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Authors
Ragland, David, PhD, MPH
Bigham, John
Oum, Sang Hyouk
et al.

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David Ragland, PhD, MPH*
Professor Emeritus, School of Public Health
Director, Safe Transportation Research and Education Center (SafeTREC)
University of California, Berkeley
2614 Dwight Way #7374
Berkeley, CA 94720-7374
Phone: 510-642-0655, Fax: 510-643-9922
davidr@berkeley.edu

John Bigham
Data Coordinator, Safe Transportation Research and Education Center (SafeTREC)
University of California, Berkeley
2614 Dwight Way #7374
Berkeley, CA 94720-7374
Phone: 510-643-1777, Fax: 510-643-9922
jbigham@berkeley.edu

Sang Hyouk Oum
Research Associate, Safe Transportation Research and Education Center (SafeTREC)
University of California, Berkeley
2614 Dwight Way #7374
Berkeley, CA 94720-7374
Phone: 510-642-2225, Fax: 510-643-9922
shoum@berkeley.edu

Katherine Chen
Research Associate, Safe Transportation Research and Education Center (SafeTREC)
University of California, Berkeley
2614 Dwight Way #7374
Berkeley, CA 94720-7374
Phone: 510-642-2225, Fax: 510-643-9922
kchen@berkeley.edu

Grace Felschundneff
Senior Editor, Safe Transportation Research and Education Center (SafeTREC)
University of California, Berkeley
2614 Dwight Way #7374
Berkeley, CA 94720-7374
Phone: 510-642-0655, Fax: 510-643-9922
gracefelschundneff@gmail.com

*corresponding author

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ABSTRACT

There is a disproportional risk of motor vehicle death and injury among American Indian/Alaska Native (AI/AN) populations in the United States. As home to the nation's largest population of AI individuals, it is vital that California develop a better understanding of the factors contributing to this risk to guide the development and implementation of interventions to improve traffic safety for this population on the nearly 100 Rancherias and reservations in the state. However, there is very little data about the numbers and types of collisions, and driver and environmental factors contributing to the collisions that occur on tribal lands. As a first step toward better understanding the scope of the risk disparity, and the shortcomings in data collection, SafeTREC conducted a literature review and crash analysis using data from the Statewide Integrated Traffic Record System (SWITRS) and tribal area base maps targeting these communities. As a result of presentations and discussions at a California Tribal Safety conference where these analyses were presented, a number of procedural and institutional challenges were identified. Addressing these issues will not only help policymakers identify interventions to improve traffic safety on tribal lands, but it will give tribal jurisdictions tools to compete for scarce safety funding through the use of data documenting the need for safety improvements. Future research efforts should be aimed at refining these and other initiatives to address both the dire conditions of traffic safety on California's tribal lands, and the limitations of the data.

INTRODUCTION

There is a disproportional risk of motor vehicle death and injury among American Indian/Alaska Native (AI/AN) populations in the U.S. Nationwide motor vehicle collisions are the leading cause of unintentional injury for AI/AN populations between the ages of 1 and 44. Motor vehicle-related death rates for AI/AN adults are more than twice that of Caucasians, and almost twice that of African Americans *(1)*. Among AI/AN 19 years and younger, motor vehicle collisions are the leading cause of injury-related fatalities *(2)*, and AI/AN infants under one year of age experience the highest rate of motor-vehicle traffic deaths of all racial/ethnic groups *(3)*.

Based on these alarming statistics, and the fact that California has the largest Native American population in the nation, it is vital for the state to achieve a better understanding of the factors contributing to this risk to guide the development and implementation of interventions to improve traffic safety for this population on the nearly 100 Rancherias and reservations in the state. However, there is very little data about the numbers and types of collisions, and driver and environmental factors contributing to the collisions that occur on tribal lands. Therefore, it is essential for California to improve the quality and quantity of data collected about traffic collisions that occur within the boundaries of its nearly 100 Rancherias and reservations.

On a practical note, funding for traffic safety improvements is increasingly being awarded based on collision data that documents the extent of the safety problem. Projects for which data is required now include roadway upgrades, enforcement efforts, and education programs. However, data documenting collisions on tribal lands is lacking, putting tribal communities at a disadvantage in the competition for safety project funding, and prolonging their populations' high risk for traffic-related injuries. It is critical, therefore, to have adequate collision data—counts and descriptions—for all travel modes including pedestrians and bicyclists, for tribal lands, and they must be as accurate as possible.

Not only will better data help tribal lands compete for funding, it may lead to a better understanding of contributing factors including location, type of collision, and other elements that, if addressed, may help prevent traffic collisions on tribal lands in the future. MAP-21, the new Federal transportation bill, requires “a data-driven, strategic approach to improving highway safety on all public roads.” It also requires “a comprehensive, data-driven, Strategic Highway Safety Plan (SHSP) that defines state safety goals and describes a program of strategies to improve safety.” In order to meet the requirements of MAP-21, to be in compliance with the SHSP, and to promote safety on tribal lands, data collection and reporting must be improved.

As a first step toward this goal, the Safe Transportation Research and Education Center (SafeTREC) at the University of California, Berkeley, conducted a literature review and analysis of traffic fatality and injury patterns on tribal area roadways, in addition to investigating factors related to data quality and quantity limitations. This study aims to address both the need for improved traffic safety on California’s tribal lands, and the reasons behind the shortcomings in the data.

BACKGROUND

Native American Tribal Population in California

California is home to over one hundred federally recognized tribes, the largest Native American population in the nation, totaling 723,225 *(4)*, approximately 12 percent of the total Native American population in the nation, and the largest number of distinct tribes of any U.S. state. These tribes are characterized by linguistic and cultural diversity *(5)*.

Highest Population Concentrations

- U.S. locations with highest percentages of American Indians include Sacramento (466,488) and Santa Rosa (167,815) *(6)*.

Locations

- In rural areas and near highly populated cities (Los Angeles, San Francisco, San Diego, Sacramento)
- Close to borders of AZ, OR, and NV
- In deserts and mountains, on coast, near rivers and lakes

Tribal Populations

- California tribes range in number from five to 5,000 members.
- The largest tribal population in the state is Cherokee (approximately 18 percent), followed by Apache (6 percent), Navajo (5 percent), and Choctaw (5 percent) *(6)*.

Government

- Tribes have diverse governmental, cultural, social, economic, and geographic factors
- There are six tribal courts in California, leading to jurisdictional issues and questions

Traffic Injury Risk Factors Among Tribal Populations

Sever major risk factors impact the high rates of injury and fatality among AI/AN populations nationwide, including inadequate seat belt and child seat use and alcohol impaired driving. Seat belt use on reservations is low (55.4% overall), varying across individual locations from 8.8% to 84.8% *(6)*. Seat belt usage is greatly influenced by the presence, or lack, of primary seat belt laws *(7)*. Use of child car seats also varies greatly, but is generally much lower than the nationwide average *(8)*, with findings from a study of three Northwest tribes showing usage rates from 12% to 21% *(9)*, compared with the national average of 87% *(10)*. Among traffic collisions that occurred on reservations between 1982 and 2002, 65% were alcohol-related, compared with 47% of collisions nationwide *(7)*.

Risk Reduction

The risk of traffic-related injury and fatality on tribal lands can be reduced by increasing occupant restraint use, in part by establishing primary seat belt laws, and enforcing strict DUI legislation.

Extensive research has shown that seat belt laws, in particular, primary enforcement, increase seat belt use *(11)*. Child safety seats have been show to reduce vehicle occupant fatalities by 71% for infants and 54% for children between the ages of 1 and 4 *(12)*.

Countermeasures to reduce alcohol-impaired driving include committed enforcement of 0.08% BAC laws, minimum legal drinking age laws, and zero tolerance policies for drivers under the age of 21 *(14)*. Implementing sobriety checkpoints has also been proven to be effective in reducing alcohol-related collisions and death by approximately 17-25% *(15)*. The effectiveness of these measures can be enhanced through the addition of community outreach and education programs.

Individual Tribal Traffic Safety Programs

While individual AI/AN communities vary in environment, culture, and politics, effective traffic safety measures can be implemented to reduce injury and fatality. The Center for Disease Control (CDC) Injury Center funded four tribes from 2004-2009 to develop, implement, and evaluate their own programs to reduce motor vehicle-related injury and fatality in their communities. The following pilot programs were successful at increasing seat belt use, increasing child safety seat use, and decreasing alcohol-impaired driving *(16)*:

The Tohono O'odham Nation (TON) passed a primary seat belt law in 2005, allowing enforcement officers to ticket drivers for not wearing a seat belt, without any other traffic offense being observed. Efforts to support the law focused on increasing seat belt use on the reservation with a comprehensive media campaign and working with tribal police to enforce the new law. Driver seat belt use increased 47% and passenger seat belt use increased 62% from 2005 to 2008.

The Ho-Chunk Nation Motor Vehicle Prevention Program (MVPP) also set goals to increase seat belt use and child safety seat use. Through a number of activities—including partnering with local county police departments, implementing a comprehensive media campaign, and conducting targeted education and training for police officers— MVPP saw major improvements. From 2005 to 2009, driver seat belt use increased 38%, passenger seat belt use increased 94%, and child safety seat use increased from a baseline of 26% in 2005 to 76% in 2009.

The White Mountain Apache Tribe Motor Vehicle Injury Prevention Program has focused on increasing seat belt use and decreasing alcohol-impaired driving through the use of DUI sobriety checkpoints, enhanced police enforcement, and a comprehensive media campaign. In 2008 they conducted 24 sobriety checkpoints and stopped 13,408 vehicles. They also tracked rates of seat belt use among drivers and passengers and found that driver seat belt use increased from 13% to 54% and passenger seat belt use increased from 10% to 32% from 2004 to 2008. The San Carlos Apache Tribe Motor Vehicle Injury Prevention Program has focused on reducing alcohol-impaired driving and increasing seat belt use among tribal members. Media campaigns, sobriety checkpoints, enhanced police enforcement, and local community events were all important components of their program. Since 2004, total DUI arrests have increased 52%, driver seat belt use has increased 46%, and motor vehicle collisions have decreased 29%. In 2007, the San Carlos Tribal Council passed a primary seat belt law and a .08 blood alcohol concentration (BAC) law.

CALIFORNIA TRIBAL LANDS INJURY COLLISION ANALYSIS

SafeTREC conducted an analysis of traffic fatality and injury patterns on tribal area roadways across California. Data for the analysis came from the Statewide Integrated Traffic Record System (SWITRS), maintained by the California Highway Patrol (CHP), the same source of collision data for the rest of the state. Since the tribal areas of the 111 federally recognized tribes in California are not reported as separate jurisdictions in SWITRS, tribal area base maps were used and collisions that occurred within those coordinates were counted. The analysis identified 3,755 fatal and injury collisions that occurred within 29 tribal areas in California over a period of 10 years from 2002 to 2011 (Tables 1 & 2). While fatal and injury collisions decreased in tribal areas—and in California overall as well—there remain an unacceptable number of such collisions.

Table 1 Fatal and Injury Collisions in Tribal Areas by Severity, 2002-2011

Year	Fatal	Severe	Minor	Total
2002	25	38	322	385
2003	25	35	330	390
2004	25	44	391	460
2005	23	33	361	417
2006	12	46	341	399
2007	19	41	355	415
2008	24	25	324	373
2009	15	29	273	317
2010	6	24	273	303
2011	16	34	246	296
TOTAL	**190**	**349**	**3,216**	**3,755**

Table 2 Fatal and Injury Collisions by Tribal Area. 2002-2011 (Total = 3,755)

Tribal Land	Collisions
Agua Caliente Indian Reservation	1,744
Barona Rancheria	206
Bishop Rancheria	27
Cabazon Indian Reservation	114
Cahuilla Indian Reservation	59
Campo Indian Reservation	99
Chemehuevi Indian Reservation	16
Colorado River Indian Reservation	90
Fort Independence Indian Reservation	4
Fort Yuma Indian Reservation	140
Hoopa Valley Indian Reservation	159
La Jolla Indian Reservation	46
La Posta Indian Reservation	17
Mesa Grande Indian Reservation	1
Morongo Indian Reservation	305
Pala Indian Reservation	194
Rincon Indian Reservation	100
Round Valley Indian Reservation	31
San Pasqual Indian Reservation	3
Santa Rosa Indian Reservation	21
Santa Rosa Rancheria	13
Santa Ynez Indian Reservation	5
Santa Ysabel Indian Reservation	22
Soboba Indian Reservation	6
Susanville Rancheria	9
Torres-Martinez Indian Reservation	159
Viejas Indian Reservation	57
X. L. Rancheria	14
Yurok Indian Reservation	94

Data Limitations

SWITRS, maintained by CHP, processes all reported fatal and injury collisions that occur on California's state highways and all other public roadways, excluding private property. Anecdotally, data on tribal lands is likely to be under-reported to SWITRS due to discrepancies in jurisdictional authority. CHP responds to a limited number of tribal collisions, resulting in some unknown number not being reported at all. Of those to which CHP does respond, the collisions reported to SWITRS are limited to those that occur on state highways that traverse tribal lands, and those in which a crime occurs (e.g., DUI). All other collisions on tribal land are investigated by local tribal agencies and may or may not be entered into SWITRS. Individual tribal areas differ in how collisions are investigated and reported. Therefore, the count of 3,755 injury collisions is very likely a substantial underestimate.

Reasons for Underreporting

Various factors affect collision reporting on tribal lands, both during the primary collection phase, and the data processing phase, as described in a study on collision reporting on tribal lands in South Dakota, by Baily and Huft *(13)*. Barriers found that during the primary collection phase include lack of adequate officer training, removal of vehicles from crash scenes, law enforcement understaffing, and the fact that the Bureau of Indian Affairs (BIA) does not require incident reports. Barriers encountered during the date processing phase include incompatible electronic data systems, inadequate tribal data systems, lack of feedback regarding incomplete or incorrectly completed forms, and political concerns regarding tribal sovereignty. The authors grouped these factors into three general categories *(13)*:

- Tribal law enforcement capacity for reporting, which entails staffing shortages, staff turnover, resources, computing facilities, software, and training.
- Standardization issues for crash report forms, policies, and protocols.
- Issues of relations between the state and tribes, including data privacy concerns, problems of intergovernmental communication, and concerns about ultimate uses of crash data and potentially negative impacts to tribal members

Finally, conflicts between tribal and state law may lead to problems in crash reporting. Some tribes do not require driver licenses or vehicle registration, therefore a tribal member involved in a crash may not be able to provide this identification for a crash report. In this case, tribal law would have to change to allow for complete reporting. In the absence of such changes, the standard procedures for crash reporting would have exceptions on those tribal lands with differing laws.

Overcoming Barriers to Adequate Collision Reporting

While there are many reasons for the data shortcomings, in the South Dakota study, the authors recommended three basic measures to address the barriers to adequate collision reporting on tribal lands *(13)*:

- Training for law enforcement officers on the crash forms and crash reporting process required by the state.
- Software solutions for internal tribal data processing and making the crash report form easier to complete.
- Recommending that the state sign a memorandum of agreement (MOA) with each tribe to help overcome the political issues involved in crash reporting.

Case Studies in Addressing Tribal Collision Underreporting

Other states have made successful attempts to address the issue of underreporting of collisions on tribal lands. California can benefit from these efforts by analyzing which methods could be efficiently implemented on its tribal lands. Previous research has documented various methods that states and tribal nations have implemented to improve the quality and quantity of tribal collision reporting *(13)*:

In South Dakota, 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. Because of these unique circumstances, 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. Some tribes in South Dakota have law enforcement assistants, whose main assignment is to process data, including crash data. These dedicated staff persons sometimes assist in the data collection process by reminding police officers that reports must be filled out.

The Rosebud Sioux Tribe expressed the most satisfaction with its internal collision processing software, Cisco. This system is user-friendly and has a number of built-in reports that have helped the tribe in applying for grants, making safety plans, and tracking progress on safety measures. The tribe has also received software support from Cisco, which has been helpful in the implementation of the system.

The Navajo Nation implemented a reporting system across three states: New Mexico, Arizona, and Utah, and according to tribal officials, all collisions are now reported to each state. The tribe maintains a database of collisions that occur across its seven districts. One shortfall is that the tribal council and courts decline to provide DUI information to the states, details including blood alcohol content levels

Efforts to improve reporting in Montana involve giving tribes the ability to track their collision data internally. Of the seven tribes with land in Montana, four are currently using Cisco software to track their collision data internally. The state is working to set up a system for electronic data submission. The Cisco data format is currently not compatible with the state's internal data system. Montana is considering purchasing the Cisco software so it can manipulate the data it receives from the tribes' in-house systems. The original plan was to have tribes submit data to Indian Highway Safety, who would then share it with Montana. This has not been successful to date. The state is now planning to retrieve data directly from the Cisco systems at each of the tribes.

The Inter-Tribal Council of Arizona (ITCA) has been working with tribes to improve collision reporting among several member tribes. The ITCA has had limited success to date. The focus of the efforts has been on collision data collection and tribal systems for tracking the collision data. Submitting data to the State of Arizona has not been a priority for the project. Generally, the tribes involved in the efforts are more interested in human factors in collisions, such as seatbelt use, speeding, and DUI. Identifying hazardous locations, which would be helpful for tribal transportation improvement plans, has not emerged as a primary focus.

CONCLUSION

California has the largest Native American population in the nation. Due to the disproportional risk of motor vehicle death and injury among this population, it is crucial for the state to achieve

a better understanding of the factors contributing to this threat to the communities who live on the nearly 100 Rancherias and reservations in the state. However, there is very little data about collisions that occur on tribal lands. Therefore, it is essential for the state to improve the quality and quantity of data collected about these traffic collisions to guide the development and implementation of interventions to improve traffic safety for these communities.

Collision data is often among the application requirements for funding for traffic safety improvements, including roadway upgrades, enforcement efforts, and education programs. Due to the lack of data documenting collisions on tribal lands, these communities are often at a disadvantage in competing for safety project funding. Adequate and accurate collision data for all travel modes on tribal lands is an essential element in securing this needed funding. It may also lead to a better understanding of the factors that contribute to the disproportionate traffic safety risks among these communities.

Improving Traffic Safety Data for Tribal Areas in California

One of the outcomes of the California Tribal Safety Summit was a recommendation for improved collection of collision data in tribal areas. The process for this could include some or all of the following actions:

- Survey all tribal areas to determine traffic safety data procedures, include handling of citations and collision reporting
- Develop and implement standardized reporting policies and procedures
- Develop a comprehensive traffic collision data base for the 111 recognized tribes
- Produce a quarterly report of traffic collisions
- Develop a Tribal Strategic Highway Safety Plan, in conjunction with the California Strategic Highway Safety Plan (SHSP) for the combined tribal areas

Effective Communication Between State Agencies and Tribal Governments

Finally, creating partnerships between state and tribal governments requires effective communication based on the following principles *(17)*:

- Develop trust and respect for different cultures
- Increase all parties' knowledge and understanding of: law, protocol, values, and jurisdiction
- Develop an understanding of the roles and responsibilities for tribal involvement
- Develop procedures appropriate to each group—departments within state and federal governments and tribes are unique. A one-size fits all approach may not work.

The findings of this paper represent only a first step. Future research efforts should be aimed at refining these and other initiatives to address both the dire conditions of traffic safety on California's tribal lands, and the shortcomings in the data.

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