, which at least includes tribe's name, the names and contact information of tribal leader, tribal environmental officials, and tribal law enforcement and safety officials.
- In case the tribal contact information is not available directly from tribes, other resources, such as BIAs, can be consulted.

The Washington DOT has had a good practice of maintaining such a tribal contact database. The database contains a contact list of chair, cultural resources, natural resources, planning, and human resources/tribal employment rights ordinance (TERO) officials of each federally and non-federally recognized tribe within the state boundary (Washington DOT 2013-2). The names in the database serve as first points of contact when the tribal liaisons or the state traffic safety engineers begin consultation with a tribe (Washington DOT 2013-2). The Washington DOT has designated a contact database coordinator, who manages updating the contact list if a tribal contact has permanently changed.

The Wisconsin DOT also maintains a statewide list of tribal contacts consisting of tribal leadership, environmental and tribal historic preservation officials, tribal planners, roads programs, law enforcement and safety contacts, transit officials, and economic development contacts. These lists are regularly updated. Typically, the statewide and regional tribal Liaisons reach out to a department contact as well as the tribal council appointed contact to facilitate communication within various departments of the tribe. While there are often similar job titles, more often than not, job responsibilities vary by tribal community.

In the event when tribal contact information is unavailable from the tribes directly, other sources may be available. For example, the Montana Governor's Office of Indian Affairs maintains a contact list of tribal leaders of tribes in Montana (Governor's Office of Indian Affairs 2013). The contact information can be used by the state transportation agency if the tribal contact information is not directly available.

An important source of tribal contacts is the Tribal Leaders Directory published on the website of the BIA (BIA 2013).

> The directory provides a tribes' name, address, phone, and fax number for each of the 566 Federally recognized tribes. There may be an email or website address listed for the tribal entity if they have provided it to the BIA. Each tribe is listed in three sections, by the BIA region that provides services to them, the state they are located in, and in alphabetical order. The directory also provides information on the BIA Regions and agency offices (BIA 2013).

The maintenance of tribal contact database based on the information from this directory can assure the consistency of information.

Topic 1.3: Standard Procedures for Communications and Meetings

A standard procedure that outlines the communication and meeting process with tribes is beneficial to keeping a consistent tribal communication practice within the state agency. Based on the practice of Washington DOT (Washington DOT 2013-3), a typical standard procedure is illustrated by a flow chart shown in Figure 3.

Some states have successfully established standard procedures. The Washington DOT maintains governmental relations with all 29 federally recognized tribes within the state and six tribes

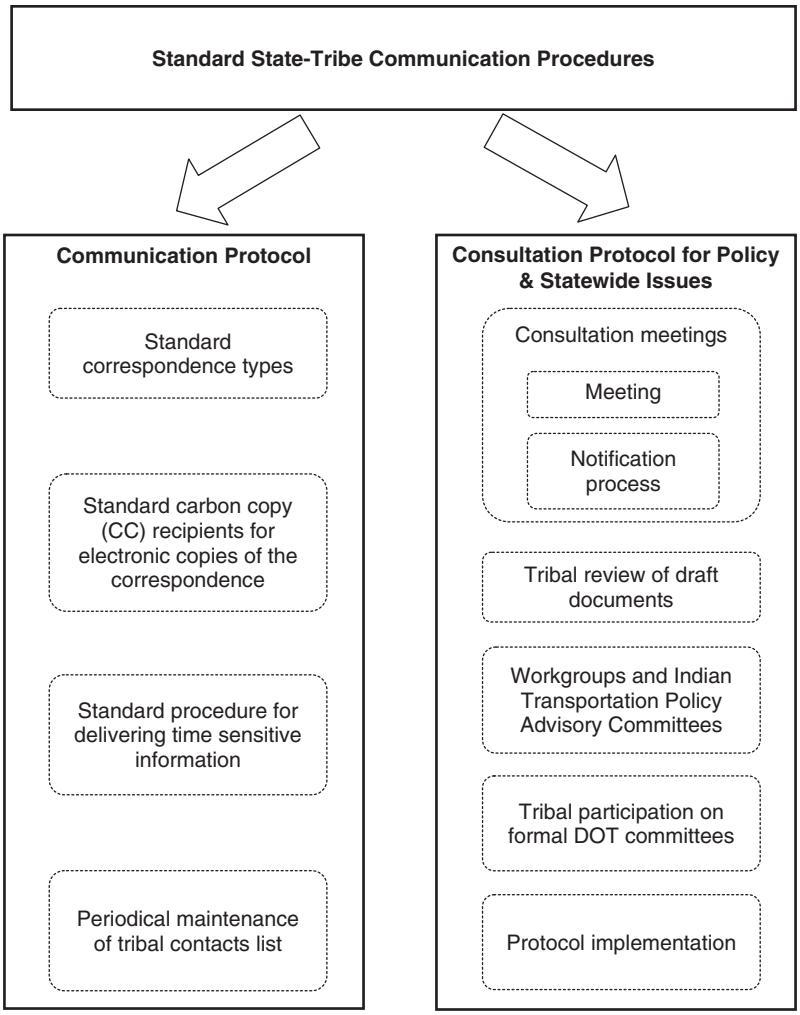


Figure 3. Standard formal state-tribe communication and consultation procedure.

with historical ties to the state. The Washington DOT has a communication protocol that assists the DOT staff when communicating with tribal governments, and a tribal consultation protocol that directs Washington DOT staffs to consult with tribes regarding their individual rights and interests. The communication protocol applies to all formal correspondence with tribal chairs. The formal correspondence to the tribal chair can be one of the following types (Washington DOT 2013-3):

- Consultation meeting requests;
- Calls for project proposals for the Washington DOT funding programs or planning documents;
- When seeking formal input on a project, policy, plan or program;
- Submission of tribal agreements, contracts and contract amendments;
- Monitoring site visit requests for tribal contract compliance; and
- Invitations to participate in the Washington DOT sponsored public events.

The correspondence is sent with a cover letter and the electronic copies to the followings (Washington DOT 2013-3):

- The appropriate tribal staff as identified by the tribe;
- For letters regarding statewide policy issues going to all tribes, copied to Washington Indian Transportation Policy Advisory Committee (WITPAC) delegates, alternates, and designated staff members; and
- Respective Washington DOT staff according to internal protocol.

The protocol has defined the standard procedure for delivering time sensitive information, such as funding opportunities. The time sensitive information may be sent electronically to tribal chairs and appropriate staff by the Washington DOT tribal Liaisons, Regional Administrators or Division Directors (Washington DOT 2013-3). The communication protocol states that the Washington DOT tribal liaison maintains a current distribution list of all aforementioned correspondence recipients. The liaison also works with individual tribes at least once a year to identify and update contacts.

The consultation protocol demonstrates the extended efforts of providing a standard method or process as well as contact personnel to communicate effectively with tribal members and authorities. According to the Washington DOT, the consultation protocol is a set of communication protocols between the Washington DOT and tribal governments, which were signed by the Washington DOT and all involved tribes (Washington DOT 2013-3). The protocol includes the following key elements (Washington DOT 2013-3):

- Consultation meetings: Washington DOT or a tribe may schedule a formal consultation meeting to discuss a statewide or policy issue with tribal representatives;
- Tribal Review of Draft Documents: When Washington DOT seeks review of a draft document by external stakeholders on a statewide or policy issue of interest to tribes, Washington DOT will request tribal review. Washington DOT staff will follow the process below when seeking formal tribal review and comment on a draft document and a consultation meeting is not part of the consultation;
- Workgroups and WITPAC Subcommittees: Workgroups and WITPAC subcommittees may be established for discussions, problem resolution and preparation for consultation on a policy issue of interest to tribes. When issues are approached by utilizing a subcommittee or work group process, notification of any final outcomes to these meetings will be distributed to the affected Washington DOT and WITPAC delegates;
- Tribal participation on formal Washington DOT committees: When Washington DOT establishes a committee of external stakeholders on statewide or policy issues of interest to tribes, Washington DOT will include at least one Tribal representative on the committee; and
- Implementation and issue resolution: Washington DOT has incorporated these protocols into its agency Executive Order on Tribal Consultation and conducted training to ensure that they are understood by Washington DOT management and staff.

In addition to working formally (agency and tribal leadership level) with the tribal reservations, the Washington DOT also worked informally with the tribes at the staff level. Based on the standard procedure, the Washington DOT proactively worked on tribal transportation projects and on statewide policies, including Target Zero and Washington's Strategic Highway Safety Plan. Tribes also reached out to the Washington DOT for project coordination. As noted by the Washington DOT, a key to successful organization of meetings is that meetings took place at tribal reservations, which was effective to encourage tribes to attend the meetings.

Topic 1.4: Communicating Interests and Concerns

Tribes are encouraged to express and convey their interests or concerns to the state agency through formal meetings with the state agency or informal communication with the tribal liaisons. One of the most significant barriers in developing effective tribal crash reporting

systems is the tribe's concern about sharing the crash data with the state agency. These concerns include:

- Program or technical issues
- Tribal regulations and sovereignty
- Fear of 'double jeopardy'
- Political difference
- Private concerns
- Local customs

The most common reason for not sharing data is a lack of funding programs or technical resources to complete the effort. Some tribes have shown interest in sharing crash data; however, the tribes' decision was postponed due to their limited financial and technical resources. Most of the remaining reasons are the root causes of deficiencies of effective tribal crash reporting programs, such as sovereignty, political difference, and local custom concerns. In regards to privacy concerns, tribal members are often sensitive to their personal information being forwarded to state departments and used in ways other than for crash reporting data. The threat of double jeopardy could be prevalent in tribal members who fear they could face fines and/or penalties from the tribal government in addition to the state government (Redinger et al. 2010). Specific concerns identified from the tribal query data include:

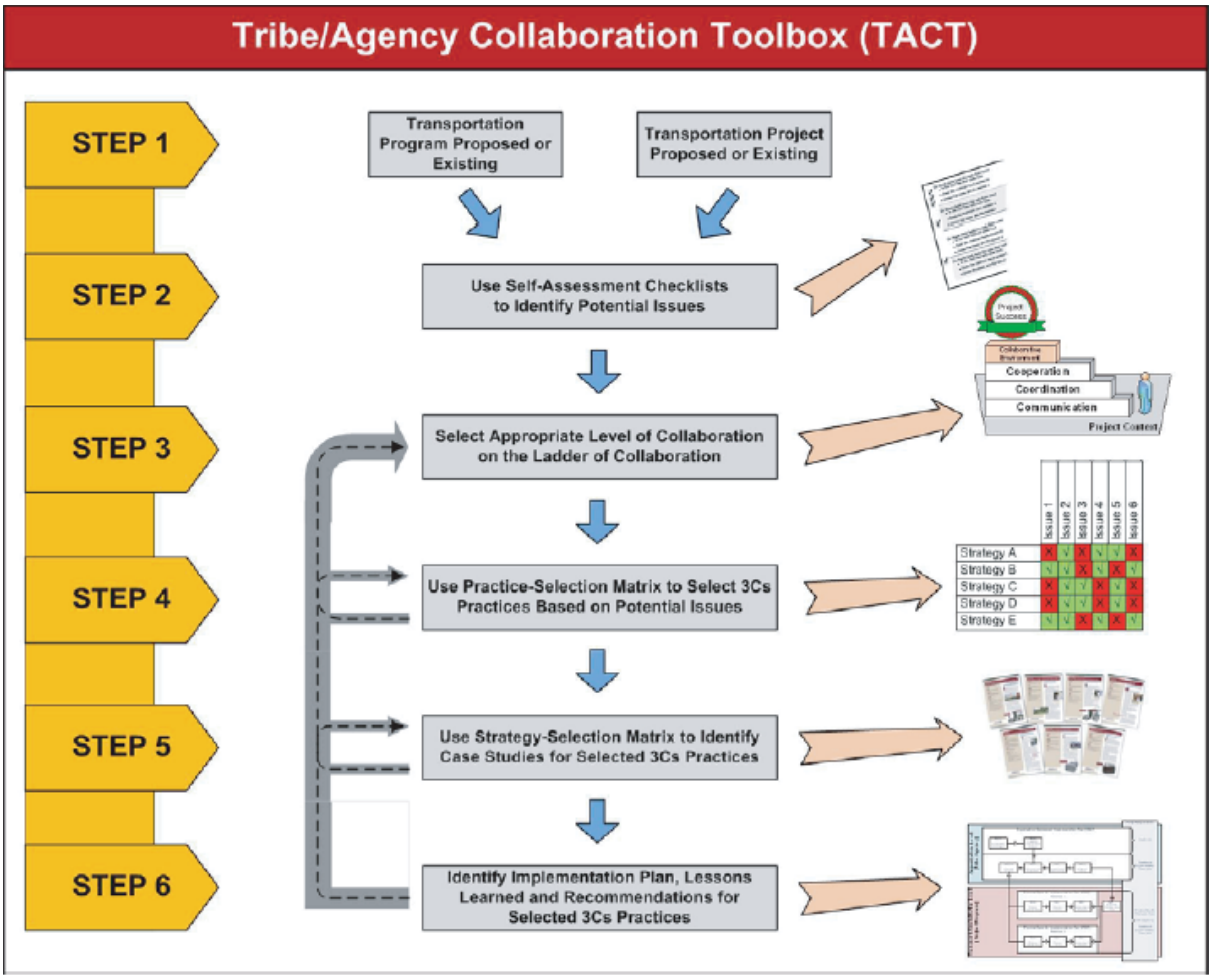
- Tribal council has decided not to disseminate the crash records unless non-member is involved in the crash. This practice has been there for many years;
- Reporting crash data to the state is in contradiction with the sovereign status of the tribe;
- Council has a strict policy of sharing information including crash data;
- There is fear of eroding tribal sovereignty;
- Tribe does not have a working relationship with the state;
- State does not recognize the jurisdiction authority of the tribe; and
- Reporting to state is not a high priority, along with a lack of personnel or personnel with other priorities.

It is recommended that concerns about limited financial and technical resources are shared with state agencies by requesting assistance. Agreements can be reached between the tribe and the state in regards to technical resource and financial support provided by the state agency. Additionally, fundamental barriers such as privacy concerns, fear of double jeopardy, and tribal regulations can be discussed and potentially resolved by addressing these concerns with the state agency. Reporting redacted crash data is a potential solution to address these concerns.

Topic 1.5: Employing the Transportation Agency/Tribe Collaboration Guidebook

Recent NCHRP research developed a tribe/agency collaboration toolbox (TACT) used to select practices of communication, coordination and cooperation (3C) for implementing projects (ATR Institute et al. 2011). The toolbox process consists of six steps as depicted in Figure 4:

1. Identify the transportation project or program.
2. Utilize the checklist to identify any potential issues on the project.
3. Refer to the Ladder of Collaboration to select the appropriate level of collaboration.
4. Refer to the strategy selection matrixes to select 3C practices appropriate for addressing the project's issues.
5. Identify and review case studies as examples of strategy implementation.
6. Utilize the implementation plan, lessons learned and recommendations to implement the selected strategies.



Souce: NCHRP Report 690 (ATR Institute et al. 2011)

Figure 4. TACT process.

In addition to this toolbox, this document further identifies best collaboration practices for facilitating 3C between transportation agencies and tribes along with several processes designed to implement them. Tribes and state agencies initiating crash data reporting systems may gain additional insight in developing and maintaining the necessary communication and cooperation methods through the use of this document. See http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_690.pdf for more information.

The process represented by Figure 4 can be applied to both tribes and state agencies. If a tribe noticed that issues have arisen in its government-to-government relationship with the state agency, the tribe can refer directly to Section 4.3 in the *NCHRP Report 690* (ATR Institute et al. 2011) to identify what the issue is and how to address the issue.

Case Study: Tribal Liaison

Source

Adapted from Federal Highway Administration. 2005. *Peer Exchange Report: State DOT Tribal Liaison Roundtable and Panel Discussion*, Federal Highway Administration, Washington, DC.

Situation

Minnesota has 11 recognized tribes in the state. Before the tribal liaison position was created in 2001, there was little formal state-tribal coordination, although the Minnesota DOT's Central Offices and Districts had been working with tribes on archaeological issues, equal employment opportunity efforts, and other transportation projects of tribal interest.

Identified Issues

Due to the lack of a coordinated program for dealing with state-tribal issues, many similar concerns from the tribes had to be addressed again and again in different contexts. The concerns therefore could not be fully addressed, which hindered the collaboration between Minnesota DOT and tribes.

Practice Implemented

To foster and coordinate Minnesota DOT's interactions with the state's 11 Native American tribes, the Minnesota DOT and the FHWA consulted with the tribes in creating a job description for the tribal liaison position. The following practices have been implemented by the tribal liaison to foster state-tribal relationship and interaction:

- When the tribal liaison first started, she met with the tribes to get a sense of the variety of issues and concerns they had. With the inputs from the tribes, Minnesota DOT put together a program to improve the state-tribal relationship with regards to transportation. The program resulted in an invitation from the Red Lake Tribe for the Minnesota DOT Commissioner to visit and a stated desire to form a partnership that led to the first statewide tribes and transportation summit/conference. A historic agreement was signed by Minnesota DOT and 10 of the 11 Minnesota tribes;
- Following the success of the first statewide tribes and transportation conference, the conference has been held annually in Minnesota. One of the tribal liaison's major responsibilities was planning and coordinating these conferences to attain a high level of participation from several different constituent agencies such as FHWA's Minnesota Division, BIA's regions as well as from tribes;
- Conferences were all held at tribal locations, as most tribes in Minnesota have casinos, conference centers, or hotels. Holding the conferences at these sites provided economical rates and good service while at the same time supporting tribal businesses and drawing tribes into real partnerships and participations;
- The tribal liaison included cultural as well as technical exchange at the conferences, such as tribal food and entertainment, with food labels being written in the language of the host tribe. Another example was the use of roundtables at the conferences, which respected the traditions of some tribes to sit so that participants could look at each other. The emphasis on talking with each other, rather than at an audience, was very valuable;
- The tribal liaison also coordinated to establish a Tribal Transportation Advisory Committee (TTAC), which facilitates information sharing and providing opportunities such as leverage funding;
- The tribal liaison coordinated the planning process leading to development of each tribe's Transportation Improvement Program (TIP) and the planning process leading to development of the state Transportation Improvement Program (STIP). Tribal staff had historically viewed the two programs as parallel but completely separate. Minnesota DOT

included BIA engineers in these conferences to improve state-BIA planning coordination, and simultaneously efforts were underway to improve state-tribal coordination. Having the TTAC in the conference was another way to improve coordination of tribal TIPs and the STIP; and
- Tribal liaison also coordinated trainings for Minnesota DOT staff on tribal historical perspectives, legal issues, tribal sovereignty, and tribal government. It was important for Minnesota DOT staff to understand that tribes are sovereign governments, not minorities, and a government-to-government relationship is appropriate.

Case Study: Maintaining State-Tribal Partnerships

Source

- Adapted from Arizona DOT Website of "Promoting Partnerships" (http://www.azTribaltransportation.com/aztt/index.asp).
- Adapted from the state query response.

Situation

Communication and relationship between tribe and the state agency is important to the development and success of effective tribal crash reporting. Tribes usually have concerns about privacy, fear of double jeopardy, and loss of sovereignty when making decisions about sharing tribal crash data with the state agency. How to convey the benefits of the tribal crash reporting system and eliminate the concerns is an essential step towards successful tribal crash reporting. Establishment of partnership between the state agency and the tribe is an ideal solution.

Identified Issues

Issues exist to hinder tribes' working with the state agency to implement the crash reporting system. The most outstanding issue is lack of trust in the state. Another issue is lack of funding program or technical resources. Some tribes showed interest about sharing the crash data; however, tribes' decision was refrained by their limited financial, technical, and personal resources. Other issues include political concerns, fear of double jeopardy and loss of sovereignty, and lack of trust in the state.

Practice Implemented

In practice, the Arizona DOT tried to address the aforementioned issues by promoting partnerships with tribes in the state of Arizona. The Arizona DOT took the following measures to implement the promotion:

- Establishment of Arizona Tribal Strategic Partnering Team (ATSPT) as means of improving state-tribal relations in transportation. ATSPT brings together representatives from state, tribal, federal and local agencies to address tribal-related transportation issues. ATSPT encourages active participation in its partnering effort by all tribes and transportation stakeholders in Arizona who have the desire to guide implementation of transportation policies and processes between Native nations, tribal governments and the state of Arizona;

- Organization of state-tribal workshops to discuss funding opportunities such as Highway Safety Improvement Program (HSIP), Planning Assistance for Rural Areas (PARA) program, Tribal Transit Program, etc. These workshops invite tribe officials, BIA representatives, and FHWA and Arizona DOT officers;
- Organization of quarterly meetings by ATSPT to (1) update the progress in partnership with tribes in the previous quarter; (2) create plan for the next quarter; (3) identify future ATSPT opportunities; and (4) complete and review Partnering Evaluation Program (PEP) ratings;
- Establishment of Promoting Partnerships website to document all meeting notes and detailed partnership process with multiple Native American reservations; and
- Organization of annual meetings with each partnered tribal agency. Meeting notes and agenda are posted on the specific partnership website established for the individual patterned tribal agency.

CHAPTER 2

Tribal Crash Data Collection System

Tribal crash data collection system is a system used by tribes to effectively document and analyze crash records. In general, the data collection system should meet the following criteria:

- The system uses a standard crash report form such as the state crash report form or a form specifically developed based on the state crash report form. NHTSA's Model Minimum Uniform Crash Criteria (MMUCC) can be consulted during the development of such standard crash report form.
- Initiation and completion of a crash report form is not dependent on who is involved in the crash.
- Location of the crash should be documented accurately by street addresses, highway mile markers, or ideally geo-referencing latitudes and longitudes, and be conforming to the state crash locating system;
- Tribal law enforcement officers should be well trained in completing crash report forms.
- Methods should be in place for evaluating the completeness of the completed crash reports.
- A crash report database is recommended to be used for archiving and managing all crash records; however, is not required for all tribes due to varied resource availability by tribes with different sizes. If a crash database is used, methods should be in place to evaluate the completeness and accuracy of the crash records.

This section presents topics related to establishing a tribal crash data collection system that meets the above mentioned criteria. The primary components of this second step in developing more effective crash reporting systems are presented in Table 2. In addition, a case study of tribal crash report form filing is included at the end of the chapter to provide best practice associated with the topics covered in this chapter.

Topic 2.1: Benefits of a Crash Data Collection System

Establishing a crash data collection system is the first step towards an effective crash reporting system. For states with tribes that have not started collecting crash data or have not been using any standard crash report forms, the state agency is responsible of explaining the benefits of implementing a standard crash report filing mechanism in order to encourage the tribes to establish the data collection system. Previous sections have discussed the benefits of an effective crash reporting system, and can be summarized as:

- Better documentation of crash records;
- Easier crash data management;
- Better understanding of hot spots and causes of crashes using the accurate and complete crash datasets;

Table 2. Developing a tribal crash data collection system.

Number	Topic	Objective
2.1	Benefits of Crash Data Collection System	State agencies may need to demonstrate the benefits of a crash data collection system and provide the data collection tools
2.2	Tribal Concerns with Collecting Crash Data	State agencies must be aware of the common concerns that tribes have with crash reporting and work with tribes to resolve these concerns
2.3	Law Enforcement Assistance Agreements on Tribal Roads	Law enforcement assistance agreements (mutual aid) can overcome a lack of law enforcement resource under emergency conditions and provide additional resources for crash reporting
2.4	Funding for Implementing the Crash Data Collection System	State agencies should work with tribes in generating the resources needed to implement the crash data collection system and program
2.5	Implementing the Tribal Crash Data Collection System	Tribes start to implement the tribal crash data collection system after resources have been obtained
2.6	Creating a Tribal Crash Database	A tribal crash database that can store, archive, query, and share crash records will assist tribes in future safety analyses and grant applications

- Basis for safety improvements and reductions in crashes; and
- More opportunities of leveraging funding for addressing traffic safety issues on tribal lands with the collected crash datasets.

A good example of conveying the benefits of crash reporting can be found with the Montana DOT. The Montana DOT promotes the use of the Montana Web-based Crash Reporting (WBCR) system and demonstrates how crash data collection and analysis can be done using WBCR to improve highway safety on tribal roads. The WBCR system allows police officers at the scene to log in via the Internet and complete the crash report form. The system allows Geographic Information Systems (GIS) mapping of the crash location, reduces errors through a built-in edit rules, allows for more accurate injury reporting through Emergency Medical Services (EMS) records, and increases the timeliness of the data input and analysis. Perhaps more significantly, the WBCR supports the expansion of tribal data collection and data sharing (currently only fatal crashes are reported). The WBCR system is provided to all tribal governments with explanation of the benefits including greater success in securing funding for safety improvements with complete crash data. Funding is available for tribes that need computer equipment. Common concerns with the WBCR system are training for tribal officers, reliable Internet access, potential sovereignty issues, and personal identifiers in the data.

The South Dakota Department of Public Safety (SDDPS) is another example of a state agency that works closely with tribes to demonstrate the benefits of greater tribal participation in crash reporting and the importance of implementing crash reporting systems. In practice, SDDPS staff promotes the sharing of crash report information between BIA/Federal Bureau of Investigation (FBI) and tribes/state Accident Records programs. Clearly, an effective crash data collection system is a prerequisite for building an effective tribal crash reporting system.

Furthermore, only a tribal crash data collection system with "quality crash data" can bring benefits to improving traffic safety on tribal roads, as the crash data is meaningful only when it is complete and accurate. Complete and accurate tribal crash data is fundamental for engineers to identify crash causes and hot spots, and eventually for securing funding to improve tribal road safety. Therefore, law enforcement officers must be aware of the importance of quality crash data to end users such as engineers, planners, educators, EMS personnel, and law enforcement personnel themselves, and the profound benefit can be brought by high quality crash data. In

practice, the completeness and accuracy of tribal crash data can be improved by training provided to tribal law enforcement officers and via data collection software as well as crash database. Related discussion can be found in Topics 2.5, 2.6 and the case study at the end of this chapter.

The ultimate benefit of tribal crash data collection is identifying and addressing traffic safety issues on tribal lands based on the collected crash data. A real example is that Wisconsin conducted Road Safety Audits (RSA) for several tribes based on the reported tribal crash data and the outcome showed improved traffic safety on tribal roads (Ceifetz 2012). An RSA is a formal safety performance of an existing or future road or intersection based on existing crash data. One success story is that based on recommendations from an RSA conducted in the Menominee Nation in 2009; traffic safety on State Trunk Highway 55 and 47 was improved by treatments that reduce number of lane departure crashes (Ceifetz 2012).

Topic 2.2: Tribal Concerns with Collecting Crash Data

Most tribes have concerns about sharing data with the state agency, even though many of these same tribes want to or have established a crash data collection system. A common concern with establishing a tribal crash data collection system is simply the lack of resources and well-trained personnel to initiate and maintain the crash data collection system. Through communication, state agencies are usually willing to provide financial assistance and support to tribes in the form of equipment, software, and training. Discussion on state assistance on funding application and training is covered in Topics 2.4 and 2.5. Additional concerns noted include:

1. Understanding the standard crash data collection procedure used by the state;
2. Access to the state crash report form;
3. Training about how to fill out the crash report form and associated software;
4. Funding opportunities for establishing the data collection systems; and
5. Law enforcement support under emergency conditions due to the lack of law enforcement personnel.

Concerns 1 and 3 can be addressed via training provided by the state agency, which is covered in Topic 2.5. Regarding Concern 2, the state agency usually provides access to the state crash report form, which is discussed in detail in Topic 2.5. Topic 2.4 discusses available funding opportunities to establish tribal crash data collection systems, which addresses Concern 4. Concern 5 on law enforcement support is specifically discussed in Topic 2.3.

Here again, the communication, cooperation, and coordination process may be effective in expressing the needs from both perspectives. States need to communicate information about funding opportunities for implementing and associated training for a crash data collection system.

Topic 2.3: Law Enforcement Assistance Agreements on Tribal Roads

One of the concerns of tribes in establishing and maintaining a crash data collection system is the lack of law enforcement resources under emergency conditions on tribal roads. As a solution, some tribes have a mutual aid agreement with neighboring law enforcement agencies to provide or receive emergency service. The neighboring agencies include other tribes, cities, counties, and state agencies.

Tribes with mutual aid agreements typically have them with surrounding county law enforcement and medical/fire services. Some tribes have concurrent jurisdiction with the city and the

state. The law enforcement responsibility is then shared by the tribe, the city, and the state. Some other tribes do not have a formal mutual aid agreement with neighboring agencies; however, requests can be made by having good relationships. A specific tribe has mentioned that the mutual aid or commission authority exists; however, it is not specifically for crashes, as who handles the crash depends on whether a tribal member is involved.

Wisconsin is an example of a state that has full mutual aid request authority under Wisconsin law. The following Wisconsin practice can be a model for addressing the mutual aid agreement needs from tribes (Redinger et al. 2010):

- Tribal police agencies respond to crashes located within the reservation boundaries. If the tribe does not have available officers at the time of dispatch, county officers will respond to, and handle, the crash reporting (applies to most tribes).
- Both the tribal and county police officers will respond to a crash on the reservation. Whether the participants of the collision are tribal members or non-tribal members dictates which agency handles the crash reporting. If a tribal member is part of the collision, the tribal police department will handle the reporting. Non-tribal citizens are handled by the county officer.
- In communities without a tribal police department, the local or county enforcement agency responds and completes the crash reporting. These tribes rely solely on the county for crash reporting.

Topic 2.4: Funding for Implementing the Crash Data Collection System

States and local agencies must be sensitive to the fact that most tribes lack sufficient resources to initiate large crash data collection systems. Tribes are encouraged to work with state partners and apply for federal and state grants to support their development and implementation of a crash data collection system. State and local agencies are encouraged to make tribes aware of funding opportunities and provide assistance in this process, as necessary.

NHTSA funding is one of the directly related funding sources for implementing a tribal crash data collection system in many states. The Traffic Records Coordinating Committee (TRCC) in the state DOT usually leads this effort. Tribes are encouraged to be actively involved in the state TRCC meetings in order to obtain first-hand information about NHTSA funding opportunities. In some states, NHTSA funding application is delegated to the region offices. A South Dakota study has summarized the TRCC funding information, as presented in Table 3 (Quick and Bailey 2007). NHTSA Section 408 funds are often available for implementing tribal crash data collection systems. Other funding opportunities for tribal highway safety improvement may be indirectly used for implementing tribal crash data collection, such as the Indian Reservation Roads (IRR) funding under the Federal Lands Highway Program, 23 United States Code (USC) 204.

The state agency is encouraged to provide assistance to the tribal leaders for funding application assistance, including grant writing support. Other methods of assistance may exist. For example, the state of Montana discusses available funding resources with tribes at various venues including the Annual Tribal Safety Summit. The Arizona DOT continuously monitors federal, state, and other sources of funding and notifies tribal officials of available opportunities using a current tribal contact database. Opportunities also are reported to tribal officials at various meetings. In Wisconsin, the state also assists tribes in the grant writing process. The Wisconsin tribal liaison works with tribes closely to obtain the data needed to apply for grants that the tribe would be qualified for.

Table 3. Potential federal funding opportunity for implementing the tribal crash data collection system.

Program	Funding Requirements	Funding
NHTSA State Traffic Information System Improvements Grants (Section 408)	• Funding must be used to adopt and implement data improvement programs: • To improve the timeliness, accuracy, completeness, uniformity, integration, and accessibility of state data; • To evaluate the effectiveness of these efforts; • To link these state data systems, including traffic records, with other data systems within the state; and • To improve the compatibility of the state data system with national data systems and data systems of other states to improve the ability to observe and analyze national trends in crash occurrences, rates, outcomes, and circumstances.	The federal share of programs funded by this section shall not exceed 80%. NHTSA funding typically allows a soft match.
BIA and the FHWA Federal Lands Highway Program, 23 United States Code (USC) 204	• Collecting data on traffic-related deaths, injuries and accidents can be eligible for this funding; • Tribal communities prepare a TIP, a 5-year plan for improvements on each reservation; and • Once the TIP is approved by the FHWA, there are projects that costs can be charged to. All projects using BIA funding have to be on the approved TIP.	

Future federal legislation is likely to create new and/or expanded funding opportunities for the development, crash data collection, and maintenance of tribal crash data. Communication with state and federal partners is critical in identifying these funding sources.

Topic 2.5: Implementing the Tribal Crash Data Collection System

Once funds are in place, the tribe can start to establish or implement the crash data collection system. As noted, the tribal crash data collection system should meet the following criteria:

- The system uses a standard crash report form such as the state crash report form or a form specifically developed based on the state crash report form. NHTSA's MMUCC should be consulted during development of such standard crash report form.
- Initiation and completion of a crash report form is not dependent on who is involved.
- Location of crash should be documented accurately by street addresses, highway mile markers, or geo-referencing latitudes and longitudes, and be conforming to the state crash locating system.
- Tribal law enforcement officers should be well trained in filling out the crash report forms.
- Methods should be in place for evaluating the completeness of the completed crash reports.
- A crash report database is recommended to be used for archiving and managing all crash records. However, it is not required for all tribes due to varied resource availability by tribes of different sizes. If a crash database is used, methods should be in place to evaluate the completeness and accuracy of the crash records.

Crash Report Form and Equipment

Almost all states encourage tribes to use the state crash report form to collect crash data on tribal lands. For example, the crash report form used by tribal police departments and county

sheriff departments in Wisconsin is the standard MV4000 Wisconsin report form in its paper form, or through the electronic version called Badger Traffic and Criminal Software (TraCS). The MV4000 crash report form and Badger TraCS software are compliant with NHTSA's MMUCC. All tribes use one or both form types except the Menominee Nation, which is a non-PL 280 tribe (Ceifetz 2012).

Tribes in some states are equipped with electronic portable crash reporting systems, which is considered to be able to increase data consistency. For example, in Montana, tribal police officers and BIA officers have handheld devices into which the responding officer enters the data. Crash data can be downloaded at the police station and submitted electronically to the Montana DOT (FHWA 2005).

For tribes located in remote areas where law enforcement officers are not always able to get to the crash scene, a self-filed crash report form can be provided to drivers. For example, in Alaska, a driver crash report form 12-209 can be completed by crash participants when the police do not or cannot respond.

It is important that the crash report form and equipment must have the ability to accurately capture or document the location of the crash. Having accurate locations is significant and can be incorporated into GIS that could be connected to roadway inventories. GIS-based roadway inventories provide more specific information on roadway geometrics, pavement conditions, and many other roadway related information that can be included in the crash analysis (Shinstine and Ksaibati, 2013-1). Availability of accurate crash locations is essential for identifying crash hot spots, which helps tribal decision makers prioritize improvements so that limited funds can be used on the problem areas with the highest crash risk.

Crash Reporting Software

Different states use different crash data collection and management software. One of the most widely used crash records software programs is TraCS, which has been deployed in 18 states across the country as of 2011 (North Dakota DOT 2013). TraCS is an application developed by the state of Iowa in partnership with the FHWA (Wisconsin DOT 2013) and serves as a national model for the development of automated reporting systems for law enforcement. TraCS is designed with modular architecture capable of sharing and incorporating common data among forms, such as crash, citation, operating while intoxicated (OWI), commercial motor vehicle inspection, and incident forms. Technologies such as bar code scanners, digital camera, and Global Positioning Systems (GPS) enhance the use of TraCS. Automated reporting improves the accuracy, timeliness and ease with which incident data is collected and made available for analysis. TraCS also provides the following additional features to facilitate the easiness of use:

- Data validation and completeness checking;
- Diagramming; and
- Printing.

The North Dakota DOT has had success in implementing TraCS with North Dakota tribes. Hardware was provided to the tribes through Federal Lands Resources funding while the software and related trainings were provided by funding from the North Dakota DOT and through a NHTSA grant. To implement TraCS, a MOU was developed and signed individually for each tribe (North Dakota DOT 2012).

In addition to TraCS, many other crash data collection and management software programs were used in various states. In practice, the software program provided by the state agency to the tribes varies by states. For example:

- The state of Idaho provided eIMPACT, Idaho's data collection software to tribes free of charge;
- South Dakota provided the TraCS electronic crash reporting software free with installation and training;
- The Arizona DOT provided TraCS software to any law enforcement agency within the state of Arizona including tribes;
- The Washington DOT had a crash reporting system available to tribes for their usage, which is called the Collision Data Analysis Tool (CDAT). This tool involves querying and reporting crash data;
- Wyoming provides a tool called 'ReportBeam' to tribes with training;
- Tribes in the state of Utah used the tool called the DI-9 to record crashes; and
- Montana planned to present WBCR to tribes once the system was fully operational in that state. The state will provide additional funding to assist tribes in implementing WBCR.

Trainings and Technical Support Provided by the State Agency

The state agency typically provides trainings and technical support on the crash data collection software. For example:

- North Dakota provides assistance with funding to support training and maintenance of data collection equipment;
- The state of Utah provides tribes with training that includes an overview of the existing tools available for use, such as the crash forms and electronic submission;
- The Minnesota Department of Public Safety offers training on completing the crash forms as well as research staff to assist with data requests. Idaho also provides installation and training support to tribes for the eIMPACT software;
- Oregon suggested that the Division of Motor Vehicles (DMV) could possibly provide this assistance service if a particular tribe requested training in crash data collection. The Oregon Driver's Manual provides basics of filling out crash reports and the filing process to follow when involved in a crash;
- Montana provides training and technical support on the use of their database system (WBCR). Funding for the WBCR trainer employed by Montana Highway Patrol (MHP) is provided by the Montana DOT; and
- In Wisconsin, the majority of tribal police officers responsible for completing the crash reports obtain their training in the state police academy.

A two-phase training procedure carried out in the state of South Dakota is recommended as one of the best practices. Specifically, the training was provided in two phases, depending on the needs of the tribal authority: (1) on-site training and (2) train-the-trainer program. The training was at no cost to tribes and was approximately 3 hours long. The SDDPS was responsible for the delivery of the report curriculum (Bailey and Huft 2008). Although in the South Dakota case the training session consumed approximately three hours, the guide does not recommend three hours as the standard length for training sessions. The length of training session should be determined based on the content covered in the training.

Topic 2.6: Creating a Tribal Crash Database

A crash database is an further improvement beyond the standard crash data collection system. A tribal crash database is a database that tribes can use to store, archive, query, and share crash records. Unfortunately, most queried tribes do not have a tribal crash database. Only eight out

of the 48 queried tribes have a crash database in place. Seven of these eight tribes have methods in place to evaluate the completeness (absence of blank fields) of submitted crash reports. Six of the tribes have an established time frame requirement for the submission of crash reports to the database. The timeframe requirement ranges from three to 10 days from the crash date. In addition to having a timeframe requirement for submission, five of the eight tribes have methods in place to evaluate the timeliness of submitted crash reports. All these facts indicate that tribal crash databases have not yet been widely implemented in tribes across the United States. In most states, recourses are available to support the creation, installation, and associated training for a crash database. Many states, such as Idaho and North Dakota, provide tribes with free installation and trainings of the recommended crash database.

Most data collection software mentioned provides the option of saving the crash records in a local (offline) database. For example, TraCS can save crash data on its local crash database. The eIMPACT software used by tribes in Idaho also includes a local crash database for storing crash records. If software tools are not used in the tribal crash data collection process, tribes can keep and file paper copies of the crash reports or implement a manual database in which individual crash data is manually coded. The further sharing of crash data with the state agency can be done via submission of hard paper copies of the crash report with or without additional coded information. Clearly, this method is time consuming and inconvenient for querying and analyzing crash patterns and causes. This issue can be addressed by creating the tribe's own localized electronic data management systems.

One of the benefits of using a tribal crash database is that the completeness and accuracy of completed crash report forms can be checked when these crash reports are input into the database. For example, in South Dakota, the state crash database has the function of validating the accuracy and completeness of the entered crash reports. Electronic records from TraCS systems are typically logged in the state database compatibly. Every crash report to be entered in the database, including electronic and paper submissions, is required to meet database or South Dakota Accident Records System (SDARS) certification and validation standards in order to ensure accuracy and completeness of records; this process is standard irrespective of the agency submitting the crash report (Bailey and Huft, 2008).

Case Study: Tribal Crash Report Form Completion

Source

Adapted from Bailey, L. and Huft, D. 2008. "Improving Crash Reporting: Study of Crash Reporting Practice on Nine Indian Reservations." In *Transportation Research Record: Journal of the Transportation Research Board, No. 2078*, Transportation Research Board of the National Academies, Washington, D.C., 2008, pp. 72–79.

Situation

Crashes on Native American reservations in South Dakota were significantly underreported. For example, 737 crashes were documented by tribal and BIA law enforcement agencies for nine reservations in 2005. However, only 52 crashes were reported with enough detail to be included in the South Dakota Accident Reporting System. The first phase in the tribal crash reporting process is filling out tribal crash report forms at the crash scene. In this phase, an officer visits the scene of a crash and fills out one or more reports on the crash. Issues happened or originated in the crash data collection phase.

Identified Issues

The issues involved in the crash data collection phase were identified to be the following:

- Issue 1: Inconsistent training for officers who work on reservations through BIA. The inconsistency also was due to the lack of communication about new forms and procedures in place at the SDDPS. As a result, law enforcement officers on tribal lands were sometimes unfamiliar with the South Dakota crash forms. Also personal ties between tribal or BIA officers and state officials, which could otherwise improve crash reporting, may be missing. This situation can be remedied in part through training and in part through extended outreach from the SDDPS and from tribal and BIA law enforcement.
- Issue 2: Removal of a vehicle from a crash scene to avoid documentation. There was a lack of public awareness of the need to preserve a crash scene.
- Issue 3: Understaffed low enforcement. Officers who are short of time may put off writing reports because of other pressing needs.

Practice Implemented

Practice has been implemented to address the tribal crash data collection issues:

- Practice to address Issue 1: Provision of training. Law enforcement officers must be trained in basic crash reconstruction, supervisors must prioritize and make time for forms to be filled out, and BIA must implement full crash reporting as part of its mission in reservation law enforcement. The law enforcement officers are trained at the South Dakota Police Academy operated by the Division of Criminal Investigation in the Office of the Attorney General. By undergoing training specific to South Dakota law enforcement, the officers are more familiar with the state's crash report form.
- Practice to address Issue 2: Special training on crash reconstruction. Several tribes in South Dakota have received grants from the Indian Highway Safety office of the BIA. These grants generally provide funds for a highway safety officer who has special training in crash reconstruction and reporting. For example, at the Cheyenne River Sioux Tribe, the highway safety officer is certified in full crash reconstruction. At the Rosebud Sioux Tribe, the highway safety officer also reviews crash reports made by other police officers.
- Practice to address Issue 3: Law enforcement mutual aid with neighboring agencies. For example, the Flandreau Santee Sioux Tribe fully reports its crashes to the state. The tribal police force operates under special circumstances, however. The tribe and the City of Flandreau have formed a combined police department that provides law enforcement services to both the city and the reservation.

CHAPTER 3

State-Tribal Crash Data Sharing

An essential component of an effective crash reporting system is tribes' sharing the collected crash data with the state agency, even when certain information on the crash report may be redacted (e.g., removal of names of the tribal members or other identifying information from a crash report). On the other hand, the state agency offers access of the state crash database to tribes for retrieval of the shared crash data for analysis purpose. This section presents topics related to state-tribal crash data sharing. The primary components of this third step in developing more effective crash reporting systems are presented in Table 4. In addition, a case study of tribal crash data processing and sharing is included at the end of the chapter to provide best practice associated with the topics covered in this chapter.

Topic 3.1: Concerns and Benefits of Sharing Crash Data

The tribal query data indicates that only 25% of the queried tribes share crash data with their associated state agency. The reasons why tribes refused to share data are numerous. One of the concerns of sharing data is tribe's fear of losing tribal sovereignty by reporting crashes to the state agency. Furthermore, tribes may withhold data because of concerns with double jeopardy of their tribal members. Another concern that cause tribes' hesitance to provide crash data is that tribes do not understand or know how the crash data will be used (Shinstine and Ksaibati 2013-1). Because of these concerns, some tribes implemented tribal laws that prohibit crash data sharing.

Tribal sovereignty has been in jeopardy before (Shinstine and Ksaibati 2013-1). Therefore, tribes must be assured by the state agency that they will remain sovereign. Building trust between tribes and the state government is critical to this success. It is important to keep in mind that this trust must be built among the leadership (Shinstine and Ksaibati 2013-1). State leaders can reach out to tribes to change the culture to improve the safety on their roadways by getting the agencies to cooperate and provide the required crash data. Key steps for building and maintaining relationship between tribes and the state are included in Part 2, Chapter 1 of this guidebook.

The benefits of tribal crash reporting must be weighed against these concerns. State agencies must develop policies that will not affect the tribe's sovereignty with the sharing of crash data. Data should only be used to address traffic safety issues on tribal lands and to identify and improve problem areas on tribal roads. Tribes need to be assured that the data collection is essential to improving traffic safety and that the information would not be used to adversely impact the tribe or the individual driver involved in a crash (Shinstine and Ksaibati 2013-1). The use of crash data to improve the safety of tribal roads needs to be conveyed to and understood by tribal governments. Performing crash analysis can take on many forms and provides tribal decision makers critical information on what improvements or programs should be initiated.

Table 4. Establishing the state-tribal crash data sharing system.

Number	Topic	Objective
3.1	Concerns and Benefits of Sharing Crash Data	Tribes and state agencies must be aware of the concerns and the benefits with sharing crash data
3.2	Crash Data Sharing Agreement	Creating a crash data sharing agreement, or MOU, defines the problem both the state agency and the tribe intend to solve, states the goal and objective, and includes both the tribe's and state agency's agreement.
3.3	Establishing a State-Tribal Crash Data Sharing System	Once an MOU is signed between the state agency and the tribe, the tribe may seek assistance from the state to implement the crash data sharing system
3.4	Providing Access to the State Crash Database	Crash data sharing is mutually beneficial between tribes and the state agency

Accurate and complete crash data can be confidently used to develop safety models that can provide specific information on problem areas, causal factors, and behavioral factors involved and how they affect the severity of crashes (Shinstine and Ksaibati 2013-1).

Specifically, the double jeopardy issue can be overcome by accepting redacted crash data with tribal members' names redacted or removed. Redacted data also helps address the tribal law concerns as no tribal members' information is disclosed. The Montana DOT, like several others, has agreed to accept tribal crash reports with all personal information, including names and social security numbers, removed (FHWA 2005).

Conveying the benefits to the tribes is another essential step to take by the state agency. As the state reaches out to the tribes, key benefits and the available assistance that can be provided must be conveyed and understood by tribal governments. The importance of complete and proper crash reporting is recognized as inadequate among tribal communities (Herbel and Kleiner 2009). The state agency needs to clearly articulate the benefits of sharing the crash data. Specifically, by sharing crash data, tribes can work more closely with state agencies and request the state's assistance in:

- Identifying problem areas;
- Improving tribal road safety;
- Expanding resources including more funding opportunities; and
- Improving data collection.

Some tribes showed their interest in sharing crash data with the state agency. The following specific benefits have been identified from the tribal queries:

- Better understanding of the causes and patterns of crashes on tribal lands;
- Effective implementation of the ideas brought up in tribal safety meetings/plans in future road safety projects of the state;
- Assistance from the state in identifying problem areas;
- Assistance from the state in improving tribal road safety;
- Tribal law enforcement department receiving more training from the state;
- More assistance from the state in data collection;
- Assistance from the state in expanding resources;
- More opportunities of funding leveraged to address safety issues on tribal lands; and
- Law enforcement support from the state.

Approximately 33% of the queried tribes were aware of the benefits of an effective tribal crash reporting system by noting one or more of the benefits listed above. For example, a tribal law enforcement officer stated, "An effective crash reporting system can help implement ideas from the safety plan. So many times we see new construction with no implementation of the ideas brought up in our meetings and/or safety plan." An officer from another tribe noted, "The benefit is the improvement of high traffic areas which have blind spots." Another tribal officer said, "Establishing a crash reporting system can reduce accidents, plan for future expansions, and changing current problems areas."

In terms of suggestions from tribes, one tribe indicated that the state should make tribes more aware of the benefits, and provide seminars or trainings. Another tribe noted: "If the state would take redacted data we would be able to provide it." In this case, tribal Liaisons play a key role in communicating the concerns and benefits. Effective communication is critical to addressing most all of the concerns and conveying benefits to the tribes. A tribal official indicated in their query dataset, "The problem is a lack of communication with the state, although we have a willingness to work together."

The Minnesota tribal liaison had a good practice in coordinating the organization of statewide tribes and transportation conferences. Roundtable sessions were organized, which promoted direct communication and discussion between tribal leaders and the state's high-level staff (Minnesota DOT 2013). These roundtables are a good location for tribes to express concerns, as well as for the state to convey benefits of reporting crashes. The Wisconsin DOT instituted a transportation safety project focusing on tribal lands and held Tribal Transportation Safety Summits where DOT staff was able to share information about the benefits of crash data sharing.

Topic 3.2: Crash Data Sharing Agreement

Once consensus is reached via communications between the state agency and a tribe, they often create and sign a crash data sharing agreement, commonly referred to as a memorandum of understanding (MOU). A MOU defines the problem both the state agency and the tribe intend to solve, states the goal and objective, and clearly describes both the tribe's and the state agency's agreement. Tribe agreements often include the following items:

- Provision of contact information of tribal law enforcement officer;
- Agreement of sharing the tribal crash data with full or redacted information;
- Timeframe to send tribal crash data;
- Partnership with the state agency to evaluate problematic areas; and
- Partnership with the state agency to address safety concerns identified from the crash data.

State agency agreements often include the following:

- Provision of standard state crash report form;
- Provision of assistance in installing and maintaining the crash data collection software;
- Provision of trainings in filing the crash reports, supporting the use of data collection and sharing software;
- Allowance of tribe's accessing the shared crash data;
- Provision of assistance in funding search and application;
- Partnership with the tribe to evaluate problematic areas; and
- Partnership with the tribe to address safety concerns identified from the crash data.

MOUs may be more important for non-PL 280 tribes and the corresponding state agency. Data sharing agreements are pre-established PL 280 tribes. PL 280 (an abbreviation for Public

Law 280) is a federal law mandating a transfer of federal law enforcement authority within certain tribal nations to state governments. There are six states in the country that utilize PL 280 to guide their relationships with tribes located in their state. Other states were allowed to elect similar transfers of power if the tribes affected gave their consent. Therefore, states may have tribes that are both PL 280 and non-PL 280. The tribes that do not fall into that category of PL 280 have independent jurisdiction and are not required to meet a state's request for tribal matters. For example, Wisconsin is a PL 280 state with the exception of the Menominee Nation. Thus, an MOU is needed and was signed between the Menominee Nation and the Wisconsin DOT in terms of agreement of crash data sharing.

The New Mexico DOT and South Dakota DOT have a strong history of developing and signing MOUs with tribal agencies. In New Mexico, MOUs were signed between New Mexico DOT and several New Mexico tribes. These MOUs, though not legally binding, required a working group consisting of representatives of the New Mexico DOT (usually including the District Engineer) and of a tribal government to meet in person at regular intervals to "establish goals, objectives and delineation of tasks relating to implementation of projects of mutual concern, and to identify and seek to remove obstacles to the achievement of those goals, objectives, and tasks." When projects were identified as objectives, the working group was required to meet at least quarterly to work towards a project-specific agreement. The first MOU was signed with Acoma Pueblo in 2002, and as of November 2004, similar agreements had been signed with four other pueblos including the Jicarilla Apache Nation and the Navajo Nation (the state's largest tribe with over 80,000 members in New Mexico) (FHWA 2005).

In South Dakota, the MOU was signed between the state agency, the Indian Highway Safety Program, and BIA Road Departments. The agencies have jointly developed a model MOU as an agreement to exchange crash data between the tribe and the state to improve highway safety. The goal of the agreement is to support engineering solutions to hazardous areas of the roadway, and the agreement specifies that the crash data submitted will be used to address roadway hazards (Quick and Bailey 2007). Appendix A presents a copy of the South Dakota MOU example.

Topic 3.3: Establishing the State-Tribal Crash Data Sharing System

Once an MOU is signed between the state agency and the tribe, the tribe may seek assistance from the state to implement the crash data sharing system. Crash data sharing has two basic elements: method of data sharing and timeframe of reporting crashes.

Method of Data Sharing

For many tribes, especially tribes that use a paper-based method for collecting crash data, the crash data are included in the paper copies of the crash report mailed to the state agency. For tribes that use crash data collection software, data sharing is usually implemented by the same software for crash data collection. In addition to electronic submission, some states (such as Minnesota) also allow tribes to report crashes via the web with registration on the website. Direct crash database integration with the state crash database is another method of sharing tribal crash data. Among the 16 queried states, Minnesota is the only state that has tribal crash data submitted via an integrated tribal crash database. Trainings on methods for submitting crash data to the state agency are typically provided to tribes by the state agency. During the data share process, the completeness of completed crash report forms is typically checked when inputting or transferring tribal crash reports into the state crash database.

Tribes may choose to withhold certain information from the crash data when reporting the crash data to the state agency. Whether the information is withheld should be stated in the MOU.

Timeframe of Reporting Crashes

The timeframe of crash data submission varies by states and tribes. Nine of the 16 states queried reported that they received shared crash data from tribes. Among the nine states, six states received data yearly, two received data semi-annually, and one received quarterly. According to the tribal query data, of the 12 tribes that provide crash data to the state agency, four tribes provide the data on an annual basis, three tribes on a quarter basis, and the remaining five tribes did not specify how often they provide the data. It is suggested that tribal crash data be submitted to the state agency at least semi-annually. This frequency can assure the timely identification of problem areas on tribal roads. These traffic safety issues can in turn be addressed in a timely manner.

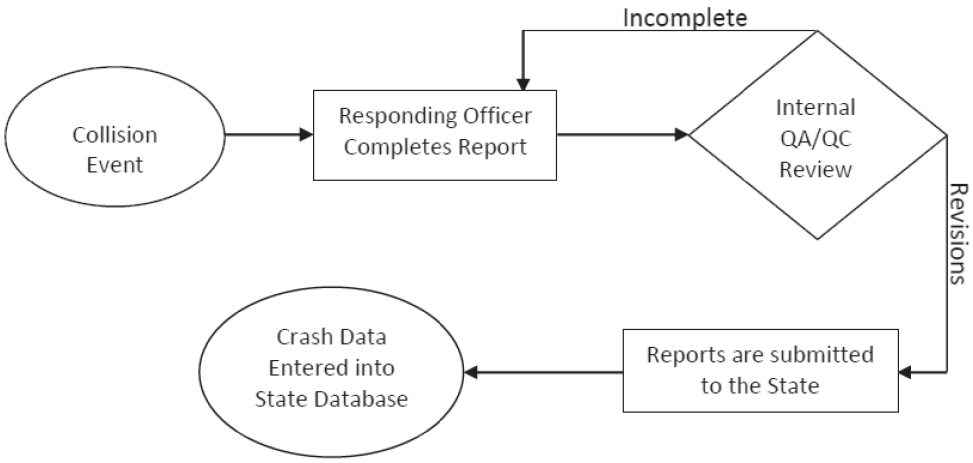
Process for PL 280 Tribes

Figure 5 illustrates a standard crash data collection and sharing process for non-PL 280 tribes (Ceifetz 2012).

Using Wisconsin practice as an example, upon completion of the crash report by a PL 280 tribe law enforcement officer, the crash report is submitted to the state for processing. Quality Assurance/Quality Control (QA/QC) methods were consistent in being reviewed either by an administrative professional, another officer, or upper management. Upon completion of the review, the report is filed with a hard copy or in an electronic filing system used by tribal law enforcement agencies. According to all agencies that submit data, they comply with the state regulation of the report being submitted within 10 days of the crash. Overall, the reporting process for all of the agencies seemed to be thorough and timely with adequate oversight for quality (Ceifetz 2012).

Process for Non-PL 280 Tribes

Wisconsin also has practice in developing processes for non-PL 280 tribes. Menominee Nation is the only non-PL 280 tribe in the state of Wisconsin (located within Menominee County).



Souce: Ceifetz 2012

Figure 5. Standard crash data collection and sharing process.

Menominee County contains two law enforcement agencies, the Menominee County Sheriff Department and the Menominee Nation Tribal Police Department.

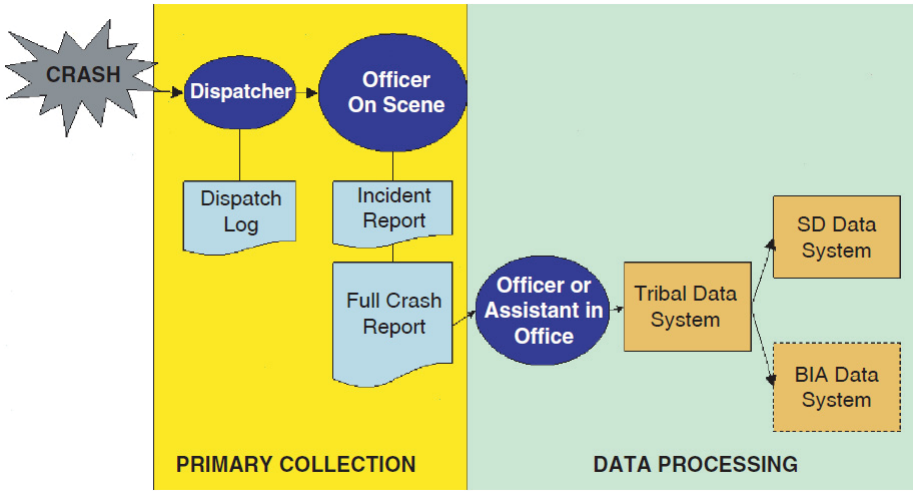
When a crash occurs in Menominee County, the Menominee Tribal Police Department conducts the investigation and writes the report of any tribal members involved in the crash. Menominee County Sheriff's officers investigate and write the crash report of non-tribal members involved. Due to this arrangement, information regarding tribal members involved in the crash is handled by the Menominee Tribal Police Department. This arrangement keeps private information of tribal members from being forwarded to the state. Menominee County Sheriff's Department reported that there is a concern from tribal members that information from their crash data could be used against the tribe and this is a reason for not sharing this information with the state; conversely, the state will not accept crash reports without personal identifiers (Ceifetz 2012).

As a solution, Menominee Nation has a separate confidentiality agreement with the Wisconsin DOT regional office staff to report their crash data directly to them for use in the identification of safety issues. This agreement between the Menominee Nation and the Wisconsin DOT is renewed annually (Ceifetz 2012).

Process with BIA Involved

In some states, BIA is involved in the tribal crash reporting process. For states with this common practice, the South Dakota model has proven to be effective.

In South Dakota, crash reports of crashes on tribal roads are initiated by both tribal law enforcement and BIA law enforcement. For all nine reservations, law enforcement services are supported by BIA. Five tribes administer their own law enforcement directly under PL 96-638. For the remaining four tribes, the BIA provides law enforcement directly. The SDDPS collects all crash reports within the state, as prescribed by state statute. Counties and cities in South Dakota are required to submit the crash reports to the SDDPS within 3 days (Bailey and Huft 2008). Figure 6 shows the current tribal crash reporting process used in South Dakota.



Souce: Bailey and Huft 2008

Figure 6. Tribal crash reporting process in South Dakota with BIA involved.

As sovereign nations, the tribes in South Dakota have a formal relationship with the federal government, not the state. Therefore, conflicts have arisen during the process of reporting crashes to the SDDPS. Typical conflicts are:

- Due to different training received, tribal and BIA law enforcement officers are unfamiliar with South Dakota crash forms.
- Crash reports are not standard practice at BIA. The BIA does not currently require full crash reports, although it does require incident reports.
- Tribes are not under the same obligations as cities and counties to report crashes to the SDDPS. Although BIA law enforcement supports sharing crash data between tribes and SDDPS, only four tribes in South Dakota have BIA law enforcement services, and other tribes can choose whether to report or not (Bailey and Huft 2008).

The South Dakota model introduces solutions to the aforementioned conflicts. These solutions include:

- Tribal and BIA law enforcement officers can be trained to get familiar with the state crash reporting form.
- BIA law enforcement must implement full crash reporting as part of its mission in reservation law enforcement.
- To stimulate better reporting from tribes, the SDDPS and the South Dakota DOT can outreach to tribes explaining how crash data collection systems can benefit tribes. Tribes need assurance that the only use of crash data collected on tribal lands will be to improve traffic safety, not to criticize crash rates or to support criminal investigation or any other effort (Bailey and Huft 2008).

Topic 3.4: Providing Access to the State Crash Database

Crash data sharing provides obvious benefits to both the state agency and the tribe. Tribes must have access to the state crash database to retrieve the submitted crash data for the purpose of identifying locations with traffic safety problems and for obtaining the necessary data for grant applications. Furthermore, data sharing provides a level of trust between agencies. According to the state query data, six states allow tribes to access the submitted crash data via database access, nine states allow the access by request, and one state currently does not allow tribes to access their submitted crash data at a later time.

Many states allow tribes to access the crash data electronically. In Arizona, tribes are able to access their data in the Safety Data Mart once the tribes have signed the Data Access/Exchange Agreement with the Arizona DOT. In Idaho, tribes can perform crash analysis through the Web Crash Analysis Reporting System (WebCARS) after they have requested and obtained an account. Minnesota maintains the Minnesota Crash Mapping Analysis Tool (MnCMAT) program that allows tribes to access the crash data. A data file would be provided upon request. Some other states such as Alaska, California, North Dakota, New Mexico, South Dakota, Wisconsin and Utah provide crash data back to the reporting tribal agency per request. Data access agreements requested by most of the states can also be included in the MOU between the state agency and the tribe.

In some states, the state agency collects some crash data for tribes, such as crashes on roads with concurrent jurisdiction by the tribe and the state. Tribes should also be able to access these crash data in order to perform a complete crash analysis. As a solution, the state agency usually provides tribes with access to these data. For example, crash data collected by the Oregon DOT on tribal lands can be made available to tribes in many forms and the ability to download from the web or receive data for their own systems can be arranged. In Oklahoma, all tribal roads are

owned by the state. Therefore the state is responsible for crash reporting on all the tribal roads. The Southern Plans Tribal Technical Assistance Program (TTAP) Center offers a Crash Data Collection class that provides trainings to tribal officers on how to log in to the Oklahoma's Safe-T System so they can access crash data for their area. Tribal officers can learn how to access the crash data on tribal lands, which were collected by the state (Southern Plains TTAP Center 2013).

Case Study: Tribal Crash Data Processing and Sharing with the State Agency

Source

- Adapted from Bailey, L. and Huft, D. 2008. "Improving Crash Reporting: Study of Crash Reporting Practice on Nine Indian Reservations." In *Transportation Research Record: Journal of the Transportation Research Board, No. 2078*, Transportation Research Board of the National Academies, Washington, D.C., 2008, pp. 72–79.
- Adapted from the state query response.

Situation

Crashes on Native American reservations in South Dakota were significantly underreported. Seven hundred thirty-seven crashes were documented by tribal and BIA law enforcement agencies for nine reservations in 2005. However, only 52 crashes were reported with enough detail to be included in the South Dakota Accident Reporting System. Therefore, the first phase of the tribal crash reporting process focused on enhancing primary data collection. The second phase in the tribal crash reporting process focused on tribal crash data processing and sharing with the SDDPS. A tribal law enforcement assistant enters the information into the data storage system. Some tribal law enforcement offices have software systems, such as Cisco or the Criminal Records Information System (CRIS), to record crash data electronically. Others keep crash reports or copies of each crash report in a paper file. Some tribal law enforcement offices do not keep copies of full crash reports and simply submit those that are collected to the SDDPS.

Identified Issues

The issues involved in the crash data collection phase were identified to be the following:

- Issue 1: Lack of feedback regarding the completeness or accuracy of the crash form after submitting the crash reports to the SDDPS. Tribal law enforcement agency could benefit from additional feedback about how forms were filled out.
- Issue 2: Incompatible electronic crash data collection system with the state system. Software systems for crash records do not conform to a standard across the United States.
- Issue 3: Lack of software technical support for the software for crash data collection and sharing as well as lack of trained personnel to work with the software.
- Issue 4: Tribal sovereignty and political concerns. Historically in South Dakota, statistical data have sometimes been used to support criticism of tribal governments and members. Tribes may need assurance that the only use of crash data collected on tribal lands will be to improve traffic safety, not to criticize accident rates or to support criminal investigation or any other effort. The political barriers were also caused by not receiving South Dakota DOT funds from tribal traffic safety improvement after reporting the crash data. Tribes are not under the same obligations as cities and counties to report crashes to the SDDPS. Several tribal councils did not support submitting crash reports with personal identification of the people involved.

Practice Implemented

Practice has been implemented to address the tribal crash data processing and sharing issues:

- Practice to address Issue 1: The state crash database has the function of validating the accuracy and completeness of the entered crash reports. Electronic records from TraCS systems are typically logged in the state database compatibly. Every crash report to be entered in the database, including electronic and paper submissions, is required to meet database or SDARS certification and validation standards in order to ensure accuracy and completeness of records; this process is standard irrespective of the agency submitting the crash report. The SDARS database is able to be integrated with other state databases. The SDDPS makes crash data available for download to any government agency that requests it; as a result, tribes have access to crash data that they can, in turn, use to improve transportation safety and planning on tribal lands.
- Practice to address Issue 2: The SDDPS started to use TraCS as software for tracking crashes. Compatibility of TraCS with other criminal justice databases was the key to creating data files that can be directly transferred. By the time of returning the state query, the SDDPS was aware of one of the three tribes in South Dakota having and using TraCS. TraCS is provided by the Office of Highway Safety (Accident Records) under DPS at no cost, including installation and training. Although specific computer equipment for crash reporting is not provided in addition to the TraCS software, it is important that TraCS is available to all law enforcement, including tribal agencies. Additionally, SDDPS has a professional contractor available to help state agencies with installation and other IT/software questions.
- Practice to address Issue 3: Training from the software provider. For example, The Rosebud Sioux Tribe received software support from Cisco, which has been helpful in the implementation of the system. This system is user-friendly and has a number of built-in reports that have helped the tribe to apply for grants, make safety plans, and track progress on safety measures.
- Practice to address Issue 4: To encourage better reporting from tribes, the SDDPS started to explain how its crash data collection system can benefit tribes.

CHAPTER 4

Improving Tribal Traffic Safety Using Crash Data

The ultimate purpose of implementing the tribal crash reporting system is to fully utilize the collected tribal crash data in identifying and addressing traffic safety issues on tribal roads. This section covers topics related to how tribes and the state collaborate to improve tribal traffic safety using the reported tribal crash data. The primary components of this fourth step in developing more effective crash reporting systems are presented in Table 5. In addition, a case study of a cooperative rural road safety program for tribal roads and a case study of developing a statewide tribal transportation safety initiative are included at the end of this chapter to demonstrate best practices related to the topic of this chapter.

Topic 4.1: Engineering Studies to Identify and Address Tribal Traffic Safety Issues

Comprehensive tribal crash data allows for crash studies to be completed, such as RSA, to identify tribal traffic safety issues. Tribes often lack the expertise needed to perform safety studies based on the crash data or field evaluations in order to identify and address traffic safety issues on tribal lands. Safety stakeholders such as state DOTs, FHWA, TTAP, and local technical assistance programs (LTAP) can provide resources and technical expertise to assist tribes in performing traffic safety studies (Shinstine and Ksaibati, 2013-1; 2013-2).

TTAP was created by FHWA in 1991 to assist tribes with the management of their transportation networks (Sullivan IV and Martin 2009). TTAP has seven regional centers across the country. They provide the tribes with training, information, updates on new technology and personalized assistance with their transportation programs and are helping tribes improve their roadway safety. TTAPs work closely with FHWA to provide assistance with the many federal programs available to improving tribal traffic safety.

The state agency is usually involved in this process to provide engineering support and funding assistance. Most states have tools to perform different crash analyses. Some states, such as Idaho and Oregon, provide access to safety tools and GIS interactive maps for tribes to analyze the crash patterns by themselves. Other states directly perform tribal-specific crash data analyses or hire contracted researchers to conduct the analysis. For example:

- The Arizona DOT contracts with consultants to conduct crash analyses on tribal road systems when tribes are approved for assistance to conduct transportation studies under Arizona DOT's PARA program. Specifically, tribes are approved by the state to receive assistance from Arizona DOT via the PARA program. The PARA program is sponsored by the Arizona DOT and provides federal funds to assist tribal governments and counties, cities and towns located outside the Transportation Management Area (TMA) planning boundaries with multimodal transportation planning needs.

Table 5. Improving tribal traffic safety.

Number	Topic	Objective
4.1	Engineering Studies to Identify and Address Tribal Traffic Safety Issues	Comprehensive tribal crash data allows for crash studies to be completed, such as the road safety audit, to identify tribal traffic safety issues
4.2	Grants (funding) for Tribal Roadway Safety Improvements	After safety issues are identified on tribal roads, tribes can seek grants or funding to support their roadway safety improvement projects

- Montana conducts Native American crash data analysis annually with available data.
- The North Dakota DOT provides assistance to tribes in mapping the crashes using the data;
- The Washington DOT conducts general tribal crash analysis. The analysis is normally done by providing a crash history with a particular type of focus, i.e., contributing circumstances or pedestrian involvement.
- The Wisconsin DOT commissions a statewide report that analyzed crash data on tribal lands providing a starting point for addressing safety issues. RSAs also were conducted in several tribal communities.
- In Wyoming, analyses are performed in the state for tribes that request the analyses.
- New Mexico directly provides statistical and analytical data to the tribes based on crashes on tribal lands if the tribes can properly collect the tribal crash data.

States usually assist tribes in evaluating or directly evaluate the safety improvement of the problem areas. Such evaluations can be implemented via programs such as the HSIP. For example:

- The North Dakota DOT works with tribes through the STIP and HSIP processes;
- South Dakota reviews road safety projects for tribal roads every year;
- In Montana, HSIP nominations are solicited from tribal nations and evaluated against other needs across the state. Montana DOT has worked with other agencies to develop safety plans and evaluate safety problems. The Safe On All Roads (SOAR) program does involve tribal traffic safety evaluation; and
- The Arizona DOT works with tribal communities to develop safety projects using high-risk rural roads (HRRR) Funds, based on the Arizona DOT screening of the system.

Tribes are encouraged to get involved in safety evaluation projects in order to make sure that the engineering solutions are proffered to best suit the tribes. For example:

- In the RSA process and the PARA planning process in Arizona, tribal and BIA planners/engineers provide decision-making authority on the proper solutions/counter measures to be used within the respective tribal community;
- In Montana, safety projects/improvements on tribal roadways are coordinated with tribal officials. In South Dakota, tribal officials are involved in public meetings and direct meetings on STIP.
- South Dakota DOT works with other agencies to review road safety projects on tribal lands on an annual basis. Such projects, as well as other solutions and countermeasures to crash problems are discussed openly with tribes at public meetings to gather tribal input; additional meetings are held to address these meetings on STIP.
- Washington DOT consulted with tribes on the update of the plan to incorporate tribal-specific countermeasures.
- California DOT (Caltrans) has established a Native American Advisory Committee (NAAC) with the purpose to ensure that Caltrans management receives direct advice on planning,

developing, and implementing transportation projects and services from the Native American community (California DOT 2013). Membership of NAAC consists of persons who are nominated by tribes and Native American organizations throughout the state, recommended by the NAAC and appointed by the Director. Members serve as "at large" members to the tribes in their geographic regions (northern, central, and southern) as drawn by the BIA regional map. Members are advocates for all Native Americans of California.

A key practice program that assists the tribes in traffic safety improvement is a four-task model process developed in Arizona in 2004 (Mickelson and Corbett 2004). The four tasks included in the process are:

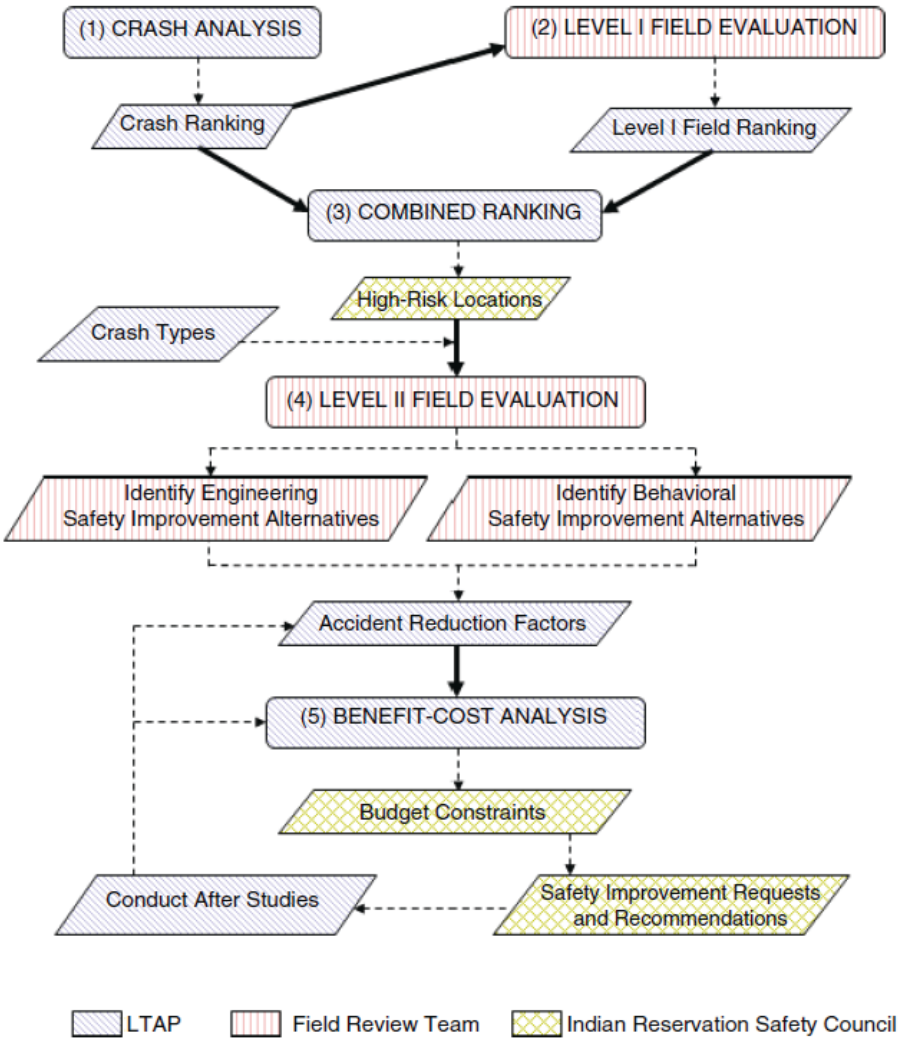
1. Determine whether a tribe has a highway safety problem;
2. Select funding sources;
3. Plan for a tribal highway safety improvement project (THSIP) or highway safety project; and
4. Implement the tribal Hazard Elimination Safety (HES) program project based on the plan.

The first three tasks are administrative in nature and are designed to help tribes incorporate traffic safety into their government structure (Shinstine and Ksaibati 2013-1). The HES in the fourth task was replaced by HSIP from SAFETEA-LU, which was later replaced by the new transportation law, MAP-21.

A most recent practice in terms of assisting tribes in identifying and addressing traffic safety issues is a five-step methodology developed by Wyoming Technology Transfer Center (WYT^2) in cooperation with the Wyoming DOT (Shinstine and Ksaibati 2013-1). As most IRR routes are similar to rural local roads, the five-step methodology was specifically adapted from the Wyoming Rural Road Safety Program (WRRSP) that was developed to assist counties across Wyoming to overcome the challenges in meeting the criteria of the HRRR funding. The objective of the five-step methodology is to identify high-risk locations on IRRs and eventually implement a low-cost safety improvement program (Shinstine and Ksaibati, 2013-1). This methodology also helps tribes use funds for safety improvements on their roadway systems.

The methodology is based on available crash data on tribal roads. A combination of data-driven field verification and trend analysis is used. Figure 7 illustrates the entire procedure of this methodology. Specifically, the five steps included in the methodology are as follows:

- Step 1: Crash Data Analysis: performed to determine high-risk crash location based on analysis of tribal crash data. The analysis should cover a period of 5 to 10 years to identify trends or hot spots. Crash rates can be used to replace crash frequency if traffic volume data is available. However, considering tribes often lack complete and accurate crash data, number of crashes are often used. On the basis of the number of crashes per one-mile segment, the routes are assigned a crash rank from greatest number of crashes per hot spot to least. The top 15 to 25 high crash routes are selected to be investigated in Step 2.
- Step 2: Level I Field Evaluation: conducted on the high crash segments. These routes are evaluated by a team comprised of tribal members, and transportation experts from LTAP, TTAP, or BIA. Tribal personnel are essential as they have site expertise and knowledge of the problem areas. Evaluation applies to five categories: (1) general, (2) intersections, (3) signage and pavement markings, (4) fixed objects and clear zones, and (5) shoulder and right-of-way. Each segment receives a total score, which is the sum of the score of each category. All segments from all routes that were evaluated are ranked from lowest to highest score. The segment with the lowest rank value is considered to have the highest risk.
- Step 3: Combined Ranking to Identify Potential High-Risk Locations on the Basis of Steps 1 and 2: the crash ranking is combined with the Level I ranking (simply added). The segments with the smallest numbers are considered the most hazardous. The top 10 to 15 roads should be selected for Step 4: Level II evaluation.



Souce: Shinstine and Ksaibati, 2013-1

Figure 7. Five-step process for identifying and addressing high-risk locations on tribal roads.

- Step 4: Level II Field Evaluation to Identify Countermeasures: performed to determine proper countermeasures. The evaluation teams should be determined by the tribes and should include tribal personnel and transportation experts. The team reviews each road and revisits the sites as needed to determine the proper countermeasures. Crash reduction factors (CRFs) are assigned for countermeasures using the FHWA safety tool (Bahar et al. 2013) or individual state's own CRFs for specific countermeasures. Each site is assigned one or more countermeasures and a cost of implementation is estimated.
- Step 5: Benefit–Cost Analysis: performed to provide the tribes with information on the most effective safety improvements. Construction costs are estimated. The benefit associated with each improvement is calculated based on the CRFs and societal cost of crashes and the ratio of benefit-to-cost is calculated. The list of benefit-to-cost ratios provides a prioritized list of improvements and tribes must review and approve the list. Once the tribes have decided which improvements they desire, they can determine what resources they want to allocate to the safety improvement project.

The application of this methodology requires collaboration among safety stakeholders, which possibly include DOT, tribal leadership, LTAP, TTAP, BIA, and local and tribal law enforcement programs for tribes. Flexibility is needed so that the tribes can adjust the process to fit their unique operations. A program that fits the tribes' specific needs can make the task of safety improvement manageable as well as encourage the tribes.

In addition to identifying crash locations, analysis of tribal crash data also helps identify crash causation and improvement alternatives to enhance behavioral safety. Crash data can identify contributing variables such as driver impairment or lack of safety belt use. For example, based on the analysis of collected crash data, the Ho-Chunk Nation in Wisconsin launched a culturally tailored motor vehicle injury presentation program that conducts child safety seat clinics and performs safety seat checks. After the program was implemented, driver and passenger seat belt use and the use of child safety seats increased substantially (Ceifetz 2012). This case shows the benefit of using tribal crash data to improve driver behavioral safety on tribal lands.

Topic 4.2: Grants (funding) for Tribal Roadway Safety Improvements

After safety issues are identified on tribal roads, tribes are asked to seek grants or funding to support their roadway safety improvement project. At this time, tribes can ask for state's assistance in seeking funding opportunities. In addition to the state, TTAPs usually provide assistance to tribes in applying funding for tribal traffic safety improvement.

Topic 2.2 of Part 2 provided information about funding for implementing a tribal crash data collection system. For tribal roadway safety improvement, a number of funding opportunities from federal, state, and location governments are available.

A Wisconsin report provides detailed information about available funding opportunities (Ceifetz 2012). The most common funding that tribes can apply is for IRR.

> The IRR is part of the Federal-Aid Highway Program and is funded from the Highway Trust Fund. It is authorized under the Federal Lands Highway Program, 23 USC 204. Use of IRR Program funds is defined in 23 USC. This program is jointly administered by the BIA and the Federal Highway Administration. Tribal communities prepare a TIP, a 5-year plan for improvements on each reservation. The TIP is then submitted to the BIA Division of Transportation (BIADOT) for review and approval. BIADOT reviews, approves, and forwards the TIP to FHWA Federal Lands Highway Office (FLHO) for approval. Once the TIP is approved by the FHWA, there are projects that costs can be charged to. All projects using BIA funding have to be on the approved TIP (Ceifetz 2012).

Safety projects eligible for IRR funding could include:

- Highway alignment improvement;
- Bridge widening;
- Pedestrian paths/sidewalks and bus shelters;
- Installation and replacement of signs when designated as, or made part of, a highway safety project;
- Construction improvements that enhance and promote safe travel on IRRs, such as guardrail construction and traffic markings;
- Development of a safety management system;
- Education and outreach highway safety programs, such as use of child safety seats, defensive driving, and Mothers Against Drunk Drivers;

- Development of a highway safety plan designed to reduce traffic accidents and deaths, injuries, and property damage;
- Collecting data on traffic-related deaths, injuries and accidents;
- Impaired driver initiatives;
- Child safety seat programs; and
- Purchasing necessary specific traffic enforcement equipment, such as radar equipment, breath analyzer, or video cameras.

Some other major funding opportunities from the federal government include HSIP, HRRR offered by MAP-21, and the state and Community Highway Safety Grants Program (Section 402) offered by NHTSA. Table 6 summarizes the detailed information of the three funding sources.

> The State and Community Highway Safety Formula Grant Program (Section 402, NHTSA) was developed to provide funding to implement initiatives targeted at improving safety. Section 402 funds are typically used to fund safety projects related to enforcement, education, and EMS, and can be used for a variety of safety initiatives including conducting data analyses, developing safety education programs, and conducting community-wide pedestrian safety campaigns (Ceifetz 2012).

Table 6. Potential Federal funding opportunities: adapted from a South Dakota study.

Program	Funding Requirements	Funding
FHWA Highway Safety Improvement Program (HSIP)	• Planning: collecting and maintaining data, establishing project priorities, conducting engineering studies, identification of hazardous locations and elements. • Implementation: scheduling and implementing projects. • Evaluation: determining the effect of safety improvements.	The federal share is 90%, subject to the sliding scale adjustment, except that the federal share is 100% for certain safety improvements listed.
FHWA High Risk Rural Road (HRRR) HRRRs are eligible for HSIP funding.	• Roads that are classified as rural major and minor collectors and rural local roads "with significant safety risks" will become the roadways designated as HRRR. • States are required to define HRRR in their updated state Strategic Highway Safety Plans (SHSPs).	The Special Rule requires states with an increase in fatality rates on rural roads to obligate a specified amount of HSIP funds on HRRRs.
NHTSA State and Community Highway Safety Grants Program (Section 402)	• Funding must be used to support state highway safety programs designed to reduce traffic crashes and resulting deaths, injuries, and property damage. • A state may use these grant funds only for highway safety purposes.	Ninety-five percent of the funds apportioned to the Secretary of the Interior shall be expended by Native American tribes to carry out highway safety programs within their jurisdictions.

Souce: Quick and Bailey 2007

Federal funds within the HSIP may be used to implement the infrastructure based improvements identified within a safety plan. HSIP funding is administered by each state's DOT. In most states there is an application process required to secure funding to make improvements or fund various safety initiatives. This funding is intended to assist agencies in implementing safety improvements to their transportation system (Ceifetz 2012).

Additional federal and local funding opportunities are provided in a FHWA publication (FHWA 2011) and the Wisconsin report (Ceifetz 2012). These additional funding programs include:

- U.S. Department of Health and Human Services (HHS)
  - Funding for highway safety activities.
- Indian Highway Safety Program 25 Code of Federal Regulations (CFR) 181;
- FHWA funds, administered by the states for safety only, include:
  - Highway-rail grade (public) crossings.
- FHWA funds, administered by the states for activities, including safety:
  - Surface Transportation Program (STP);
  - Interstate Maintenance (IM);
  - Highway Bridge Replacement and Rehabilitation Program (HBRRP);
  - Intelligent Transportation System (ITS); and
  - State Planning and Research (SPR).
  - Tribal Transportation Safety Funds
- U.S.DOT sponsored training programs, including safety topics:
  - National Highway Institute (NHI); and
  - TTAP.
- NHTSA funds administered by the states through the Governor's representative (safety only):
  - State and Community Highway Safety Grant;
  - Intoxicated Driver Prevention Program;
  - Alcohol-impaired Driving Countermeasures Incentive Grants;
  - Safety Incentive Grants for the Use of Seat Belts;
  - Occupant Protection Incentive Grants;
  - State Highway Safety Data Improvement Grants;
  - Child Passenger Education Program;
  - Research and Demonstration Grants; and
  - Training.
- Highway Safety Programs administered by BIA Highway Safety Office program (BIAHSO) and funded by NHTSA (safety only):
  - State and Community Highway Safety Grant;
  - State Highway Safety Data Improvement Grants; and
  - Child Passenger Education Program.
- State funded and administered (not all states):
  - State Highway Funds State Safety Funds;
  - Transportation Loan Programs; and
  - LTAP.

Utah, Washington, and South Dakota have good practices in place for tribes' obtaining funding from the state. In Utah, tribes can apply for funding for implementing their crash data collection system through the state's Highway Safety Grant process. Washington tribes are eligible for grants administered by the Washington Traffic Safety Commission under Washington's Strategic Highway Safety Plan: Target Zero. The SDDPS makes financial resources available to tribes via grants from the Office of Highway Safety to help improve safety on tribal lands through the use of crash data.

Unlike the state and federal agencies, city, county, and local government may not be able to provide direct funding opportunities to tribes. However, they usually offer assistance in funding

searches. For example, in Michigan, the local safety initiative does help tribal agencies determine which funding sources are available based on roadway classification and crash data.

The Arizona DOT also published a Tribal Traffic Safety Funding Guide for Tribes in Arizona in 2006 (Arizona DOT 2006). The funding source information provided in that publication may be outdated, but it still can be helpful in funding a source search.

Case Study: A Cooperative Rural Road Safety Program for Tribal Roads

Source

Adapted from Shinstine, D. S., and Ksaibati, K. 2013-2. "Indian Reservation Safety Improvement Program." In *Transportation Research Record: Journal of the Transportation Research Board, No. 2364*, Transportation Research Board of the National Academies, Washington, D.C., pp. 80–89.

Situation

Wyoming has developed the WRRSP through the Wyoming Technology Transfer Center–Local Technical Assistance Program (WYT^2-LTAP) to assist counties across the state to overcome the challenges of meeting the criteria of the HRRR. The WRRSP is a five-step methodology that includes the analysis of crash data, field evaluation, and benefit–cost analysis to identify and prioritize low-cost safety improvements. Although IRRs are similar to rural local roads, Native American tribes have not been provided with such comprehensive tools to do the same. Native American nations are different from their rural counterparts in that they are sovereign and do not fall under the jurisdiction of the states. They need some mechanism to assist in identifying sites for improvement. This will help them assess their priorities and determine how they can allocate resources for safety improvements.

Identified Issues

Native American tribes are different from their rural counterparts as they are sovereign and do not fall under the jurisdiction of the states. Therefore, in Wyoming, there were no specific tools designed for tribes for implementing traffic safety improvement. Tribes need some tools to assist in identifying sites for improvement. These tools will help the tribes assess their priorities and determine how they can allocate resources for safety improvements.

Practice Implemented

- WYT^2-LTAP has converted WRRSP into a similar five-step procedure specifically for tribes to identify traffic safety issues and prioritize their improvements. The whole procedure is discussed in detail in Part 2, Topic 4.1. The procedure has been implemented at Wind River Indian Reservation (WRIR) in Wyoming.
- Before implementing the process, several meetings were held between transportation officials from WRIR, Wyoming DOT, Northern Plains Tribal Technical Assistance, WYT^2-LTAP, BIA, and Wind River law enforcement. The meetings proved productive and established the protocols necessary for proceeding. Early meetings opened the lines of communication and identified the expectations of all the parties. WRIR is eager to expand its abilities to address transportation safety on the reservation and extended the scope of the collaboration to the development of a strategic transportation safety plan. WRIR transportation personnel agreed that the field evaluation teams needed to include various tribal stakeholders.

- Three areas of responsibility were assigned to the process. WYT²-LTAP was responsible for performing the crash analysis, crash ranking, Level I field ranking, and combined ranking; identifying crash types; determining accident reduction factors; and performing the benefit-cost analysis. The field review team was selected by the tribes to include WYT²-LTAP, tribal transportation and its consultant, and tribal law enforcement. This review team was responsible for conducting the Level I and II field evaluations and identifying engineering improvement alternatives.
- A tribal safety council was not formally organized, but tribal transportation officials coordinate review of field results and program status with other tribal leadership for their input and concurrence. The tribal safety council's involvement began with input on high-risk locations. The council completed the project review by identifying budget constraints and determining what safety improvement projects to recommend for funding.
- After the first three steps were completed, 12 high-risk roads were selected for evaluation for countermeasures. WRIR transportation reviewed the list and decided to proceed with a similar evaluation for 15 additional IRRs. Countermeasures were identified for each road. This exercise was collaborative and entailed making decisions as a team on what should be done for the various locations. Many of the countermeasures included pavement markings and signage. Future long-term improvements for narrow roads were also proposed. These types of projects would require acquisition of right-of-way and major reconstruction. Such projects are not within the scope of the HRRR, which is designed to provide funding for low-cost improvements. However, several were noted for future consideration by the tribes and so that the tribes could pursue other funding sources.
- Eventually, benefit-to-cost ratios were calculated for all proposed safety improvement projects. Particularly, cost estimates were developed on the basis of Wyoming DOT 2011 bid tabs and WYT²-LTAP resources from other similar safety improvements and were categorized by the selected countermeasures. The total cost was calculated for each road and compared with an overall benefit in crash reduction for the entire roadway.

Case Study: Development of a Statewide Tribal Transportation Safety Initiative

Source

- Adapted from the Wisconsin DOT Tribal Affairs website (http://www.dot.wi.gov/localgov/aid/Tribalaffairs/i-tsafety.htm)
- Adapted from Redinger, C., Woods, M., Bagdade, J. S., and N. Bowman. 2010. *Improving Crash Reporting On Wisconsin Indian Reservations Phase 1: Review of Crash Reporting Procedures*, Wisconsin Department of Transportation, Madison, WI.
- Adapted from Ceifetz, A. H. 2012. *Crashes on Wisconsin Indian Reservations: Reporting, Conclusions, and Recommendations.* Wisconsin Department of Transportation, Madison, WI.
- Adapted from phone interview.

Situation

Wisconsin has 11 federally recognized tribes in the state and holds an annual consultation meeting with tribes that provides an opportunity for exchange between tribally elected officials and DOT officials. Early in the department's consultation efforts, tribes raised safety as one of their primary concerns, citing crashes on tribal lands, engineering issues, and EMS services. As a result of concerns raised, the tribal Affairs office initiated a series of RSAs and a statewide crash data study. The efforts were initiated to help the department better understand current tribal crash data efforts, needs, and crashes within Wisconsin's tribal communities.

The first phase of the report titled "Improving crash reporting on Wisconsin Indian Reservations, Phase 1: Review of crash reporting procedures" was intended to provide the department with a better understanding of how crash reporting was being conducted within tribal communities in the state. The second phase titled "Crashes on Wisconsin Indian reservations: Reporting, conclusions and recommendations" looked at the crash data available for the tribes in the state, analyzed the data to determine safety issues and made recommendations.

Identified Issues

- The Phase 1 report indicated that tribal police departments predominantly utilized the standard Wisconsin report form, the MV4000, in its paper form or through electronic submitting. The only tribe not utilizing this format was the Menominee Nation.
- The Phase 1 report noted that network screening was done manually for several tribal departments due to lack of funding to obtain GPS and GIS systems to plot data. These network screening efforts often consisted of a map of the jurisdiction with push-pins indicating location of crashes.
- The Phase 1 report summary states that all agencies appear to report crash data to the state as required per the PL 280 agreement. The only exception is the Menominee Nation Tribal Police Department who is a non-PL 280 tribe.
- The Phase 2 report data analysis identified that BIA roads are not included in the Wisconsin Information System for Local Roads (WISLR). As a result, crashes occurring on these roads are difficult to identify. The report noted that this may cause delay in the data appearing in the state records.
- Both Phase 1 and Phase 2 found that stakeholders feel that their crash reporting process is working efficiently and accurately.

Practice Implemented

- To address the lack of crash data from the Menominee Nation, a MOU was signed between the tribe and the Wisconsin DOT Regional Office to share data. The tribe shares crash data with retracted information (primarily name) for use in the identification of safety issues. The agreement between the tribe and the department is renewed annually.
- In 2009 and again in 2011, the Wisconsin DOT, along with state and federal partners, hosted Tribal Safety Summits. The summits were designed to bring stakeholders together from the tribes and various agencies to discuss, collaborate, and work towards solutions in the 4 E's of transportation safety efforts (education, enforcement, engineering, and emergency). Each summit generated a written report on the conference proceedings. Tribal transportation safety topics have been incorporated into annual tribal transportation conferences organized by the department.

PART 3

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Abbreviations, Acronyms, Initialisms, and Symbols

3C	Communication, Cooperation and Coordination
ATSPT	Arizona Tribal Strategic Partnering Team
BIA	Bureau of Indian Affairs
BIADOT	BIA Division of Transportation
BIAHSO	BIA Highway Safety Office program
Caltrans	California Department of Transportation
CC	Carbon Copy
CDAT	Collision Data Analysis Tool
CFR	Code of Federal Regulations
CRF	Crash Reduction Factor
CRIS	Criminal Records Information System
DMV	Division of Motor Vehicles
DOT	Department of Transportation
EMS	Emergency Medical Services
FBI	Federal Bureau of Investigation
FHWA	Federal Highway Administration
FLHO	Federal Lands Highway Office
GIS	Geographic Information Systems
GPS	Global Positioning Systems
HBRRP	Highway Bridge Replacement and Rehabilitation Program
HES	Hazard Elimination Safety
HHS	Health and Human Services
HPR	Highway Planning and Research
HRRR	High Risk Rural Roads
HSIP	Highway Safety Improvement Program
IM	Interstate Maintenance
IRR	Indian Reservation Road
ITS	Intelligent Transportation System
LTAP	Local Technical Assistance Program
MAP-21	Moving Ahead for Progress in the 21st Century Act
MHP	Montana Highway Patrol
MMUCC	Model Minimum Uniform Crash Criteria
MnCMAT	Minnesota Crash Mapping Analysis Tool
MOU	Memorandum of Understanding
NAAC	Native American Advisory Committee
NCHRP	National Cooperative Highway Research Program
NHI	National Highway Institute

NHTSA	National Highway Traffic Safety Administration
OWI	Operating While Intoxicated
PARA	Planning Assistance for Rural Areas
PEP	Partnering Evaluation Program
PL 280	Public Law 280
QA	Quality Assurance
QC	Quality Control
RSA	Road Safety Audit
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SDARS	South Dakota Accident Records System
SDDPS	South Dakota Department of Public Safety
SHSP	Strategic Highway Safety Plan
SOAR	Safe On All Roads
STIP	State Transportation Improvement Program
STP	Surface Transportation Program
TACT	Tribe/Agency Collaboration Toolbox
TERO	Tribal Employment Rights Ordinance
THSIP	Tribal Highway Safety Improvement Project
TIP	Transportation Improvement Program
TOPS	Traffic Operations and Safety
TraCS	Traffic and Criminal Software
TRCC	Traffic Records Coordinating Committee
TTAC	Tribal Transportation Advisory Committee
TTAP	Tribal Technical Assistance Program
USC	United States Code
WBCR	Web-based Crash Reporting
WebCARS	Web Crash Analysis Reporting System
WISLR	Wisconsin Information System for Local Roads
WITPAC	Washington Indian Transportation Policy Advisory Committee
WRIR	Wind River Indian Reservation
WRRSP	Wyoming Rural Road Safety Program
WYT^2	Wyoming Technology Transfer Center
WYT^2-LTAP	Wyoming Technology Transfer Center–Local Technical Assistance Program

APPENDIX A

Memorandum of Understanding Example

An example of MOU between a tribe and state agencies is well documented in a South Dakota study (Quick and Bailey 2007). In the example, three parties are involved in the agreement, which are the tribe, South Dakota DOT, and SDDPS. This example intends to give a general idea about how an MOU for tribal crash reporting between a tribe and the state agencies is formatted and what basic information should be included.

Exhibit A.1. MOU Example

This agreement is between the South Dakota Department of Transportation (the "DOT"), the South Dakota Department of Public Safety (the "DPS") and the [*Tribe Name]* Tribe (the "Tribe").

The DOT, DPS and the Tribe believe it is mutually beneficial to enter into this agreement for the safety of the traveling public and improvement of highway systems that lie within the exterior boundaries of the [*Reservation Name]* Reservation.

The parties agree as follows:

1) The success of this agreement is predicated upon all parties acting in accord with the following principles:

   a) All parties state that they are interested in:
      i) ensuring that the motor vehicle crash data will be used for data analysis and generating supporting documentation for highway improvements only,
      ii) providing reports and data analysis,
      iii) eliminating high hazard areas on the highway system within the reservation.

   b) Compliance is a responsibility of all parties and all activities in this regard will be conducted with mutual respect for each other's responsibilities. To this end, neither party will impose additional requirements or standards without giving advanced notice to the other parties and do encourage informal resolution of problems involving all interested parties.

   c) The Tribe agrees to the following:
      i) provide motor vehicle crash reporting data on the DPS report form or compatible reporting format with the DPS system,
      ii) agree that no other motor vehicle crash reporting form other than the DPS format or compatible system will be used to report motor vehicle crash reporting data
      iii) will provide motor vehicle crash reporting data on a monthly basis to DPS or more frequently if there is a high number of motor vehicle crashes in a time period,

iv) provide complete motor vehicle crash reports and follow the standards and requirements for reporting established by DPS

d) The DPS agrees to the following:
   i) collect all motor vehicle crash reporting data and will only use the information for analysis of motor vehicle crash analysis and reporting purposes.
   ii) provide reports and data collected to Tribe on a quarterly basis and as requested,
   iii) provide training to Tribal law enforcement and support personnel on motor vehicle crash reporting,
   iv) provide technical support to Tribal law enforcement and support personnel on motor vehicle crash report,
   v) maintain highest levels of confidentiality of motor vehicle crash reporting data received.

e) The DOT agrees to the following:
   i) analyze motor vehicle crash reporting data and use information to support adding projects to the Five-Year STIP to improve highway safety within the reservation boundaries,
   ii) conduct research projects and other technical analysis of motor vehicle crash data,
   iii) provide reports and technical analysis to Tribe,
   iv) provide technical assistance to Tribal planning and/or highway departments,

2) To provide for stability and predictability in the motor vehicle crash reporting analysis all parties agree to maintain this agreement through the term specified below. Modifications or changes in the agreement [*or any of the attachments*] therein can be made through mutual consent and will be effective after being reduced to writing and signed by officials for each party.

3) It is the intent of all parties that this agreement shall be implemented on a cooperative basis without regard to jurisdictional issues. It is further agreed that all parties will encourage informal resolution of problems prior to instituting litigation. It is also agreed that nothing herein shall prevent the Tribe, DOT or DPS from instituting any litigation pertaining to any jurisdictional issue with regard to motor vehicle crash reporting or any other matter.

By signature below, the [*Tribe Name]* Tribe, the State of South Dakota, Department of Transportation, and the State of South Dakota, Department of Public Safety agree to adhere to this agreement and *[the attached documents]*:

The Tribe, DOT, BIA, and DPS further agree *[the above-referenced attachments and]* this agreement shall be applicable for the period of March 1, 2007 to December 31, 2012.

[*Tribe Name*] TRIBE	STATE OF SOUTH DAKOTA
_____	_____
[*Tribal President/Chairman Name*]	Tom Dravland
Tribal Chairman/President	Secretary
[*Tribe Name*]Tribe	Department of Public Safety
Date _____	Date _____
_____	_____
[*BIA Representative*]	[*Name*]
[*Title*]	Secretary
Bureau of Indian Affairs	Department of Transportation
Date _____	Date _____

Souce: Quick and Bailey 2007

APPENDIX B

Case Study Flyers

This appendix contains six one-page flyers that were created to complement the six case studies in the guidebook. They are available on the accompanying CD.

APPENDIX C

Promotional Flyer

This double-sided, three-fold flyer is designed to promote the use of this guidebook and is available on the accompanying CD.

APPENDIX D

Useful References

Lists of useful references that may be informational for Tribes and States when implementing the effective Tribal crash reporting are provided in this appendix. The references are categorized by topics of State-Tribal communication and relationship, funding application guide, crash data collection and sharing, and Tribal traffic safety improvement.

State-Tribal Communication and Relationship

- ATR Institute, Migliaccio, G. C., Knoebel, G., Martinez, R., Albert, D., and J. Hurd. 2011. *NCHRP Report 690 : A Guidebook for Successful Communication*, *Cooperation, and Coordination Strategies Between Transportation Agencies and Tribal Communities*, Transportation Research Board of the National Academies, Washington, DC.
- Federal Highway Administration. 2005. *Peer Exchange Report: State DOT Tribal Liaison Roundtable and Panel Discussion*, Washington, DC.
- Federal Highway Administration. 2010. *Peer Exchange Report: State Department of Transportation Tribal Liaison Roundtable and Panel Discussion*, Washington, DC.
- Ceifetz, A. H. 2012. *Crashes on Wisconsin Indian Reservations: Reporting, Conclusions, and Recommendations.* Wisconsin Department of Transportation, Madison, WI.

Funding Application Guide

- Mickelson, R. and Corbett, E. 2004. *Tribal Highway Safety Improvement Program Model and Implementation Plan for Hazard Elimination Projects Guide.* Federal Highway Administration, Washington D.C. http://www.fhwa.dot.gov/tribal/topics/safety/saf_ack/ (As of September 11, 2013).
- Federal Highway Administration. 2011. *Tribal Highway Safety Improvement Implementation Guide*, Federal Highway Administration, Washington, DC.
- Arizona Department of Transportation. 2006. *Tribal Traffic Safety Funding Guide, A Supplement to the SPR 592 Building Tribal Traffic Safety Capacity Projec*t, Arizona Department of Transportation.
- Ceifetz, A. H. 2012. *Crashes on Wisconsin Indian Reservations: Reporting, Conclusions, and Recommendations.* Wisconsin Department of Transportation, Madison, WI.

Crash Data Collection and Sharing

- Quick, P. and Bailey, L. 2007. Improving Motor Vehicle Crash Reporting on Nine South Dakota Indian Reservations, Final Report SD2005-14-F, South Dakota Department of Transportation.

- Redinger, C., Woods, M., Bagdade, J. S., and N. Bowman. 2010. Improving Crash Reporting On Wisconsin Indian Reservations Phase 1: Review of Crash Reporting Procedures, Wisconsin Department of Transportation, Madison, WI.
- Ceifetz, A. H. 2012. Crashes on Wisconsin Indian Reservations: Reporting, Conclusions, and Recommendations. Wisconsin Department of Transportation, Madison, WI.

Tribal Traffic Safety Improvement

- Mickelson, R. and Corbett, E. 2004. *Tribal Highway Safety Improvement Program Model and Implementation Plan for Hazard Elimination Projects Guide.* Federal Highway Administration, Washington D.C. http://www.fhwa.dot.gov/tribal/topics/safety/saf_ack/ (As of September 11, 2013).
- Federal Highway Administration. 2010. *Peer Exchange Report: State Department of Transportation Tribal Liaison Roundtable and Panel Discussion*, Washington, DC.
- Ceifetz, A. H. 2012. *Crashes on Wisconsin Indian Reservations: Reporting, Conclusions, and Recommendations.* Wisconsin Department of Transportation, Madison, WI.
- Shinstine, D. S. and Ksaibati, K. 2013. *Indian Reservation Safety Improvement Program: A Methodology and Case Study, Final Report FHWA-WY-13/07F*, Wyoming Department of Transportation.

Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation

Tribal Transportation Strategic Safety Plan

presented by the

Tribal Transportation Safety Management System Steering Committee

August 2017

www.TribalSafety.org

EXECUTIVE SUMMARY

Transportation safety issues have long plagued Native American and Alaska Native populations. Motor vehicle crash statistics describe fatality rates that are higher among the Native American and Alaska Native populations than the overall population in many states. Motor vehicle crashes are among the leading causes of death for Native Americans and Alaska Natives. An estimated average of 535 Native American and Alaska Native fatalities due to motor vehicle related crashes were reported each year 2010-2014. Additional transportation related deaths are known to occur that are not captured in the available databases.

Data from the Fatality Analysis Reporting System (FARS) showed 3,278 available fatality reports in Tribal areas from 2010-2014 despite known underreporting. An analysis of these fatality reports revealed several topics that are addressed in this National Tribal Transportation Safety Plan. The topics presented were selected by the Tribal Transportation Safety Management System Steering Committee after review of several data sources. Tribes are strongly encouraged to conduct a similar data analysis and customize a transportation safety plan that describes safety topics most applicable to the Tribe.

The topics addressed in this plan are listed below.

General Topics

- Decision Making Process
- Crash Data Availability and Limitations

Emphasis Topics

- Occupant Protection/Child Passenger Seats
- Roadway Departure
- Impaired Driving
- Pedestrian Safety
- Availability of Public Safety Services

Additional Topics

- Speed
- Driver Distraction
- Intersections
- Young Drivers
- Older Drivers
- Off-road Transportation
- Animal-Vehicle Crashes

TABLE OF CONTENTS

Cover photos courtesy of: Confederated Salish and Kootenai Tribes, Grand Traverse Band of Ottawa and Chippewa Indians, BIA Indian Highway Safety Program, Cross Timbers Consulting, LLC (Tom Edwards), and Red Plains Professional, Inc. (Dale Lewis).

INTRODUCTION

A Strategic Transportation Safety Plan should identify problems and guide a collaborative effort toward addressing the high-risk attributes of transportation infrastructure, human behavior, and vehicles. The objective is to achieve the highest level of transportation safety by integrating the work of a variety of disciplines and agencies. These disciplines include leadership; research; data collection; planning, design, construction, operation, and maintenance of the transportation infrastructure; injury prevention and control; health education; and those disciplines involved in modifying transportation user behaviors.

This Tribal Transportation Strategic Safety Plan offers an assessment of transportation safety needs in Tribal areas and provides Tribal Governments with strategies and resources that can be utilized in the pursuit of saving lives. The development and continual update of a Tribe-specific strategic transportation safety plan tailored to the experience and needs of each Tribe is strongly encouraged. As Tribes develop custom safety plans and other safety efforts, the details of this document may be useful for comparison to national trends, identifying strategies, or finding resources. Transportation safety plans developed by a Tribe should be the starting place for transitioning from planning to implementation - not this national plan.

The Tribal Transportation Safety Management System Steering Committee developed this plan and anticipates future revisions periodically or when improved data becomes available. This safety plan and future updates will be published on the website www.TribalSafety.org.

This document will also serve as the study required by Congress in the Fixing America's Surface Transportation Act (FAST) Section 1117(c) and will inform the report to Congress required in the same section.

General Topics

- Decision Making Process
- Crash Data Availability and Limitations

Emphasis Topics

- Occupant Protection/ Child Passenger Seats
- Roadway Departure
- Impaired Driving
- Pedestrian Safety
- Availability of Public Safety Services

Additional Topics

- Speed
- Driver Distraction
- Intersections
- Younger Drivers
- Older Drivers
- Off-Road Transportation
- Animal-Vehicle Crashes

TRIBAL TRANSPORTATION SAFETY MANAGEMENT SYSTEM STEERING COMMITTEE

MISSION

Facilitate implementation of effective transportation safety strategies to save lives while respecting Native American and Alaska Native values by fostering communication, collaboration, and cooperation.

VISION

All transportation users arrive safely at their destinations.

GOAL

To prevent and reduce fatalities and injuries associated with the use of Tribal transportation facilities.

ABOUT THE COMMITTEE

The Tribal Transportation Safety Management System Steering Committee is a coalition of federal agencies and Tribal governments. The members of the committee represent programs that are designed to address transportation safety from multiple perspectives including enforcement, emergency medical services, education, and engineering. The following federal programs and Tribal governments are currently participating on the committee:

- Northern Cheyenne Tribe Transportation Program
- Pueblo of Zuni Roads Program
- Karuk Tribe Roads Program
- Central Council of the Tlingit and Haida Indian Tribes of Alaska
- Cherokee Nation Transportation Program
- Bureau of Indian Affairs (BIA) Division of Transportation
- BIA Northwest Region Transportation
- BIA Office of Justice Services Indian Highway Safety Program
- Centers for Disease Control (CDC)
- Federal Highway Administration (FHWA) Office of Safety
- FHWA Resource Center
- FHWA Tribal Transportation Program
- Indian Health Service
- National Highway Traffic Safety Administration (NHTSA) Region 6
- Tribal Technical Assistance Program Centers

Since 2015 the committee has met several times each year to coordinate and collaborate on programs, projects, and reports. This plan is a result of the committee's efforts to develop a resource that could help facilitate the implementation of programs and projects that will improve transportation safety in Tribal areas. More information about the committee can be found at www.TribalSafety.org.

METHODOLOGY AND SUPPORTING DATA

Motor vehicle crashes are the leading cause of death from unintentional injury for Native Americans and Alaska Natives ages 1 to 44 (CDC, n.d.). In some States, Native Americans are overrepresented in fatal crash rates by as much as 4 times the general population (Washington State, 2016), (New Mexico DOT, 2016). From the FARS data reported for 2010-2014, an average of 535 Native Americans and Alaska Natives are reported to have lost their lives in motor vehicle crashes each year. Also for 2010-2014 the FARS database includes 3,278 fatalities in areas where Tribal governments have the greatest influence on the engineering, enforcement, emergency medical services, and education. The methodology used to select applicable crash data is described in Appendix A.

These statistics are likely understated due to misidentification of Native Americans and Alaska Natives in crash data and underreporting of crash data in Tribal areas (FHWA, Report to Congress: Tribal Governments & Transportation Safety Data, 2017). In addition, many Tribes rely on modes of travel other than motor vehicles and incident data is not available on such transportation incidents in a national database.

The topics covered by this plan were selected by the Tribal Transportation Safety Management System Steering Committee. This selection was informed by the review of multiple sources of data including:

- Safety plans developed by Tribes
- NHTSA Fatality Analysis Reporting System (FARS)
- CDC Web-based Injury Statistics Query and Reporting System (WISQARS)
- State Strategic Highway Safety Plans (SHSP) with a Tribal emphasis
- United States Geological Survey Protected Areas Database
- United States Census Bureau American Community Survey

Fatalities are the focus of this report because FARS only contains fatality reports and is the only nation-wide database containing detail on motor vehicle crashes. A detailed analysis of the FARS data is provided in Appendix B and summarized throughout the rest of this plan. Fatalities and injuries should be of the greatest concern when prioritizing safety projects and are the focus of performance measures in most federal safety programs.

Based on the data analysis conducted for this plan, several topics were identified that must be addressed at a national level to improve transportation safety in Tribal areas. These topics are organized in three categories: General Topics, Emphasis Topics, and Additional Topics. General topics provide a framework for planning and data improvement. Emphasis topics address the contributing factors with the greatest potential for safety improvement in Tribal areas. Finally, additional topics are problems that appear to be emerging issues or may be a primary concern for some Tribes but are not as prominent in the national data analysis.

General Topic: Decision Making Process

Successful transportation safety programs usually follow a cyclical, strategic process (Figure 1) with these steps:

Figure 1. Decision Making Process

1. **Engage Stakeholders**. Transportation safety can be influenced by a wide variety of stakeholders. Valuable benefits are realized when transportation safety programs are established with cooperation from leadership, enforcement, engineering, emergency medical services, and education (or public outreach) in addition to input from the public.
2. **Plan** - Assess needs, analyze data, and plan. Development of a transportation safety plan is strongly encouraged. A safety plan can guide a committee's actions, provide a tool for communication, and be a critical link to funding. The major steps of safety plan development include:
    - *Identify Risk Factors.* Using available incident history, determine the most significant human, roadway, vehicular, and environmental factors influencing transportation safety. The planning process should involve consideration of the available crash history, input from local safety practitioners, and an assessment of transportation safety needs.
    - *Identify Countermeasures.* Determine what strategies can be used to address identified risk factors. Evaluate available resources that can be utilized to implement these strategies. Prioritize projects, programs, and further study needs in the safety plan. Further studies that may be identified include: assessments of safety processes (crash data collection, emergency response, etc.), road safety audits, systemic safety studies, and road design alternatives analyses.
3. **Implement**. Once a safety plan is complete, an effective transportation safety program will implement the identified additional studies, projects, and activities. Implementation may involve integration into other planning processes, seeking resources, and coordination with other governments.
4. **Evaluate and Update**. Throughout the implementation process an effective transportation safety program will monitor the plan's progress. When implementation of planned activities and projects has occurred or when new data is available stakeholders should reconvene and update the transportation safety plan.

Resources:

- FHWA, Strategic Transportation Safety Plan Toolkit for Tribal Governments: https://flh.fhwa.dot.gov/programs/ttp/safety/stsp-toolkit.htm
- Highway Safety Improvement Program Manual, Planning: https://safety.fhwa.dot.gov/hsip/resources/fhwasa09029/sec3.cfm
- Systemic Approach to Safety: https://safety.fhwa.dot.gov/systemic/
- Examples of completed Tribal Safety Plans: www.TribalSafety.org
- Crash Modification Factors Clearinghouse: http://www.cmfclearinghouse.org/resources_countermeasures.cfm
- Manual for Selecting Safety Improvements on High Risk Rural Roads: https://safety.fhwa.dot.gov/hsip/hrrr/manual/

General Topic: Crash Data Availability and Limitations

With some exceptions, the quality and availability of crash data in Tribal areas needs significant improvement. A report to Congress published in 2017 by the FHWA identified several barriers to the collection, sharing, and analysis of quality crash data in Tribal areas. Among the barriers identified in the report were resources, effective communication, Tribal sovereignty concerns, and data collection methods.

The availability of quality crash data is vital to an understanding of the projects and programs that should be a priority in an effective safety program. For infrastructure-oriented safety decisions, roadway and traffic data are helpful to interpret crash data and identify opportunities for infrastructure-oriented safety treatments. Crash data is also valuable for acquiring funding from state and federal grants.

Tribes are encouraged to conduct a traffic records assessment to ensure that methods being used to collect, share, and analyze crash data are providing optimal benefit to the Tribe. Traffic records assessments can also be an effective tool to establish communication with state and local safety partners. In addition, the development of a transportation safety plan should be initiated by an analysis of the available safety data.

Resources:

- Guide for Effective Tribal Crash Reporting, NCHRP 788 – This publication from the Transportation Research Board provides a self-assessment process that Tribes and States can use to assess crash data and develop an action plan if improvements are needed: http://www.trb.org/Publications/Blurbs/171540.aspx
- Model Minimum Uniform Crash Criteria: http://www.mmucctraining.us/
- NHTSA Traffic Records Resources: https://www.nhtsa.gov/research-data/traffic-records
- FHWA, Report to Congress: Tribal Governments & Safety Data: http://flh.fhwa.dot.gov/programs/ttp/safety/
- Washington Traffic Safety Commission, Tribal Traffic Safety Advisory Board, Video: *Recording Our Past, Protecting Our Future:* http://wtsc.wa.gov/programs-priorities/tribes/ or https://youtu.be/VDrTQNLH2-g

Emphasis Topics

Five topics were identified as emphasis topics that can be addressed at a national level to improve transportation safety in Tribal areas. The Tribal Transportation Safety Management System Steering Committee selected these topics after review of several data sources. Emphasis topics address the contributing factors in crashes that have the greatest opportunity for transportation safety improvement in Tribal areas. The five emphasis topics are summarized in Table 1. Crashes often involve multiple contributing factors. As a result, many crashes overlap multiple emphasis topics.

Topic	Fatalities in Tribal Areas	% of all Vehicle Fatalities in Tribal Areas
Occupant Protection Devices Unused	1663 +	51% +
Roadway Departure	2062	63%
Impaired Driving	1318	40%
Pedestrians	346	11%
Availability of Public Safety Services	44% of fatal crashes with greater than 1 hour elapsed from Emergency Medical Service (EMS) notification to arrival at hospital	

Table 1. Data summary for emphasis topics

EMPHASIS TOPIC - OCCUPANT PROTECTION/CHILD PASSENGER SEATS

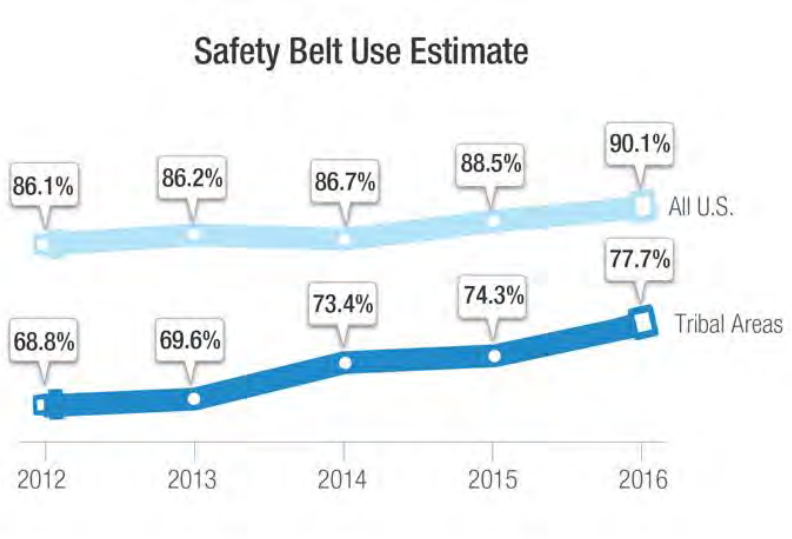

Figure 2. Seatbelt usage trends
Data Source: NHTSA, 2016 Safety Belt Use Estimate for the Indian Nations and NHTSA Traffic Safety Facts, Seat Belt Use in 2016-Overall Results

Occupant protection devices include seat belts, child safety seats, helmets, airbags, and other vehicle design features. These devices are designed to prevent or significantly reduce the severity of injuries when a crash occurs. Drivers and vehicle occupants can lessen the consequences of a potential crash by simply choosing to buckle up. Many Tribes and States identify occupant protection as an emphasis topic in a transportation safety plan.

Seat belts are underutilized in many Tribal areas. A national survey conducted by the BIA Indian Highway Safety Program in 2016 concluded that seatbelt usage in Tribal areas averaged 77.7% while the nationwide rate is much higher at 90.1% (NHTSA, 2016). As shown in Figure 2, seatbelt usage trends have been consistently lower in Tribal areas when compared to estimates for the entire United States. Some Tribes identified seat belt usage rates as low as 62% in their safety plans. Fortunately, usage rates have been trending upward.

The underutilization of occupant protection devices contributed to at least 1,494 fatalities from 2010-2014 in Tribal areas where a vehicle occupant was unrestrained. During this time, another 332 fatalities occurred where it is unknown if the individual was restrained or not. Unrestrained vehicle occupants represent more than half of the vehicle fatalities in Tribal areas.

Unrestrained vehicle occupants represent more than half of the fatalities in Tribal areas

Although child safety seat use rates for American Indian and Alaska Native communities vary greatly, rates are generally much lower than the overall population (CDC, n.d.). From 2010-2014 the reported data shows fifty-nine fatalities of vehicle occupants ages four and younger. Among these children only 25% were reported to have been restrained in some fashion.

Motorcycle riders represent 8% of the fatal motor vehicle crash data in Tribal areas which is low compared to 14% of all United States motor vehicle fatality data. A total of 257 motorcycle rider fatalities were reported on roadways in Tribal areas from 2010-2014. Head trauma is the most significant risk for motorcycle riders when involved in a crash although they are exposed to a variety of potentially lethal risks during a crash. In seven out of ten of motorcycle fatalities the rider was not wearing a helmet. Additional fatalities likely occurred off-road on motorcycle, all-terrain vehicles, and snow machine trails in Tribal areas. The FARS data that was reviewed only contains reported fatalities on public roadways.

STRATEGIES:

Tribal Governments can:

- Establish and enforce primary seat belt and helmet use laws.
- Ensure strong restraint laws for child passengers.
- Establish inspection stations for seat belts and child safety seats.
- Educate drivers and youth (see Figure 3):
  - Use a car seat, booster seat, or seat belt on every trip, no matter how short.
  - Buckle up the right way.
  - The lap belt goes across the hips, below the stomach.
  - The shoulder belt goes across the middle of the chest and over the shoulder.
  - Never put the shoulder belt behind your back or under your arm.
  - Wear seat belts even when the car or truck has air bags. Air bags are made to work with seat belts, not by themselves.
  - Never ride in the bed of a truck.
  - Never use a seat belt to buckle more than one person at a time.
  - Wear seat belts throughout pregnancy.
  - Use seat belt extenders if the seat belt is too small.
  - Find the right car seat or booster seat for a child's age, height, and weight (See Figure 4).
  - Buckle older children in a booster seat until the seat belt fits them properly. Seat belts fit properly when the lap belt lays across the upper thighs (not the stomach) and the shoulder belt lays across the chest (not the neck).
  - Get help installing a car or booster seat from a certified child passenger safety technician.
  - Properly buckle children in the back seat. The back seat is safest for children.
  - Never place a rear-facing car seat in front of an airbag. Airbags can injure or kill small children riding in the front seat.
  - Do not use traditional baby carriers (such as cradleboards) in place of a car seat. Traditional carriers do not keep children safe in cars or trucks.

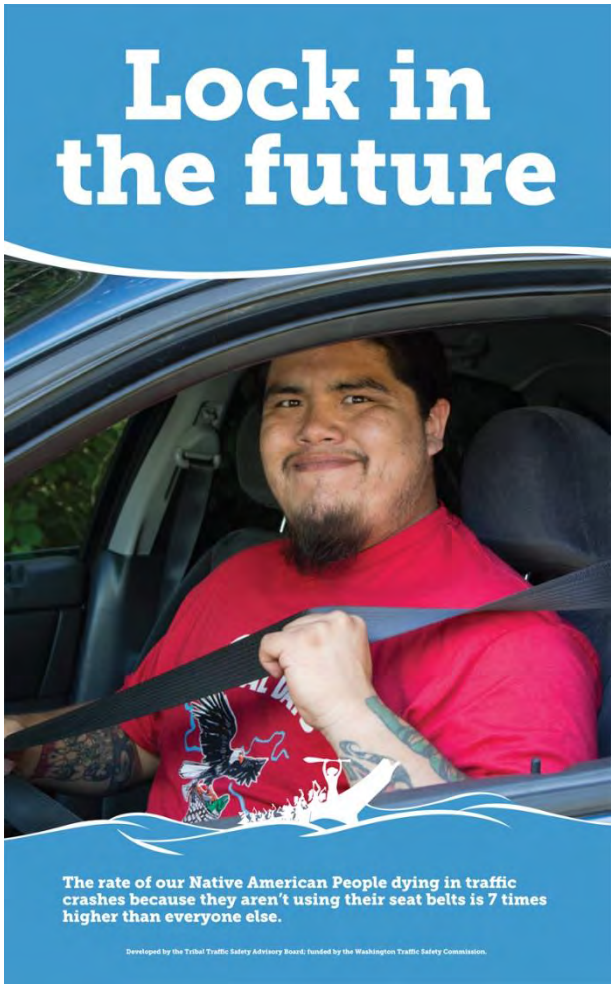

Figure 3. Educational materials developed by the Tribal Traffic Safety Advisory board of the Washington Traffic Safety Commission

Law Enforcement Can:

- Conduct short-term, high-visibility enforcement for child-passenger safety seats and seatbelts.
- Combine seat belt, impairment, and nighttime enforcement efforts.
- Maintain strong enforcement efforts.
- Work with law enforcement association committees.

- Enforce helmet laws.
- Coordinate enforcement efforts with education campaigns.
- Coordinate with Tribal council to ensure leadership support of enforcement campaigns.

RESOURCES:

- CDC, Roadway to Safer Tribal Communities Toolkit: http://www.cdc.gov/motorvehiclesafety/native
- NHTSA, Countermeasures that Work: https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/812202-countermeasuresthatwork8th.pdf
- IACP, Highway Safety Committee: http://www.theiacp.org/Highway-Safety-Committe
- IACP, Indian Country Law Enforcement Section: http://www.theiacp.org/Indian-Country-Law-Enforcement-Section
- IHS, Safe Native American Passengers: https://www.ihs.gov/MedicalPrograms/InjuryPrevention/index.cfm?module=toolbox&option=snap
- IHS, Child Passenger Safety Program: https://www.ihs.gov/MedicalPrograms/InjuryPrevention/index.cfm?module=toolbox&option=ride

Figure 4. Seventy-five percent of child fatalities were not using a child passenger seat
Photo courtesy of the BIA Indian Highway Safety Program

EMPHASIS TOPIC - ROADWAY DEPARTURE

From 2010-2014, roadway departure was a factor in crashes that resulted in at least 2,062 reported fatalities on roads in Tribal areas. This represents 63% of all reported motor vehicle fatalities in Tribal areas. Many Tribes and states identify roadway departure as an emphasis area in transportation safety plans. A roadway departure crash occurs when a vehicle leaves the traveled way resulting in a crash. Roadway departure crashes were identified when the first event in the crash was reported to be: impact with guardrail, impact with a fixed object (tree, utility pole, boulder, building, ditch, fence, etc.), ran off roadway, crossed median, crossed centerline, airborne vehicle, or re-entering the roadway.

Often crashes result from many combinations of factors. This emphasis topic focuses on strategies to address

Figure 5. One third of roadway departure fatalities in Tribal areas occurred in a horizontal curve.
Photo near the Native Village of Minto shows a visual trap that could lead a driver to miss the curve.

roadway departure only and does not address the behavioral factors, such as impaired and distracted driving, which often lead to road departure. For example, 44% of roadway departure fatalities are estimated to involve an impaired driver with a least a 0.08 BAC.

Some roadway departure crashes resulted in an object being hit. Figure 6 describes the most harmful event impacted in roadway departure fatalities in Tribal areas. This information reinforces the need to ensure the use of crashworthy roadside hardware (barriers, posts, and poles). This also highlights the advantages of providing a roadside that is recoverable and free of obstacles such as trees, hazardous fences, culvert ends, and other fixed objects.

Most roadway departure fatalities (71%) involve only one vehicle. Nine in ten roadway departure fatalities occur in rural areas with a significant portion, 47%, occurring on minor collector or lower classification rural roadways. Traffic volumes are typically lower at night, yet 43% of roadway departure crashes occur in the dark and 6% during dusk or dawn. Weather does not seem to play a significant role. Atmospheric conditions are clear or cloudy in 89% of roadway departure fatalities. Similarly, the road surface was reported to be dry for 83% of fatalities.

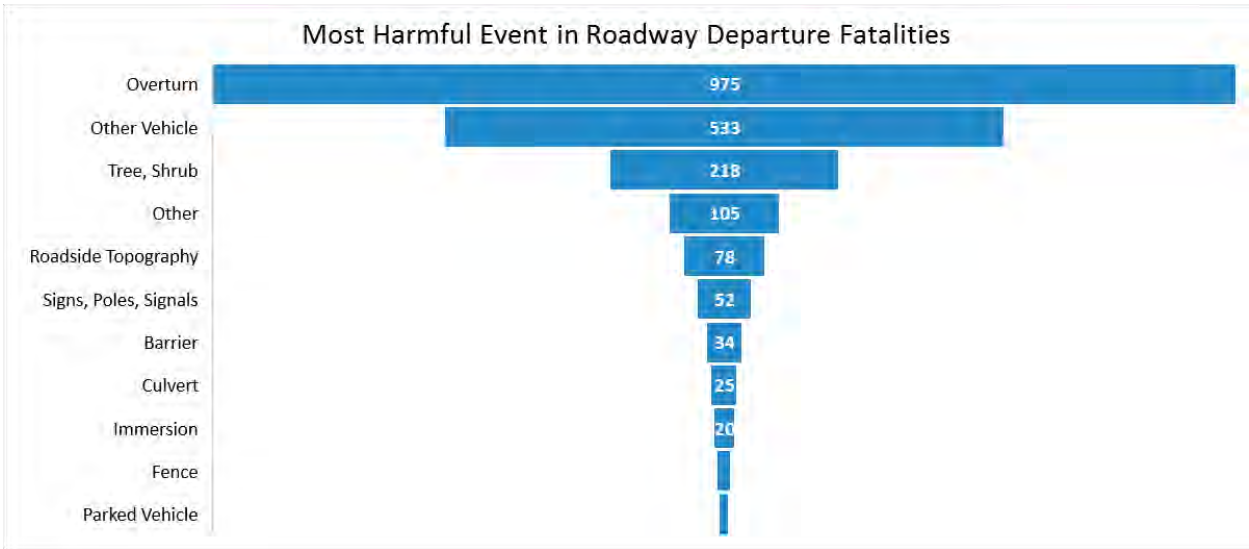

Figure 6. Most harmful event in roadway departure fatalities
Data source: 2010-2014 FARS Data

Roadway alignment is an important contributing factor to consider in roadway departure crashes. Thirty-five percent of roadway departure fatalities in Tribal areas occurred in a horizontal curve – a curve to the right or left (such as the curves to the left shown in Figures 5 and 7). This fact is significant because curved sections comprise a small portion of most road networks. At a national level roadway departure in curves is also a significant transportation safety issue. More than 25% of fatal crashes in the whole United States occur in curves with most of those crashes involving roadway departure. The average crash rate for horizontal curves is about three times that of other types of highway segments (FHWA, 2016).

STRATEGIES:

The strategies for roadway departure can generally be simplified in three categories: (1) Keep vehicles on the roadway, in their appropriate directional lane; (2) Reduce the potential for crashes when vehicles do leave the roadway or cross into opposing traffic lanes (provide for safe recovery); and (3) Minimize the severity of crashes that do occur.

- Keep vehicles on the roadway
  - Address behavioral topics (impairment, distraction, etc.) that can lead to road departure as discussed elsewhere in this plan.

Figure 7. Before (top) and after (bottom) pavement marking maintenance by the Reno-Sparks Indian Colony
Photo courtesy of Scott H. Carey, Reno-Sparks Indian Colony

- Ensure appropriate warning signs.
- Enhanced warning signs, especially in locations where crashes frequently occur or applied systemically to address high-risk factors.
- Use road surface friction treatments in spot locations such as curves, ramps and intersections with limited sight distance at approaches.
- Provide a shoulder to allow errant vehicles to safely return to the travel lane.
- Provide edge and shoulder rumble strips or stripes.
- Install and maintain pavement markings (see Figure 7).
- Install post mounted delineators.
- Maintain the roadway surface so that it can be safely traversed at the design speed.
- Avoid hillcrests and horizontal curves (curves to the left or right) at the same location.
- Ensure visibility of signs at night by implementing a sign management method recommended in the Manual on Uniform Traffic Control Devices (MUTCD).

- Provide for safety recovery
  - Provide clear zones free of hazardous roadside objects (See Figure 8).
  - Flatten roadside slopes so they are traversable.
  - Use Safety Edge on paving projects for safe re-entry of errant vehicles back on the travel way.
- Minimize crash severity
  - Install barriers, breakaway poles, crashworthy sign supports, or other crashworthy devices when hazards cannot be removed or relocated.
  - Update guardrail that does not meet a recent crashworthiness standard such as MASH or NCHRP Report 350.
  - Delineate hazards that cannot be removed, replaced, or shielded with barrier.

Figure 8. Hazardous roadside object identified through a systemic safety study.
Photo courtesy of the Confederated Salish and Kootenai Tribes

- Conduct a systemic safety study of roadway departure crashes to prioritize low cost strategies that mitigate the consequences of leaving the roadway.

RESOURCES:

- FHWA, Roadway Departure Safety: https://safety.fhwa.dot.gov/roadway_dept/
- Low Cost Treatments for Horizontal Curve Safety: https://safety.fhwa.dot.gov/roadway_dept/countermeasures/horicurves/fhwasa15084/
- Roadside Design Guide: https://bookstore.transportation.org/collection_detail.aspx?ID=105
- Night time sign visibility: https://safety.fhwa.dot.gov/roadway_dept/night_visib/policy_guide/sign_15mins/
- MUTCD 2A.08 Retroreflectivity: https://mutcd.fhwa.dot.gov/htm/2009/part2/part2a.htm
- MUTCD 2A.15 Enhanced Conspicuity for Standard Signs: https://mutcd.fhwa.dot.gov/htm/2009/part2/part2a.htm
- MUTCD 2C.06 Horizontal Alignment Warning Signs: https://mutcd.fhwa.dot.gov/htm/2009/part2/part2c.htm

EMPHASIS TOPIC - IMPAIRED DRIVING

An estimated 1,318 motor vehicle fatalities in Tribal areas from 2010-2014 involved an impaired driver. Among these fatalities are 1,168 involving a driver with a blood-alcohol concentration (BAC) of 0.08 and another 150 fatalities involving a driver with BAC between 0.01 and 0.07. For tribal areas, 40% of fatalities involved a driver impaired by alcohol with a BAC of at least 0.01. In comparison, 36% of fatal crashes during 2010-2014 in the United States overall are reported to involve a driver impaired by alcohol with a BAC of at least 0.01 (NHTSA, 2015).

Nationally, use of drugs other than alcohol (e.g., marijuana and cocaine) are identified in about 18% of motor vehicle driver deaths in the United States but test results were only available for 66% of cases in the studied crash data (NHTSA, 2010). Data on the involvement of drugs in fatal crashes in Tribal areas is not available. Anecdotally, if drug abuse is a factor then alcohol is typically also involved. Police officers often do not test for drug levels if alcohol impairment is also a factor. In addition, there are a wide variety of drugs and many require special equipment or a unique test to identify the suspected drug. Not all police departments are equipped with the necessary training, equipment, and tests to cover all controlled substances. Despite the unavailability of data, Law Enforcement officers often discuss the involvement of controlled substances as a growing problem on reservations based on their experience.

STRATEGIES:

Tribal Governments can:

- Establish and fully enforce existing laws that address the prevention of impaired driving. These include:
  - Blood Alcohol Concentration (BAC) of .08 limit laws;
  - Minimum legal drinking age laws;
  - Zero tolerance laws for drivers younger than 21 years old; and
  - Drug impaired driving.
- Authorize sobriety checkpoints. Checkpoints can reduce alcohol-related crash deaths by 9 percent.
- Require ignition interlock use for people convicted of drinking and driving, starting with their first offense.
- Restrict nighttime driving for teens to no later than 10 p.m. for at least the first 6 months of licensed driving.
- Restrict new drivers to no more than one passenger during the first 6 months of licensed driving.
- Ensure that alternatives to driving and walking are available for those leaving drinking establishments.
- Explore Community Guide supported strategies that may lead to a reduction in binge drinking.

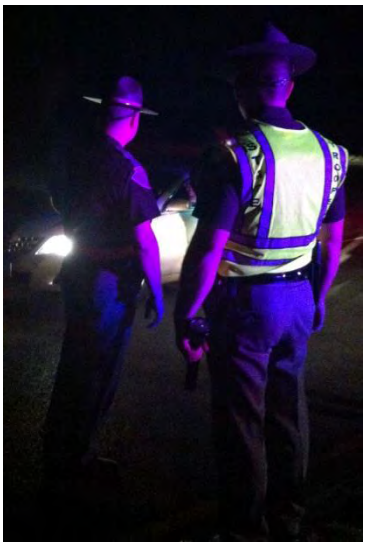

Figure 9. Oklahoma Highway Patrol Troopers Conduct Sobriety Checkpoints at the request of Caddo Nation Injury Prevention.
Photo Courtesy of Antoinette Short

Local health professionals can:

- Conduct screening and brief interventions for risky behaviors, such as using alcohol and drugs, and driving while impaired.
- Educate patients about the dangers of drinking and driving.
- Assess prescription drug controls using the guidelines provided in the National Safety Council publication "Prescription Nation: Addressing America's Drug Epidemic" (http://www.nsc.org/learn/NSC-Initiatives/Pages/Prescription-Nation-White-Paper.aspx).

Law Enforcement can:

- Combine seat belt, impairment, and nighttime enforcement efforts.
- Publicize sobriety checkpoint programs.
- Conduct sobriety checkpoints (See Figure 9).
- Maintain strong enforcement efforts.
- Coordinate enforcement efforts with education campaigns.
- Coordinate with Tribal council to ensure leadership support of enforcement campaigns.
- Ensure police officers are adequately trained to identify and test alcohol and drug impaired drivers.

RESOURCES:

- CDC Roadway to Safer Tribal Communities Toolkit: http://www.cdc.gov/motorvehiclesafety/native
- CDC Impaired Driving: http://www.cdc.gov/motorvehiclesafety/impaired_driving
- NHTSA, Countermeasures that Work: https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/812202-countermeasuresthatwork8th.pdf
- CDC Community Guide, Motor Vehicle Injuries, https://www.thecommunityguide.org/topic/motor-vehicle-injury
- National Safety Council, *Prescription Nation: Addressing America's Drug Epidemic,* http://www.nsc.org/learn/NSC-Initiatives/Pages/Prescription-Nation-White-Paper.aspx

EMPHASIS TOPIC - PEDESTRIAN SAFETY

An average of 69 lives were lost each year (2010-2014) in Tribal areas when a pedestrian was struck by a vehicle. This represents 11% of the fatal crashes in Tribal areas. Many safety plans developed by Tribes and states identify pedestrian safety needs. A significant portion of the applications submitted to the Tribal Transportation Program Safety Fund have requested funding to improve pedestrian infrastructure.

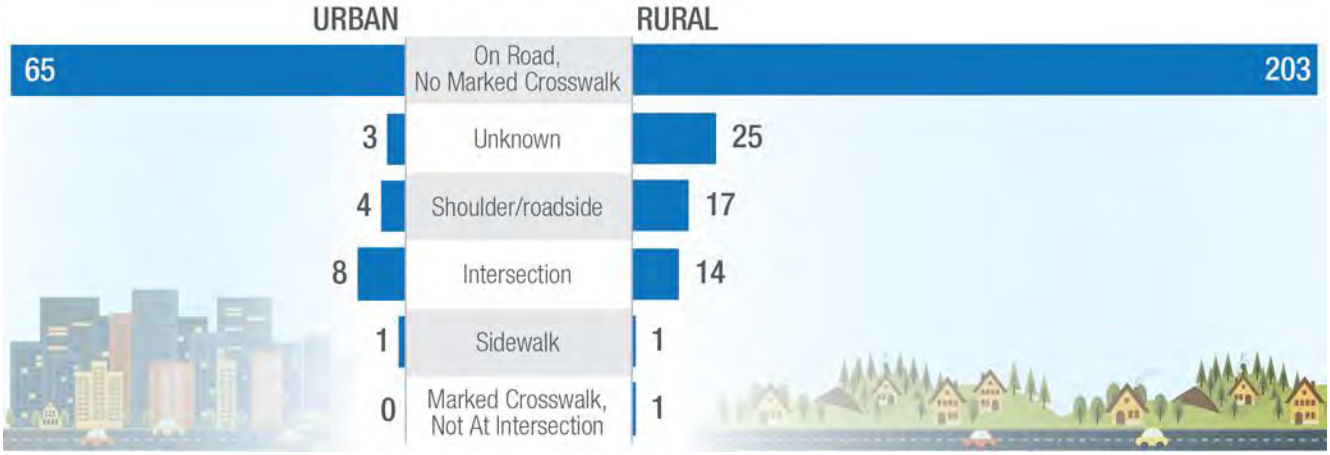

Figure 10. Location of pedestrian crashes
Data source: 2010-2014 FARS

Consistent with national statistics, the overwhelming majority of pedestrian fatalities do not occur at an intersection, are most frequent in the evening after 5p.m., and occur in dark conditions where no lighting exists. Three out of every four pedestrian fatalities in Tribal areas occurs during dark conditions.

In Tribal areas, most pedestrian fatalities occurred in rural areas with 23% located on urban roads. The location of pedestrians with respect to the roadway at time of impact is described in Figure 10. The majority (77%) of pedestrian fatalities in both rural and urban Tribal areas occurred when a pedestrian was walking in or along the roadway, not at an intersection, and not in a marked crosswalk. Further study is necessary to identify if these individuals are crossing, walking within the roadway, or walking along the road at the time of the crash. Only 6% of the pedestrian fatalities in Tribal areas were reported to have occurred at an intersection.

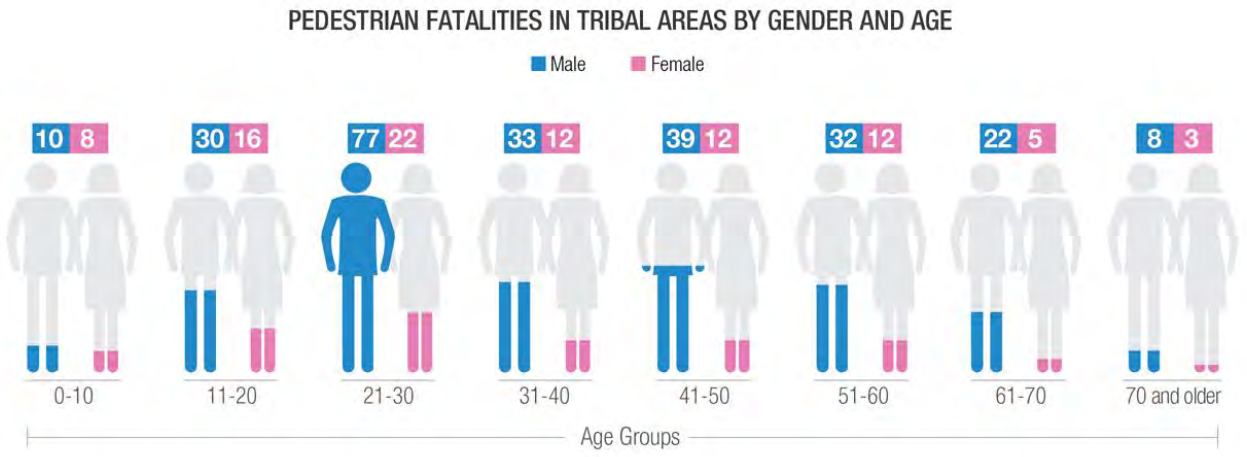

Figure 11. Age and gender of fatally injured pedestrians
Data source: 2010-2014 FARS

Pedestrian fatalities in Tribal areas are overwhelmingly (74%) males, with the largest age group being 21-30 years of age as shown in Figure 11. A significant portion (at least 43%) of pedestrian fatalities in Tribal areas involved a pedestrian who had consumed alcohol. This is a low estimate since 30% of pedestrian fatality reports did not report an alcohol result.

Native Americans and Alaska Natives experienced fatal pedestrian crash rates more than 3.5 times greater than other portions of the population in overall fatality data for the United States from 2005-2014 (Smart Growth America and National Complete Streets Coalition, 2016). An average of 98 Native Americans and Alaska Natives pedestrian fatalities occurred each year according to the overall United States FARS data from 2010-2014. Some of the behavioral strategies identified for Tribal areas may also help address Native American and Alaska Native pedestrian fatalities outside of Tribal areas. Additional detail on all Native American and Alaska Native fatalities both on and off Tribal areas can be found in the FHWA research report "Pedestrian Safety in Native America" (http://www.pedbikeinfo.org/data/library/details.cfm?id=2103).

Although not the focus of this emphasis area, many pedestrian improvements also have benefits for bicyclists. For reported fatal crashes on reservations, an average of five bicyclist fatalities occurred each year 2010-2014.

STRATEGIES:

Ensure that alternatives to driving and walking are available for those leaving bars and other locations where alcohol is being served.

Provide safe infrastructure for walking:

- Provide separated pathways (see example in Figure 12) or sidewalks in areas frequently used by pedestrians.

- When appropriate, provide pathways between origins and destinations independent of the road network that decrease pedestrian activity along roadways.
- Where pedestrian activity occurs along a roadway, provide roadway lighting.
- Mitigate obstacles such as bridges, culverts, steep embankments, snow storage, and utility apparatuses that may force pedestrians into the roadway.

Figure 12. Separated Pathway, Citizen Potawatomi Nation, Oklahoma
Photo courtesy of Tom Edwards, Cross Timbers Consulting, LLC

Minimize exposure for pedestrians crossing roadways:

- Shorten crossing distance with “bulb out” extensions of the curb & mid-crossing refuge islands.
- At stoplights with pedestrian signals, provide time for the pedestrian walk indication before conflicting signals turn green.
- Remove sight distance obstacles that can hide pedestrians from a driver’s view.
- Implement road diets where feasible to allow for refuge islands and eliminate the need for pedestrians to cross multiple lanes.

Educate Pedestrians:

- Walk on a sidewalk or path when one is available.
- If no sidewalk or path, walk on the shoulder, facing traffic. Stay alert.
- Avoid distractions that take eyes and ears off the surroundings.
- Be cautious. Never assume a driver sees you. Make eye contact with a driver before entering the travel lane.
- Be predictable. Cross streets at crosswalks or intersections when possible. This is where drivers expect and can see pedestrians.
- Be seen. Wear bright clothing during the day, and wear reflective materials or use a flashlight at night (See Figure 13).
- Avoid alcohol and drugs when walking; they impair your judgment and coordination.

Educate Drivers:

- Look for pedestrians everywhere.
- Never pass vehicles stopped at a crosswalk. They may be stopped to allow pedestrians to cross the street.
- Never drive under the influence of alcohol and/or drugs.
- Follow the speed limit; slow down around pedestrians.
- Stay focused and slow down where children are likely to be present, like school zones and neighborhoods.

RESOURCES:

- FHWA Pedestrian and Bicycle Safety: https://safety.fhwa.dot.gov/ped_bike/
- CDC Motor Vehicle Safety – Pedestrians: https://www.cdc.gov/motorvehiclesafety/pedestrian_safety/index.html
- NHTSA, Countermeasures that Work: https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/812202-countermeasuresthatwork8th.pdf
- NHTSA, Everyone is a Pedestrian: www.nhtsa.gov/nhtsa/everyoneisapedestrian/

Figure 13. Educate pedestrians to be seen. Wear bright clothing during the day and reflective materials or use a flashlight at night. Photo courtesy of BIA Indian Highway Safety Program

EMPHASIS TOPIC - AVAILABILITY OF PUBLIC SAFETY SERVICES

Many Tribal areas are rural with public safety services covering vast areas using limited resources. In addition, the remoteness of these locations requires individuals to make long commutes for employment, health services, education, and supplies. When a crash occurs in a remote Tribal area response times can be very long for police, emergency medical services, towing services, and fire and rescue crews. In addition, trauma centers can be a great distance away.

Training for officers in rural Tribal areas can be difficult to obtain. In some cases, enforcement officers do not have basic medical training and must wait with a victim until trained emergency medical personnel arrive. Training on basic roadway safety and efficient incident scene management techniques can also be needed.

Medical professionals describe a "golden hour" as the ideal timeframe in which to bring a severely injured individual to an appropriate physician. Emergency Medical Services (EMS) response times were only available for about one-third of the crash data examined. The available data shows that 44% of the fatal crashes in Tribal areas from 2010-2014 involved greater than one hour elapsed from the time EMS was notified until arrival at a medical treatment facility. For comparison, overall U.S. fatality data from 2010-2014 shows that 23% of fatalities in the United States occurred after at least one hour had elapsed between EMS notification and arrival at a medical treatment facility. The charts in Figure 14 provide additional detail about EMS response times.

Several of the safety plans developed by Tribes identify the need for increased resources for public safety services. Some Tribes are pursuing projects to improve emergency response time by updating 911 systems, improving street and address signage, creating helicopter landing pads, and mitigating obstacles that impact emergency response time.

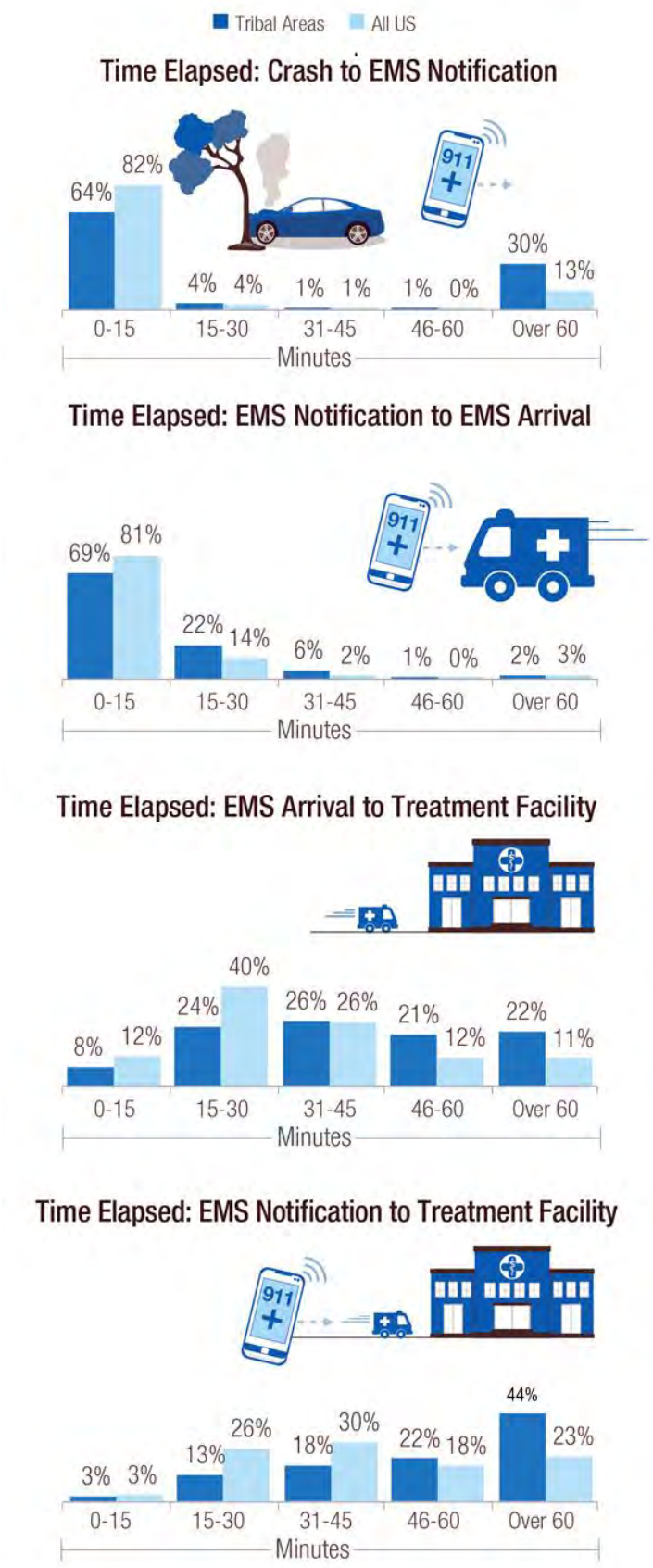

Figure 14. Comparison of EMS response times for Tribal areas and the rest of the USA
Source: 2010-2014 FARS Data

STRATEGIES:

- Provide basic medical training for volunteer community members who can respond to emergencies. The Community Emergency Response Teams program and the American Red Cross training are two options.
- Work with professional law enforcement associations that develop medical training and strategies such as the International Association of Chiefs of Police (IACP) Police Physicians Section.
- Provide first responders with incident management training to ensure safety and efficient crash scenes.
- Assess emergency notification, dispatch, communication, and response procedures to identify optimization needs.
- Collect incident management performance measure data.
- Address gaps in coverage for emergency communication systems.
- Train law enforcement in basic medical response.
- Ensure that EMS providers are using appropriately structured patient evaluations to provide the needed level and speed of care.
- Assess and identify the need for landing sites for medical transport helicopters (See Figure 15).
- Install and maintain emergency notification call boxes.
- Retain qualified staff at local health clinic

Figure 15. An air ambulance lands at a crash scene near Pawnee Nation
Photo courtesy of Chris McCray, Pawnee Nation

RESOURCES:

- Community Emergency Response Team (CERT) Program: https://www.fema.gov/community-emergency-response-teams
- American Red Cross Training: http://www.redcross.org/take-a-class
- IACP, Physicians Section: http://www.theiacp.org/Police-Physicians-Section
- Using Data to Improve Traffic Incident Management: https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/timdata.cfm
- Traffic Incident Management Responder Training: https://www.fhwa.dot.gov/innovation/everydaycounts/edc-2/tim.cfm
- U.S. Department of Homeland Security, Federal Law Enforcement Training Centers: https://www.fletc.gov/

ADDITIONAL TOPICS

The following topics were identified by the Safety Management System Steering Committee as topics that are either emerging issues or topics that are likely of interest to some Tribes but are not as prominent at the national level. These selections were based on the analyzed data sources and committee members' knowledge.

Table 2. Data summary for Additional topics

Topic	Fatalities in Tribal Areas	Percent of All Fatalities in Tribal Areas
Speed	1018	31%
Driver Distraction	Indeterminate	
Intersections	485	15%
Young Drivers (Age 15-22)	424	13%
Older Drivers (Age 65+)	443	13%
Off-Road Transportation	Indeterminate	
Animal-Vehicle Crashes	32	1%

SPEED

Speed is reported as a contributing factor in 1,018 fatalities (36%) in Tribal areas from 2010 to 2014. Speed related crashes represent both crashes where a vehicle was exceeding the posted speed limit as well as those cases where police reported that a vehicle's speed was unsafe for road, weather, traffic or other environmental conditions at the time. The national percentage of speed related crashes is slightly lower at 31% for the same period.

The data from Tribal areas indicates that just over one-third of the speed related fatalities were due to traveling too fast for conditions. Another one-third of the speed related crashes were due to exceeding the posted speed limit. One in four speed related fatalities involved vehicles racing. The remaining speed involved crashes did not have the specifics reported.

Victims of fatal speed related crashes in Tribal areas were less likely to be using occupant protection devices (Restraints were not used by fatally injured victims in 57% speed cases vs. 51% overall for Tribal Areas). Speed related fatalities involved an impaired driver for at least 60% of cases in Tribal areas. These facts suggest that drivers who participate in one risky behavior are more apt to also participate in other risky behaviors.

RESOURCES:

- NHTSA, Countermeasures that Work: https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/812202-countermeasuresthatwork8th.pdf
- ITE, Traffic Calming Guide: http://www.ite.org/traffic/
- FHWA, Speed Management Safety: https://safety.fhwa.dot.gov/speedmgt/
- FHWA, Methods and Practices for Setting Speed Limits: https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa12004/

Driver Distraction

Driver distraction was a factor in nearly 3,500 fatalities in the United States in 2015. There are many sources of distraction including talking or texting on a phone, eating or drinking, talking to passengers, and any other activity that takes a driver's attention from the task of driving. Data currently available on distracted driving crashes is not clear for Tribal areas. However, this is an emerging issue that should be considered in the safety planning process. Policies, laws, enforcement, and educational efforts can all help to reduce distracted driving.

Resources:

- NHTSA, Distracted Driving: Distraction.gov

Intersections

About fifteen percent of motor vehicle fatalities in Tribal areas from 2010-2014 were intersection related. This statistic is low in contrast to national data which consistently shows up to 23 percent of fatal crashes occur at intersections (FHWA, Intersection Safety, 2017). Despite the national statistics being low for reservations, intersection safety is highlighted as a major concern in some safety plans developed by Tribes. Some Tribes report very high numbers of serious crashes occurring at specific intersections in the Tribal area. So, while addressing intersections may not be a top priority at a national level some Tribes should pursue safety improvements at problem intersections starting by describing these problem locations in a transportation safety plan.

Resources:

- Institute of Transportation Engineers, Unsignalized Intersection Improvement Guide: www.ite.org/uiig
- FHWA, Intersection Safety: https://safety.fhwa.dot.gov/intersection/

Young Drivers

Young drivers, ages 15-20, were involved in 376 fatal crashes which resulted in 424 fatalities in Tribal areas from 2010-2014. The young driver was killed in 192 of the 424 fatalities. There is no data to determine if the young driver was "at fault" however a lack of experience could be a contributing factor for the majority of these crashes.

Among the young drivers involved in these crashes 67% are male. When restraint use was reported, 59% of young drivers who died were not using occupant protection devices (helmets or belts). About 48% of these crashes occurred in daylight. Crashes involving young drivers include roadway departure, multi-vehicle, and intersection related in similar proportion to the overall dataset of all fatal crashes in Tribal areas.

Resources:

- CDC Teen Driving Resources: https://www.cdc.gov/motorvehiclesafety/teen_drivers/index.html
- NHTSA, Countermeasures that Work: https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/812202-countermeasuresthatwork8th.pdf
- National Safety Council, Alive at 25 Program: https://aliveat25.us/

Older Drivers

Older drivers over age 65 are involved in crashes slightly less frequently in Tribal areas than in the entire United States. During 2014 just over 13% of the drivers involved in fatal crashes in the United States were age 65 or older. The reported fatal crash data for 2010-2014 in Tribal areas shows 12% of drivers involved in fatal crashes are over 65. Resources listed below may be useful for Tribes that identify a need to address older drivers.

RESOURCES:

- FHWA designing roadways for aging populations: https://safety.fhwa.dot.gov/older_users/
- CDC Information for keeping older drivers safer: https://www.cdc.gov/motorvehiclesafety/older_adult_drivers/
- NHTSA, Traffic Safety Facts – Older Population: https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812372
- NHTSA, Older Driver Safety: https://www.nhtsa.gov/road-safety/older-drivers

OFF-ROAD TRANSPORTATION

For some Tribes located in remote areas the primary mode of travel may not be conventional motor-vehicles. Trail, ice road (see Figure 16), air, and marine travel may be significantly more prominent in some Tribal communities than the use of standard roadway vehicles used in most of the United States. At national and regional levels, data is extremely limited on the fatal and injury incidents associated with the use of many of these modes. The safety issues associated with these modes of travel are likely to be different from the motor vehicle issues.

Tribes are strongly encouraged to develop a transportation safety plan that describes the Tribe's transportation safety history. These plans should be based on local knowledge of incident history in the absence of formal incident databases. These plans can be an especially helpful communication tool when the primary modes of travel are not conventional motor vehicles. Such plans could help to enhance the understanding of these issues by safety partners.

Figure 16. Ice Road Crew from the Native Village of Napaimute working near the Village of Chuathbaluk, Alaska.
Photo courtesy of Mark Leary, Native Village of Napaimute

Resources are limited for this topic because it is very broad and not well documented or understood. Tribal communities looking to address off-road transportation safety should consider the applicability of countermeasures and principals found in the other sections of this plan. Many of these strategies may have applicability, especially those that address behavioral issues like occupant protection and impairment. Further research is needed to understand the magnitude of the problem and associated risk factors.

RESOURCES:

- For marine safety – US Coast Guard Auxiliary: http://www.uscgboating.org/recreational-boaters/index.php
- For All Terrain Vehicle (ATV) safety – ATV Safety Institute: http://www.atvsafety.org/
- For Snowmobiles – Snowmobile Safety Awareness Program: http://www.saferiderssafetyawareness.org

ANIMAL-VEHICLE CRASHES

Crashes involving a single vehicle colliding with an animal are frequent in Tribal areas. These crashes typically cause property damage but very rarely result in injury to a human. From 2010-2014 in Tribal areas a live animal was involved in motor vehicle crashes that resulted in 32 human fatalities. FARS data does not document the animal species or differentiate between domestic and wild animals. Because of the frequency, crashes involving a live animal have been a common topic at safety summits and in transportation safety plans developed by Tribes.

Countermeasures available to address animal-vehicle crashes are limited. Large animal passages over or under roads are very expensive and many designs are still considered experimental. Intelligent transportation systems involving detection and warning for animals in the roadway have had limited success. Likewise, fencing, shoulder widening, and warning signage have limited success in addressing crashes with some species of animals.

FUNDING PROGRAMS

TRIBAL TRANSPORTATION PROGRAM - SAFETY FUND

The Tribal Transportation Program Safety Fund is a competitively selected annual grant for infrastructure improvement, safety planning, and the analysis and collection of safety data. Under the FAST Act the fund is about $9 Million per year, a two percent set-aside from the Tribal Transportation Program. Requests for funding have exceeded the available amount by at least 300% every year.

TRIBAL TRANSPORTATION PROGRAM – TRIBAL SHARES

Each federally recognized Tribe participating in the Tribal Transportation Program is provided with an annual allocation of funding. This funding can be used for a wide range of transportation needs including the implementation of infrastructure safety projects.

BIA INDIAN HIGHWAY SAFETY PROGRAM (IHSP)

The Highway Safety Act of 1966, 23 U.S.C. 402, provides Department of Transportation (DOT) funding to assist federally recognized Tribes with implementation of traffic safety projects. The program is administered by the BIA Indian Highway Safety Program under an agreement with NHTSA.

U.S. DEPARTMENT OF JUSTICE, COMMUNITY ORIENTED POLICING SERVICES

The U.S. Department of Justice Office of Justice Programs and Office of Community Oriented Policing Services offer programmatic opportunities to highlight best-practice community policing and safety programs. Opportunities exist for Tribal and local law enforcement agencies to apply for grants to pilot safety-oriented initiatives.

STATE HIGHWAY SAFETY PROGRAMS

States can utilize their funds provided by the NHTSA to fund federally recognized Tribes to address traffic safety issues in their State. The State Highway Safety Programs, commonly referred to as Section 402, was initially authorized by the Highway Safety Act of 1966 and has been reauthorized and amended several times, including most recently under the FAST Act.

Section 402 supports state highway safety programs, designed to reduce traffic crashes and resulting deaths, injuries, and property damage. Section 405(c) supports the development and implementation of effective State programs that evaluate or improve safety data quality. A State may use these grant funds only for highway safety purposes; at least 40 percent of these funds are to be used by or for the benefit of Tribal governments and political subdivisions of the State to address local traffic safety problems. States are required to provide a 20 percent match for this funding. The program is administered by NHTSA at the Federal level and by the State Highway Safety Offices at the State level. Crash data improvements are eligible under 23 U.S.C. 402 and 405(c).

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which was originally signed into law on August 10, 2005, (Public Law 109-59) established the Highway Safety Improvement Program (HSIP) as a core Federal-aid program administered by State transportation departments. The overall purpose of this program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads through the implementation of infrastructure-related highway safety improvements. The SAFETEA-LU established extensive new resources and opportunities to advance highway safety throughout the country in a comprehensive, strategic manner. Core requirements for the HSIP are that projects be data driven and consistent with the State's Strategic Highway Safety Plan which is to be developed in partnership with State, Tribal, and local entities. The requirements for the HSIP are codified in 23 U.S.C. 148.

ACRONYMS

ATV	All-Terrain Vehicle
BAC	Blood Alcohol Concentration
BIA	Bureau of Indian Affairs
CDC	Centers for Disease Control
CERT	Community Emergency Response Team
DOT	Department of Transportation
EMS	Emergency Medical Services
FAST	Fixing America's Surface Transportation Act
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
HSIP	Highway Safety Improvement Program
IACP	International Association of Chiefs of Police
ITE	Institute of Transportation Engineers
IHS	Indian Health Service
IHSP	Indian Highway Safety Program
MASH	Manual for Assessing Safety Hardware
MUTCD	Manual on Uniform Traffic Control Devices
NCHRP	National Cooperative Highway Research Project
NHTSA	National Highway Traffic Safety Administration
SHSP	Strategic Highway Safety Plan
USDOT	United States Department of Transportation
WISQARS	Web-based Injury Statistics Query and Reporting System

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APPENDIX A. DATA ANALYSIS METHODOLOGY

METHODOLOGY

The fatal crash data analysis conducted for this report was selected from the Fatality Analysis Reporting System (FARS) in two ways:

- Crashes coded as Indian Reservation
- Geospatial analysis

FARS established a field called "special jurisdiction" that is supposed to be populated to indicate if a fatal crash occurs within an Indian reservation, national park, or a variety of other special conditions. There is indication that the "special jurisdiction" field is underutilized and not adequate to represent all crashes on Indian reservations. Also, not all Federally recognized Tribes have an Indian reservation.

Ideally a geospatial analysis would be conducted using a road inventory that represented all roadways with a transportation significance to Tribes. Unfortunately, the National Tribal Transportation Facility Inventory is the only such data source and it is not Geographic Information System enabled.

In the absence of a road inventory this analysis determined that Tribal area boundaries could be used to define the fatal crashes that are most applicable to Tribes. There are many ways in which Tribal areas can be defined. Tribal area boundaries cannot be consistently defined across the 566 federally recognized Tribes in the United States because of the various ways in which Tribal areas are established. Instead, for the purposes of this analysis Tribal areas are represented by following data sources:

- United States Geological Survey Protected Areas Database (USGS PAD) version 1.1 (all fatal crashes in Indian Reservations, Land owned by Tribes, Bureau of Indian Affairs Tribal Trust Land, and Alaska Native Village Corporation boundaries)
- All fatal crashes in high Native American population counties in Oklahoma
- Fatal crashes where the death of a Native American or Alaska Native was reported in a US Census TIGER Oklahoma Tribal Statistical Area.

The results published in this plan may vary from other published analyses of fatal crashes in Tribal areas. The primary difference is likely related to the definition of "Tribal areas" in Oklahoma and Alaska.

ALASKA

Most of the 229 Tribes in Alaska do not have an Indian reservation. Instead, the Alaska Native Claims Settlement Act (ANSCA) established regional and village corporations where Tribes have some land ownership. The US Census TIGER definition of Alaska Tribal Statistical Areas was considered. However, the Census definition of Tribal areas included large urban areas and very few crashes of concern to Tribes. So, for Alaska this study considered Tribal areas to be the Alaska village corporation boundaries, as documented by the USGS PAD, and the Annette Island Reserve. This results in the inclusion in this study of 37 fatalities from 2010-2014 motor vehicle crashes in Alaska.

OKLAHOMA

Native Americans and Alaska Natives are estimated to comprise 13% of the population in the State of Oklahoma (US Census Bureau, 2013). Within Oklahoma there are 38 federally recognized Tribes. These Tribes receive 18% of the Tribal Transportation Program shares because of their large populations and large roadway networks (which

mostly consist of state and county roads used by Tribal members). However, most Tribes in Oklahoma do not have Indian reservations.

Large Oklahoma Tribal Statistical Areas have been established which cover about three quarters of the State of Oklahoma. These areas include large cities such as Tulsa and parts of Oklahoma City. Discussion at several conferences and over the phone with several employees of Tribes located in Oklahoma determined that these large areas would not appropriately represent the transportation interest of Tribes.

In the absence of geocoded road network data or well defined Tribal boundaries, an approach was developed to include relevant crash data for Tribes in Oklahoma. (Jurney, 2017) This approach selects crashes that meet one of these criteria:

- All fatal crashes that occur in a county where Native Americans are a higher percentage of the population than the statewide average according to the 2013 American Community Survey.
- All fatal crashes in an Oklahoma Tribal Statistical Area if the crash was reported to involve the death of a Native American or Alaska Native.

The result of this definition for Tribal areas in Oklahoma results in the identification of 1,495 fatalities during 2010-2014. Oklahoma crashes are a significant portion (45%) of the data used to support this National Tribal Transportation Safety Plan.

Fatalities Distribution by State

The data set supporting used in this study included 3,278 fatalities which occurred in Tribal areas. Table 1 shows the distribution of these crashes by state. Oklahoma has been identified separately in the following tables because a significant portion of the overall data set comes from Oklahoma and the definition of Tribal areas is different for Oklahoma Tribes. This information is displayed on a map in Appendix C.

State	Fatalities
Oklahoma	1484
Arizona	570
New Mexico	295
Montana	141
Washington	123
South Dakota	108
Idaho	94
North Dakota	89
California	48
Minnesota	42
Wisconsin	38
Alaska	37

State	Fatalities
Oregon	30
Utah	30
New York	28
Wyoming	27
Michigan	25
Colorado	14
Nevada	13
North Carolina	10
Nebraska	9
Kansas	8
Mississippi	3
Texas	2

State	Fatalities
Arkansas	1
Connecticut	1
Maine	1
Alabama	0
Florida	0
Indiana	0
Iowa	0
Louisiana	0
Maryland	0
Massachusetts	0
Rhode Island	0
South Carolina	0

TABLE 1. FATALITIES IN TRIBAL AREAS BY STATE

APPENDIX B. CRASH DATA CONTRIBUTING FACTORS ANALYSIS FOR TRIBAL AREAS

EMPHASIS TOPICS OVERVIEW

Emphasis topics shown in Table 2 were selected by a committee after review of several data sources including:

- Safety plans developed by Tribes
- The National Highway Traffic Safety Administration's Native American Traffic Safety Facts: https://cdan.nhtsa.gov/NA_report/NA_Report.htm
- The Center for Disease Control's Web-based Injury Statistics Query and Reporting System (WISQARS)
- State Strategic Highway Safety Plans with a Tribal emphasis.
- United States Geological Survey Protected Areas Database

Topic	Fatalities in Tribal Areas (Except Oklahoma)		Fatalities in Oklahoma Tribal Areas		Total, All Tribal Areas	Percentage of Total
Total	**1794**		1484		3,278	
Occupant Protection Devices Unused	**> 855 (808 not restrained, 47 not using helmets)**	48%	> 808 (686 not restrained, 122 not using helmets)	54%	>1663 (1494 not restrained, 169 no helmet)	> 51%
Roadway Departure	1086	61%	976	66%	2062	63%
Impaired Driving	746 w/ BAC 0.08 or greater 830 w/ BAC > 0	BAC=>.08: 42%	422 w/ BAC 0.08 or greater 488 w/ BAC > 0	BAC=>.08: 32%	1168 w/ BAC 0.08 or greater 1318 w/ BAC > 0	BAC=>.08: 36% BAC>0: 40%
Pedestrians	249	14%	97	6.5%	346	10.5%
Availability of Public Safety Services	40% of fatal crashes where sufficient data was available had greater than 1 hour from EMS notification to arrival at a hospital		46% of fatal crashes where sufficient data was available had greater than 1 hour from EMS notification to arrival at a hospital		44% of fatal crashes where sufficient data was available had greater than 1 hour from EMS notification to arrival at a hospital	

TABLE 2. SUMMARY OF DATA SUPPORTING SELECTED EMPHASIS TOPICS

Detailed Emphasis Area Contributing Factors Analysis

Additional facts were determined from the 2010-2014 FARS data analysis and are provided below for both Oklahoma Tribal areas and Tribal areas in the rest of the United States. In the data set are three cases in Oklahoma with four fatalities which overlap these two distinct definitions of Tribal areas. These four fatalities are reported with the Tribal areas (except Oklahoma) definition.

Occupant Protection

		Fatalities in Tribal Areas (except Oklahoma)	Fatalities in Oklahoma Tribal Areas	All Tribal Areas Fatalities
Passenger Vehicles	**Restrained**	339	426	765
	Unrestrained	736	630	1366
	Unknown	119	64	183
	Total	1194	1120	2314
Large Trucks	**Restrained**	13	19	32
	Unrestrained	6	26	32
	Unknown	3	15	18
	Total	22	60	82
Motorcycles	**Restrained**	53	26	79
	Unrestrained	47	122	169
	Unknown	7	2	9
	Total	107	150	257
Other/Unknown Vehicles	**Restrained**	8	1	9
	Unrestrained	66	30	96
	Unknown	128	5	133
	Total	202	36	238
Total	**Restrained**	413	472	885
	Unrestrained	855	808	1663
	Unknown	257	86	343
	Total	1525	1366	2891

- Fatalities of persons age 0-4 years old
  - Oklahoma Tribal areas: 20 fatalities
  - Tribal areas (except Oklahoma): 39 fatalities
- Fatalities of unrestrained persons age 0-4 years old
  - Oklahoma Tribal areas: 6 fatalities of unrestrained; 3 unknown if restraint used; 11 fatalities using restraining systems
  - Tribal areas (except Oklahoma): 22 fatalities of unrestrained; 14 unknown if restraint used; only 3 fatalities using restraining systems

ROADWAY DEPARTURE		Fatalities in Tribal areas (except Oklahoma)	Fatalities in Oklahoma Tribal Areas	Fatalities in All Tribal Areas	Fatalities by the Highest Driver BAC in the Crash	
					BAC=.01+	BAC=.08+
2010-2014	**Not a Roadway Departure Crash**	708	508	1216	295	258
	Roadway Departure Crash	1086	976	2062	1023	910
	Total	1794	1484	3278	1318	1168

- Number of vehicles
  - Oklahoma Tribal areas: 654 fatalities involved only a single vehicle (67 %); 322 involved multiple vehicles
  - Tribal areas (except Oklahoma): 812 fatalities involved only a single vehicle (74.8%); 274 fatalities involved multiple vehicles
- Rural vs. Urban
  - Oklahoma Tribal areas: 889 rural; 87 urban
  - Tribal areas (except Oklahoma): 1,002 rural; 79 urban; 5 unknown
- Light condition
  - Oklahoma Tribal areas: 539 fatalities in daylight; 385 fatalities in dark; 43 fatalities at dawn/dusk; 9 fatalities in unknown light conditions
  - Tribal areas (except Oklahoma): 485 fatalities in daylight; 495 fatalities in dark; 79 fatalities at dawn/dusk; 27 fatalities in unknown light conditions

Roadway Departure Fatalities by Atmospheric Weather Conditions			
	Tribal Areas (except Oklahoma)	Oklahoma Tribal Areas	All Tribal Areas (fatalities)
Clear	792	619	1411
Rain	39	56	95
Sleet/Hail	4	5	9
Snow	22	3	25
Fog, Smoke, Smog	16	9	25
Severe Wind	4	0	4
Cloudy	145	227	422
Other/Unknown	64	7	71
Total	**1086**	**976**	**2062**

Roadway Departure Fatalities by Surface Condition			
	Tribal Areas (except Oklahoma)	Oklahoma Tribal Areas	All Tribal Areas
Dry	867	841	1708
Wet	58	90	148
Snow, Ice, or Slush	83	22	105
Other	61	16	77
Mud, Dirt, Gravel, Sand	17	7	24
Total	1086	976	2062

Roadway Departure Fatalities by Horizontal and Vertical Alignment

Tribal Areas (except Oklahoma)				
	Straight (no curve)	Horizontal Curve	unknown	Total
Level	450	204	1	655
Slope	121	176	3	300
Hillcrest	36	14		50
Sag	1	4		5
Unknown	16	20	40	76
Total	**624**	**418**	**44**	**1086**

Oklahoma Tribal Areas				
	Straight (no curve)	Horizontal Curve	unknown	Total
Level	436	173		609
Slope	209	101		310
Hillcrest	28	3		31
Sag	7	4		11
Unknown			15	15
Total	680	281	15	976

Most Harmful Event in Roadway Departure Fatalities

Most Harmful Event	Tribal Areas (except Oklahoma)	Oklahoma Tribal Areas	All Tribal Areas
Overturn	631	344	975
Other Vehicle in Use	250	283	533
Tree, Shrub	63	155	218
Roadside Topography	31	47	78
Signs, Poles, Signals	22	30	52
Barrier	14	20	34
Culvert	8	17	25
Immersion	17	3	20
Fence	4	9	13
Parked Vehicle	4	5	9
Other	42	63	105
Total	**1086**	**976**	**2062**

IMPAIRED DRIVING

Alcohol impaired driving is not always reported because not every driver is tested. Because of the low reporting, National Highway Traffic Safety Administration (NHTSA) has developed a statistical method known as multiple imputation that is used to estimate the involvement of alcohol in fatal motor vehicle crashes. The following numbers are estimates of fatalities where an impaired driver was involved.

	Tribal Areas (except Oklahoma)	Oklahoma Tribal Areas	All Tribal Areas
Total	1794	1484	3278
BAC=>.01	830	488	1318
BAC=>.08	746	422	1168

PEDESTRIANS

- Pedestrian fatalities
  - Oklahoma Tribal areas: 97 fatalities in 94 cases
  - Tribal areas (except Oklahoma): 249 fatalities in 244 cases
- Pedestrian Fatalities by Rural/Urban and Roadway Functional Classification

Rural	**Oklahoma Tribal Areas**	**Tribal Areas (except Oklahoma)**	**All Tribal Areas**
Rural Interstate (1)	10	16	26
Rural-Principal Arterial - Other (2)	14	51	65
Rural-Minor Arterial (3)	14	36	50
Rural-Major Collector (4)	21	38	59
Rural-Minor Collector (5)		10	10
Rural-Local Road or Street (6)	6	40	46
Rural-Unknown Rural (9)		5	5
Rural Total	**65**	**196**	**261**
Urban			
Urban Interstate	4	7	11
Urban-Principal Arterial - Other (Freeways or Expressways) (12)		2	2
Urban-Other Principal Arterial (13)	17	12	29
Urban-Minor Arterial (14)		9	9
Urban-Collector (15)	2	10	12
Urban-Local Road or Street (16)	9	8	17
Urban-Unknown Urban (19)		1	1
Urban Total	**32**	**49**	**81**
Unknown (99)		**4**	**4**

- Pedestrian location at time of fatal crash

Rural/Urban	Location	Tribal Areas (except Oklahoma)	Oklahoma Tribal Areas	All Tribal Areas
Rural	On Road, No Marked Crosswalk	152	51	203
	Unknown	24	1	25
	Shoulder/Roadside	8	9	17
	Intersection	10	4	14
	Not at Intersection, In Marked Crosswalk	1		1
	Sidewalk	1		1
Urban	On Road, No Marked Crosswalk	39	26	65
	Intersection	6	2	8
	Shoulder/Roadside	2	2	4
	Unknown	1	2	3
	Sidewalk	1		1
Unknown (99)	Unknown	4		4
Total		**249**	**97**	**346**

- Pedestrian Impairment (not driver impairment)

Pedestrian Fatalities - Alcohol Impairment of pedestrian				
	Male	**Female**	**Unknown**	**Total**
Tribal Areas (except Oklahoma)				
0 BAC	26	16		42
0.01-0.07 BAC	1			1
0.08 or higher	83	28		111
Unknown	45	13	1	58
Test not given	28	8		36
Oklahoma Tribal Areas				
0 BAC	40	11		51
0.01-0.07 BAC	1	1		2
0.08 or higher	25	8		33
Test not given	6	5		11
All Tribal Areas Total	**255**	**90**	**1**	**346**

- Age/gender distribution for pedestrian fatalities

	Male	Female	Unknown	Total
Tribal Areas (except Oklahoma)				
0-10	6	6		12
11-20	22	13		35
21-30	63	18		81
31-40	22	10		32
41-50	28	6		34
51-60	18	7		25
61-70	14	4		18
>70	6	1		7
Unknown	4		1	5
Oklahoma Tribal Areas				
0-10	4	2		6
11-20	8	3		11
21-30	14	4		18
31-40	11	2		13
41-50	11	6		17
51-60	14	5		19
61-70	8	1		9
>70	2	2		4
Total	**255**	**90**	**1**	**346**

Light Conditions for Pedestrian Fatalities

Light Condition	Oklahoma Tribal Areas	Tribal Areas (except Oklahoma)	Total
Daylight	17	35	52
Dawn/Dusk	4	6	10
Dark	64	154	218
Dark - Lighted	12	33	45
Unknown		21	21
Total	**97**	**249**	**346**

Pedestrian fatalities by time of day (All Tribal areas combined)

Time of Day	Total
Midnight	14
1am	14
2am	16
3am	13
4am	12
5am	15
6am	9
7am	5
8am	1
9am	6
10am	4
11am	4

Time of Day	Total
Noon	2
1pm	2
2pm	7
3pm	8
4pm	4
5pm	12
6pm	33
7pm	23
8pm	35
9pm	32
10pm	28
11pm	26
unknown	21

Bicycle fatalities

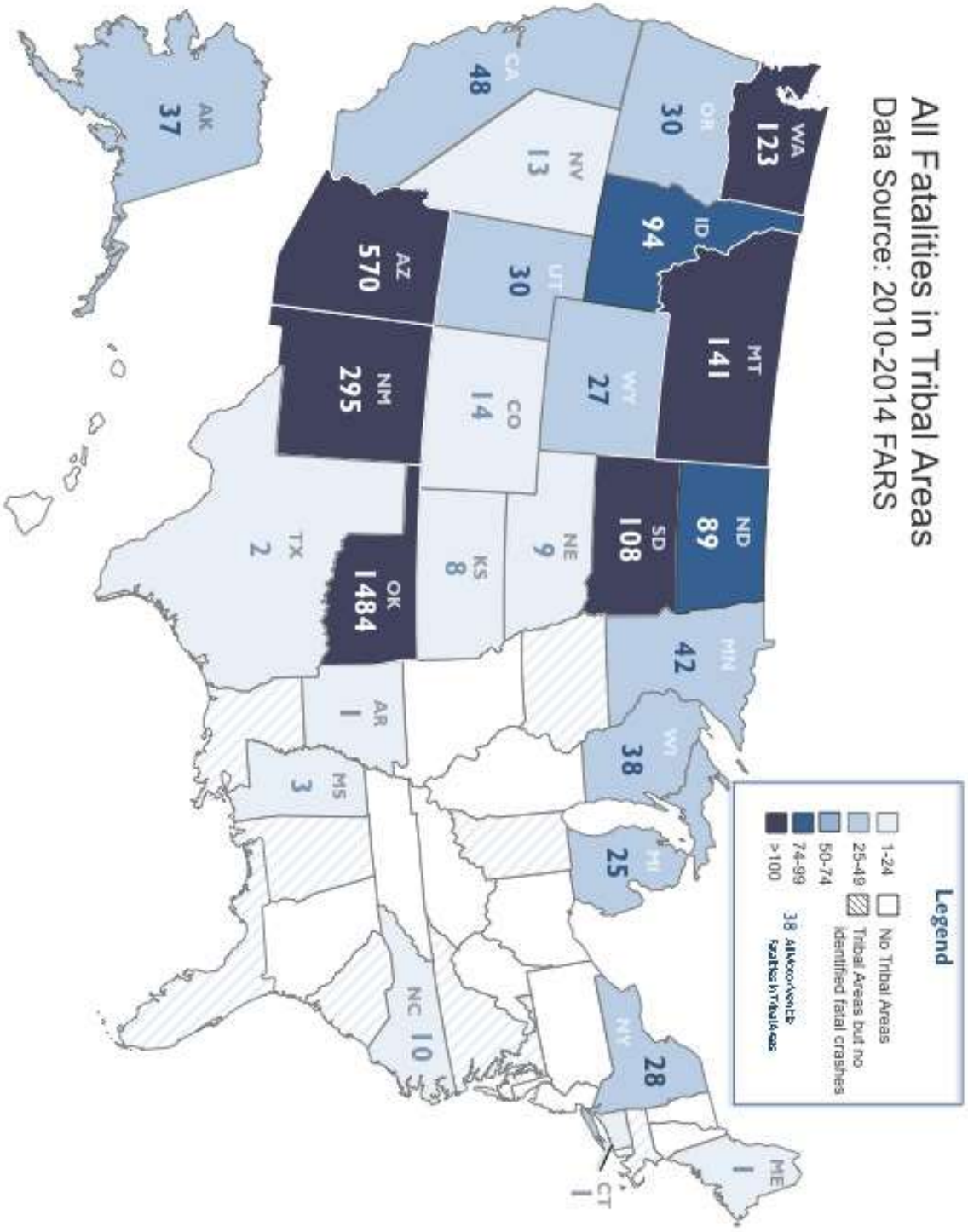
- Oklahoma Tribal areas: 9 bicycle fatalities; 5 other personal conveyance fatalities
- Tribal areas (except Oklahoma): 16 bicycle fatalities; 2 other personal conveyance fatalities; 1 non-motorized unknown type of vehicle

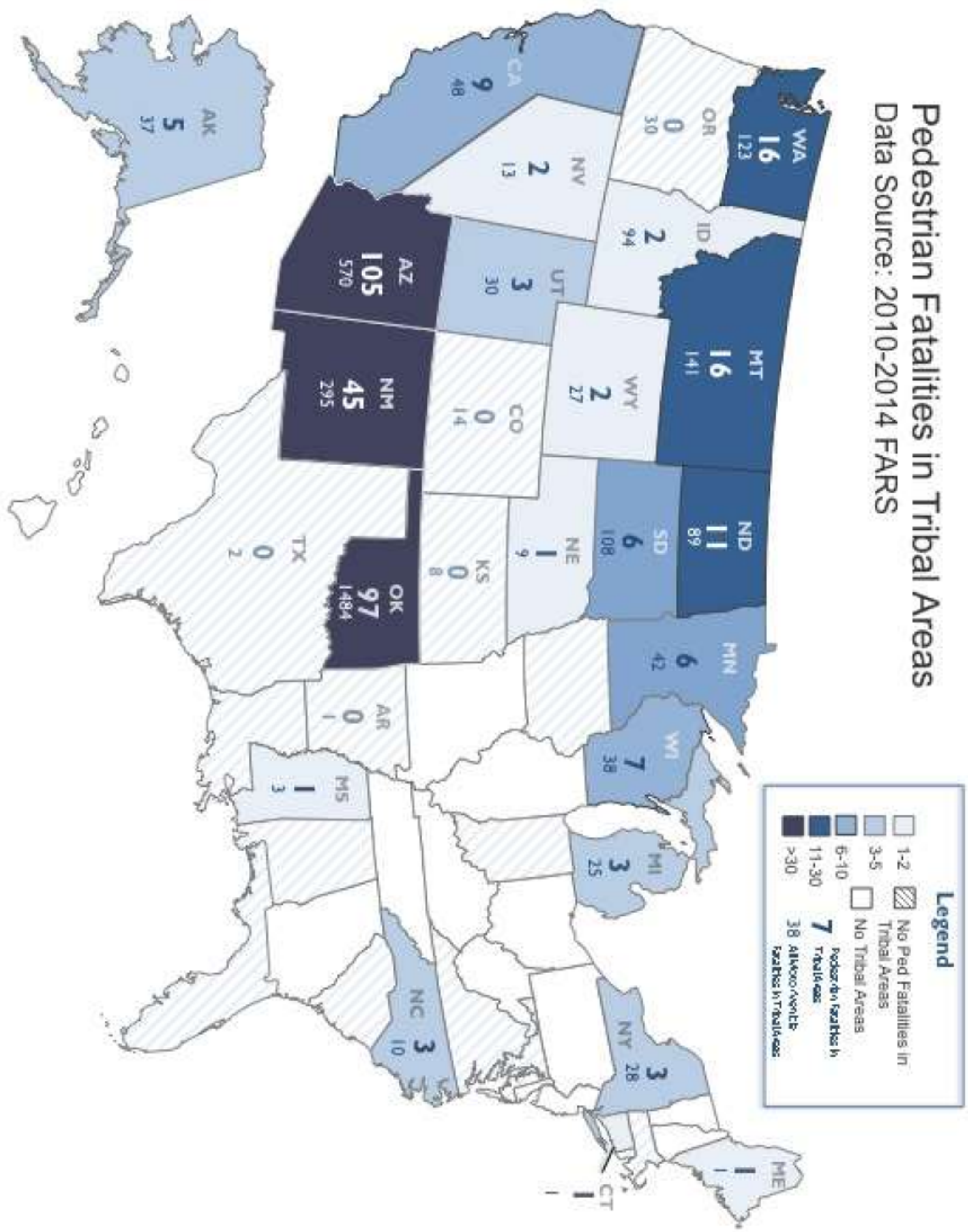
Availability of Public Safety Services

- Complete Emergency Medical Service (EMS) Response Time data was available for 1/3 fatality reports in Tribal areas (Oklahoma Tribal areas and rest of Tribal areas combined).
- EMS Response Times greater than one hour from notification to arrival at the treatment facility
  - Oklahoma Tribal areas: 46% of the cases with sufficient data reported more than one hour
  - Tribal areas (except Oklahoma): 40% of the cases with sufficient data reported more than one hour
  - All Tribal areas: 44% of the cases with sufficient data reported more than 1 hour
  - All USA: 23% of all cases with sufficient data

Additional Topics

	Oklahoma Tribal Areas		Tribal Areas (except Oklahoma)		All Tribal Areas	
	Fatalities	%	Fatalities	%	Fatalities	%
All fatalities	**1484**		**1794**		**3278**	
Speed Involved	370	25%	648	36%	1018	31%
Distracted	Indeterminate		Indeterminate		Indeterminate	
Intersections	303		20%		182	
Younger Drivers (Age 15-21)	197	10%	227	13%	424	13%
Older Drivers (Age 65+)	268	14%	175	9%	443	13%
Off-Road Transportation	Indeterminate		Indeterminate		Indeterminate	
Animal-Vehicle	14	1%	18	1%	32	1%


All Fatalities in Tribal Areas
Data Source: 2010-2014 FARS
Legend
1-24
25-49
50-74
74-99
>100
No Tribal Areas
Tribal Areas but no identified fatal crashes
WA 123
OR 30
CA 48
AK 37
NV 13
ID 94
MT 141
AZ 570
UT 30
WY 27
CO 14
NM 295
ND 89
SD 108
NE 9
KS 8
OK 1484
TX 2
MN 42
WI 38
MI 25
AR 1
MS 3
NC 10
NY 28
ME 1
CT 1


Pedestrian Fatalities in Tribal Areas
Data Source: 2010-2014 FARS
Legend
1-2
3-5
6-10
11-30
>30
No Ped Fatalities in Tribal Areas
No Tribal Areas
7 Pedestrian Fatalities in Tribal Areas
38 All Motor Vehicle Fatalities in Tribal Areas
WA 16 123
OR 0 30
CA 9 48
NV 2 13
ID 2 94
MT 16 141
WY 2 27
UT 3 30
AZ 105 570
CO 0 14
NM 45 295
ND 11 89
SD 6 108
NE 1 9
KS 0 8
OK 97 1484
TX 0 2
MN 6 42
WI 7 38
AR 0 1
MS 1 3
MI 3 25
NY 3 28
NC 3 10
ME 1 1
CT 1 1
AK 5 37