

ROADWAY SAFETY INSTITUTE

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Understanding Roadway Safety in American Indian Reservations:
Perceptions and Management of Risk by Community, Tribal
Governments, and Other Safety Leaders

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16. Abstract (Limit: 250 words) The focus of this study is roadway safety in American Indian reservations. We provide new sources of data and policy-relevant findings to address the unusually high rates of roadway fatalities and injuries among American Indians. Qualitative methods were used to generate and analyze data from people with the most direct knowledge of and responsibility for reservation roadway safety. Four case studies were conducted in partnership with the tribal governments of the Red Lake, Fond du Lac, Leech Lake, and Mille Lacs reservations; these data sources include fieldwork (90 days), interviews (n=102), focus groups (n=8), and short surveys (n=220). These data are triangulated with data from FHWA's 2016 nationwide survey of tribes and states (n=196). Key findings from this extensive data analysis are: <ol style="list-style-type: none"> 1. Pedestrian safety is a critical, yet under-recognized issue on reservations. This is unequivocal across all data sources and differentiates reservations from rural areas in general. 2. Reservation road engineering and repair are very high priorities according to both tribe and state governments. 3. Reckless driving is a multi-faceted concern, including not only impaired driving but also cell phone distraction and speeding. 4. Education and enforcement to increase seatbelt and car seat use are named as high priorities in the national survey. 5. Tribes need better cooperation with local, state, and federal agencies. Priorities include addressing data quality and sharing issues better inter-jurisdictional cooperation for infrastructure and enforcement. The study concludes with recommendations to improve roadway safety in reservations and for further research.			
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EXECUTIVE SUMMARY

What's at stake?

This research provides new sources of data and policy-relevant findings to address the unusually high rates of roadway fatalities and injuries among American Indians. Nationally, motor vehicle crashes (MVCs) are the leading cause of unintentional injury for American Indians aged 1 to 44 (Raynault, Crowe, & Ngo, 2010). Their motor vehicle death rate is higher than for any other ethnic or racial group in the United States (Pollack et al., 2012), and for the decades preceding this study it had been increasing rapidly at a time when the nationwide rate was decreasing (Poindexter, 2004). On average, approximately 535 Native American and Alaska Native fatalities are attributed to motor-vehicle related crashes each year (Federal Highway Administration, 2018).

The focus of this study - **roadway safety in American Indian reservations** - is intrinsically important. In the 2010 census, 22% of people identifying as American Indian and Alaska Natives lived in reservations, trust lands, or tribal statistical areas (Norris, Vines, & Hoeffel, 2012). At the same time, many non-Native people live and travel in tribal lands, and many MVC fatalities in tribal lands are of non-Native people (Li & Bhagavathula, 2016). In sum, there is a well-recognized need to reduce MVC injuries in tribal lands (Shinstine & Ksaibati, 2013), which has relevance for all populations in these areas and may also help to explain the high rates of motor vehicle crash fatalities among American Indians nationwide. Chapter 1 presents a review of the literature and an explanation of the research questions driving this study.

Research questions

1. What are the key sources of roadway safety risk in reservations, according to people with direct knowledge of and responsibility for reservation roadway safety?
2. What is distinctive about roadway safety in reservations, if anything, relative to other areas?
3. How are relationships among agencies with overlapping responsibility for roadway safety in reservations affecting safety?
4. How can roadway safety in reservations be improved?

Data sources and methods

The researchers collaborated with the Federal Highway Administration (FHWA) to design and analyze results of the 2016 Tribal Transportation Safety Data Survey, a national online survey with responses from 151 representatives of tribal governments and 45 representatives of state governments.

This study generated extensive primary data through case studies of four reservations in Minnesota and a national survey. The case studies were conducted through partnerships with the tribal governments of the Red Lake Band of Chippewa, Fond du Lac Band of Lake Superior Chippewa, Leech Lake Band of Ojibwe, and Mille Lacs Band of Ojibwe, and in communication with Minnesota Advocacy Council on Tribal Transportation. For the case studies, data collection methods included extensive fieldwork.

Specifically, 90 times between October 2013 and July 2018, a member of the research team visited a reservation to conduct three to ten consecutive hours of fieldwork. In addition, we conducted 102 semi-structured interviews in person or by phone with key stakeholders (engineering, enforcement, emergency responder, and education leaders from tribes and related jurisdictions), “virtual drive-alongs” in which we spent hours poring over detailed maps with seven expert drivers (e.g., school bus or propane delivery truck drivers) in four reservations, and quick in-person surveys of 220 reservation residents at community events.

These methods are described in Chapter 2 and Appendices A-C. The national survey findings are presented in Chapter 3 (summarized in Table 3.1). The four case studies are presented in Chapter 4.

Contributions of the study

- **Data generation:** This study developed and modeled qualitative research methods that create new data sources and facilitate in-depth analysis and problem-solving in particular reservations. These data emphasize the perspectives of people with the most direct, informed knowledge of reservation conditions.
- **Identification of high-priority reservation roadway safety concerns:** Analysis of the case study and national survey data indicate five key areas: *pedestrian safety, road engineering and repair, reckless driving (not necessarily due to impairment), seatbelt and car seat use, and inter-jurisdictional coordination.*
- **Inter-agency coordination needs:** Case study and survey data strongly indicate the vital importance of high-quality coordination between tribes and federal, state, and local governments in reservations. This is the first study to document the positive – or negative – consequences for roadway safety and resource efficiency of cooperative, complementary, or divisive relationships among these entities.

Summary of key concerns and recommendations

1. ***The data from all sources are unequivocal that pedestrian safety is a critical, distinctive, and under-recognized priority in reservations.*** Pedestrian safety was the most frequently named concern in all case study data, while inadequate pedestrian facilities was the fourth most frequently identified concern – among over a dozen possibilities – by the 150 tribal government respondents to the national survey. Furthermore, pedestrian safety was consistently named as the single most distinctive feature of roadway safety in reservations, relative to rural areas more generally. This is a novel and important finding of this study; there has been relatively little prior research indicating this is a particular concern. Infrastructure investment, signage, enforcement, and education to protect pedestrians in reservations is extremely important (Chapter 5.1).
2. ***Road engineering and repair need sustained resources.*** The national survey data indicate that road quality engineering and repair are very high priorities for both tribes and states, indicating the continuing importance of federal and state programs to fund this work. The case study data

indicate that public works professionals take great pride in a high degree of quality and consistency in roadway engineering of county and state roads, regardless of location, which is positive for both safety and equity (Chapter 5.2).

3. ***Impaired driving must not be assumed to be “the” explanation.*** The case study and national survey data strongly confirm that enforcement and education to reduce reckless driving are high priorities. The case study data strongly indicate great concern about driving while distracted by texts and other cell phone use. They also challenge common assumptions about drinking and driving or drug use as an explanation for American Indian mortality rates (Chapter 5.3).
4. ***Education and enforcement to increase seatbelt use are essential.*** The national survey of tribes confirms that improving seatbelt and car seat use is a high priority. Positive examples from the case studies reinforce the importance of having a steady, familiar, trusted person or group who works persistently on these issues on the reservation (Chapter 5.4).
5. ***Tribes need better cooperation with local, state, and federal agencies.*** Two needs in particular stand out: addressing mismatched perceptions of ground conditions through improved data quality and sharing and an expansion of knowledge sources; and improving coordination for resource sharing, planning, and implementation, especially for infrastructure and enforcement (Chapter 5.5).
6. ***Further research is needed to improve reservation roadway safety,*** particularly to: evaluate roadway safety implementation in reservations with tribes; advance qualitative methods and expand qualitative data sources; and assess emergency response quality in reservations (Chapter 5.6).

CHAPTER 1: THE RESERVATION ROADWAY SAFETY CONTEXT

1.1 WHAT'S AT STAKE FOR ROADWAY SAFETY IN RESERVATIONS?

This research addresses a high-stakes issue for the wellbeing of American Indian¹ communities: the high rate of fatalities and severe injuries from traffic accidents in American Indian populations and tribal lands. Understanding the nature of these risks and their contexts is important for improving safety. Nationally, motor vehicle crashes are the leading cause of unintentional injury for American Indians aged 1 to 44 (Raynault, Crowe, & Ngo, 2010). Their motor vehicle death rate is higher than for any other ethnic or racial group in the United States (Pollack et al., 2012). When we began this study in 2013, the most prominently cited statistic about this problem was that their motor vehicle crash (MVC) fatality rate had increased 52.5% at the time of the latest published analysis, covering 1975-2002, compared with a decrease in the nationwide rate of 2.2% (Poindexter, 2004). On average, approximately 535 Native American and Alaska Native fatalities are attributed to motor-vehicle related crashes each year (Federal Highway Administration, 2018).

Most research on this phenomenon examines sources of risk at the level of the entire American Indian population of the United States, without adequate attention to heterogeneity within this group and the interacting features of specific contexts. In contrast, this research project gathers and interprets on-the-ground views about sources of risk and options to improve roadway safety *in American Indian reservations* (Figure 1.1).

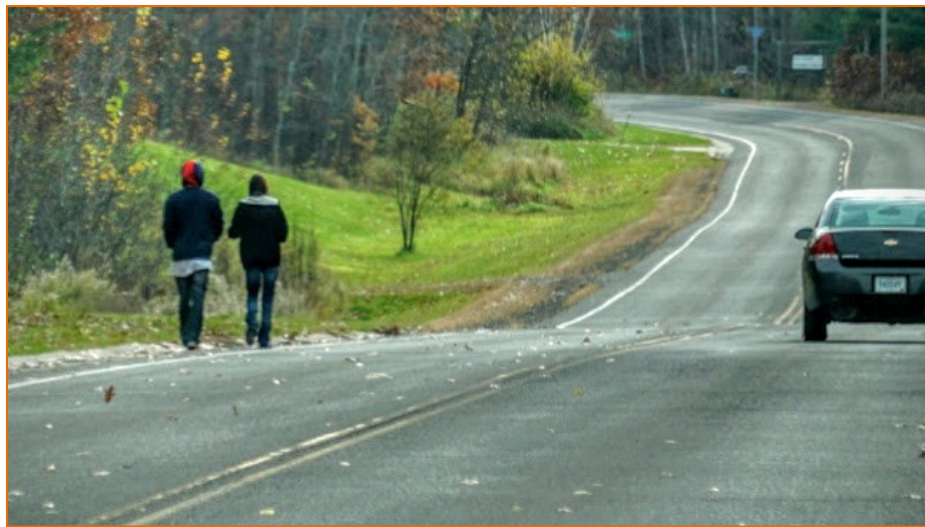


Figure 1.1 Pedestrians in roadway in Mille Lacs Band reservation, Minnesota

Photo by Guillermo Narváez.

¹ American Indian is the descriptor preferred by our collaborators and the majority of members of the communities in our region. Some communities prefer to describe themselves as Native American; we are taking the lead of our project partners.

There is a well-recognized need to reduce injury crashes in reservations (Shinstine & Ksaibati, 2013). As of the 2010 census, 22% of people identifying as American Indian and Alaska Natives nationwide lived in reservations, trust lands, or tribal statistical areas (Norris, Vines, & Hoeffel, 2012). Thus, the vast majority of American Indian people do *not* live or spend the majority of their time in reservations. This makes it important to study distinctions and overlaps between national American Indian population and American Indian reservation phenomena and to avoid the assumption that something about reservations explains excess deaths from MVCs among American Indians nationwide. Additionally, understanding the reservation context is important for improving the well-being of American Indians and others who live on and travel through reservations (Li & Bhagavathula, 2016).

Table 1.1 illustrates the overlap of American Indian and reservation traffic fatalities in National Highway Traffic Safety Administration data on all MVC fatalities in “tribal lands” over the period 2011-2015. Statistics on MVCs in “tribal lands” provide the most consistent and comprehensive data available for understanding MVC dynamics in American Indian communities. This category includes reservations and other lands owned by federally recognized tribes, which as of this publication number 573 (Bureau of Indian Affairs, 2018).²

The MVC data indicate four factors that are most frequently associated with American Indian traffic fatalities: lack of proper seatbelt or child seat restraints (found in 47% of all American Indian traffic fatalities), alcohol-impaired driving (42%), speeding (33%), and being a pedestrian (19%). These data also make clear that what occurs in reservations is a partial, yet important, explanation of American Indian traffic fatalities: only 27% of all such fatalities occur in reservations and almost half (46%) of fatalities in reservations are of non-Indian people. Factors in fatalities for American Indians nationwide (regardless of location), of all fatalities in reservations (regardless of ethnicity), and of American Indians specifically in reservations are similar. Three distinctions are that alcohol impairment, a lack of seatbelt or car seat restraints, and speeding are reported more frequently as features of fatalities on reservations (generally, and among American Indians in particular) than among fatalities of American Indians nationwide.

This analysis indicates that fatalities on tribal lands (using Bureau of Indian Affairs base maps) decreased 11% over the period 2009-2014 when compared with the previous five-year average. This improved faster than the 1.7% decrease for all areas of the United States. Although the latest data show a decrease in MVCs for American Indians and imply the gap may be closing, the rates of fatalities and severe injuries among American Indian people and on tribal lands remain unacceptably high. Tribal transportation experts, state and federal agencies, and a range of policies and programs have identified this situation as an area of elevated concern and priority. The findings of the current report support the view that improving safety on tribal lands needs continuing attention.

² However, some important limitations need to be understood. Tribal lands and the residences of American Indian or native people are not the same; federal base maps for tribal lands omit substantial geographic regions where many American Indians live, such as Oklahoma tribal statistical areas, the lands of Alaskan Natives or native Hawaiians, and the lands of tribes that are not federally recognized.

Table 1.1 American Indian and reservation traffic fatalities in the US, 2011-2015

	#	#	#
	% of All American Indian fatalities	% of All Fatalities on Reservations	% of all American Indian Fatalities on Reservations
All American Indian fatalities	2,840		
	100		
*All fatalities in tribal areas, 2010-14	*3,278		
	NA		
All fatalities on reservations		1,439	
		100	
American Indian fatalities on reservations	777	777	777
	27	54	100
Fatalities in which vehicle occupant was unrestrained	1,321	703	415
	47	49	53
Alcohol-impaired fatalities, blood alcohol level .08+	1,200	613	418
	42	43	54
Speed-related fatalities	944	543	309
	33	38	40
Pedestrian fatalities	551	197	136
	19	14	18

All data are from NHTSA’s Native American Traffic Safety Facts (2017), based on 2011-2015 FARS data. The exception is that the source for the row marked with an asterisk (*) (*All fatalities in tribal areas) is from analysis by the Tribal Transportation Safety Management System Steering Committee (2017).

1.2 EXISTING EXPLANATIONS IN THE LITERATURE

Additional research is needed to identify current reservation roadway safety trends and, most importantly, to explain them so that the most effective interventions may be designed and implemented to improve safety and reduce health disparities. At the time this study began, less than 30 peer-reviewed research papers had been published in the previous two decades about the problem of elevated crash risks affecting American Indian people, and many of these looked at the US American Indian population as a whole without distinguishing reservation environments from the whole.

These studies provide several types of explanations for the high rates of American Indian crash fatalities and injuries:

- Individual behaviors that contribute to the elevated crash risk include driving while impaired by alcohol or drugs, lower rates of usage of seatbelts and child safety restraints by American Indians, passengers riding in truck beds, and traveling at unsafe speed for road conditions (Pollack et al., 2012; Poindexter, 2004; Campos-Outcalt et al., 1997; Grossman, D.C. et al., 1997).
- Engineering- and repair-related road condition factors emphasize inadequacies in traffic control devices, signage, road and intersection design, lighting, road surface repair, mowing or plowing for visibility, and ice or snow removal (Michalek et al., 1993; Grossman et al., 1997; LaValley et al., 2003; Raynault et al., 2010).
- Systemic issues relating to poverty, isolation, and institutional capacity are also identified, including unmet health needs leading to impaired driving or medical emergencies; aging vehicles or passenger crowding associated with chronic and systemic poverty in many reservation communities; limited or delayed access to adequate emergency medical response; lax law enforcement to discourage reckless driving; poor road maintenance or enforcement due to gaps or confusing overlaps in road ownership and legal jurisdiction among multiple jurisdictions; and policies prohibiting alcohol sales on-reservation that may lead to driving while intoxicated (Gallaher et al., 1992; Grossman et al., 1997; Andrew & Krouse, 1995; Phelan et al., 2002; Johnson, Kao, & Korenbrot, 2006; Raynault et al., 2010).

Research also sheds light on opportunities to address these problems. Tribal transportation leaders identify capacity constraints (staffing levels, training or experience, operational funding) on their abilities to produce and implement safety audits and plans. Previous studies have found a need to build partnerships and institutional capacity to enhance knowledge, tools (e.g., road safety audits), and collaborations to address tribal transportation safety needs (Fleming & Strong, 2000; Zaloshnja et al., 2003; Bailey & Huft, 2008; Raynault et al., 2010; Sequist, Sequist, & Acton, 2011).

The recommendations of many previously published studies are not adequately informed by public policy and management science. Consequently, often their concluding recommendations are not strategic about workable leverage points for improving safety. This project therefore emphasizes policy and governance features of reservation roadway safety, as a foundation for additional, future studies or capacity-building work.

1.3 ROADWAY SAFETY AS A “WICKED PROBLEM” NEEDING INTER-JURISDICTIONAL

Safety is a “wicked problem,” meaning that it does not respect traditional disciplinary, jurisdictional, or physical boundaries or fit traditional problem definitions. Wicked problems cannot be reduced to an easily defined issue that technical expertise can address; no single organization or sector can resolve safety risks; and they are unstable, presenting emergent and unpredictable features and impacts (Rittel & Webber, 1973; Fischer, 1993; Roberts, 2004; Kettl, 2006). Moreover, wicked problems complicate interactions of governments and the public, as non-governmental stakeholders’ needs and expectations

of government increase and the number of involved governmental and nongovernmental entities multiply (Denhardt & Denhardt, 2000; Vigoda, 2002; Provan & Kenis, 2008; Goldsmith & Kettl, 2009).

Indeed, previous studies on improving roadway safety have conclusively found that it is a high priority to improve collaboration across sectors, disciplines, and all levels of government (Fleisher, Wier, & Hunter, 2016), including specifically when working in American Indian reservations to reduce motor vehicle fatalities (Letourneau & Crump, 2016). Thus, there are inherently important relationships among engineering, education, emergency responders, and enforcement to improve safety. This requires coordination among those different units and types of responsibilities and expertise.

High-quality coordination among organizations, sectors, disciplines, or ways of knowing can strengthen responsiveness and adaptation to “wicked problems” (Quick & Feldman, 2014) such as safety. When we view high MVC and fatality rates as failures of systems to reliably ensure safety (Reason, 2000), the value of exchange among disciplines, agencies, and jurisdictions to anticipate risks, understand problems, and head them off becomes clear (Weick & Sutcliffe, 2011). Through effective coordination, these entities can increase their capacity to address problems such as safety because together the organizations can recombine their individual information, skills, and material resources to address these challenges more effectively (O’Leary & Bingham, 2009; Innes & Booher, 2010; O’Leary & Vij, 2012; Provan & Lemaire, 2012). Furthermore, while fluidity and flexibility in these boundaries are valuable for resilience, ambiguity and conflict around them can prohibit effective responses (Roberts, 2010).

To be clear, effective coordination does not need to involve full cooperation, a complete alignment of goals, pooling resources, or subsuming one entity under the authority of another – which is a particular concern where a tribe’s sovereignty is challenged, as discussed below. Generally, working across the jurisdictional (e.g., tribe vs. county) or disciplinary (e.g., law enforcement vs. engineering) boundaries can occur in several ways. Options include translating across the boundaries so that each group can understand and work with (or at least not against) the other, aligning among the differences so that each continues to do its work without undesirable conflicts or redundancies, or decentering the work so that authority, resources, and roles are more fluidly shared (Quick & Feldman, 2014).

1.3.1 Checkerboard patterns of ownership and responsibility for roads

Effective inter-jurisdictional coordination for roadway safety becomes all the more important – even as it becomes more challenging – in the landscape of reservations. There is inherently interaction and interdependence among tribal, federal, state, and local jurisdictions from the very fact that a blend of tribal, federal, state, or local (county, city, and/or township) roads literally intersect in the physical landscape of most reservations. There are often non-tribal townships, cities, or unincorporated areas of counties that lie fully or partially within the reservation boundaries.

The jurisdictional overlaps follow the “confusing patchwork” (Fletcher et al., 2010; p. 43) of land ownership found in most reservations due to the historic “allotment” (division) of Indian lands under the Dawes Act of 1887, which split land held in trust collectively for the tribe into parcels owned by individual families (Anderson et al., 2015). Following allotment, approximately two thirds of all land in

reservations all over the United States was lost to non-tribal entities (A. Treuer, 2012), sold to natural resource companies for private commercial use, purchased by non-native people for residences (often by county governments for non-payment of taxes), or taken by non-tribal governments (e.g., for state parks, national forests, and federal military installations). Thus, land within reservations is rarely contiguously in tribal ownership and control. For example, in the Leech Lake reservation, the subject of one of the case studies in this project, only 4% of the land is in tribal ownership (Figure 1.2).

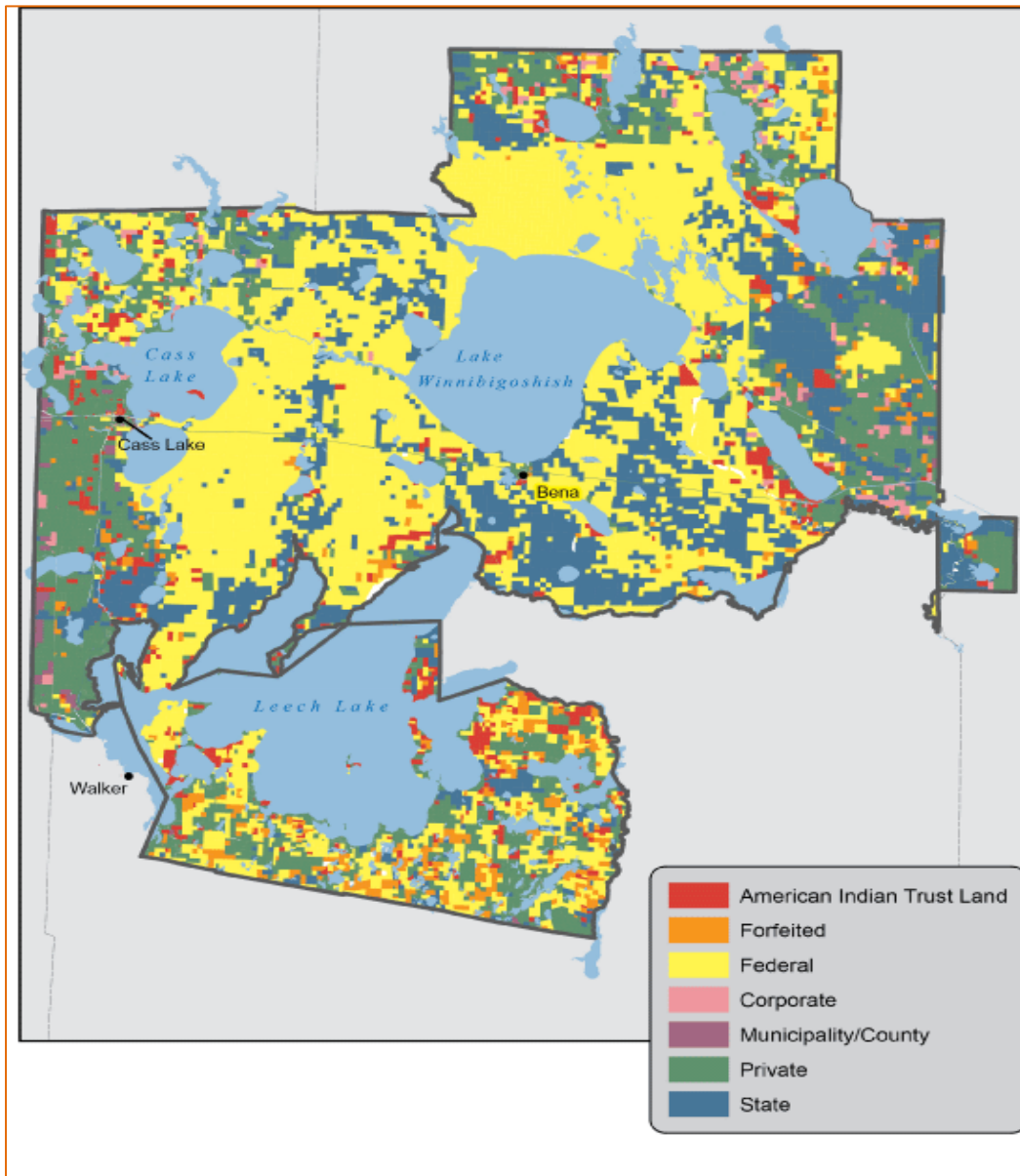


Figure 1.2 Diffused land ownership in Leech Lake reservation

Only 4% of land within the reservation boundary remains in tribal ownership. Source: Macalester College, 2010, based on data from Cass, Itasca, Beltrami, and Hubbard County Assessors, ESRI, and DNR

This “checkerboard” interspersion of residences, businesses, and settlements of tribal and non-native people complicates clarity, authority, and responsibility for law enforcement, emergency response, and driver education as well as roadway construction and management. Matters of responsibility and

authority – who has it *and* who may exercise it – are constantly in question and often contested in most reservations. Tribal sovereignty is constantly salient.

1.3.2 Tribal sovereignty and law enforcement relationships

Roadway safety in reservations cannot be understood without an appreciation of tribal sovereignty. In theory, tribal sovereignty could simplify roles and authority for roadway safety, despite the physical overlaps of territory, roads, and jurisdiction. In practice, however, there is confusion and conflict over different features of roadway safety in reservations because of ongoing friction and renegotiation of who has authority, responsibility, and rights over what. Some of this conflict arises from ignorance about what sovereignty is. David Treuer, a nationally recognized scholar of American Indian history and culture and a member of the Leech Lake Band of Ojibwe, has stated, “There is probably no aspect of Indian life more misunderstood by Indians and non-Indians alike than sovereignty” (D. Treuer, 2012; p. 31).

One definition of tribal sovereignty is the status of tribes as “distinct, independent, political communities, retaining their original natural rights,” according to Supreme Court Justice John Marshall in *Worcester v. Georgia*, an 1832 ruling comprising one part of the Marshall trilogy. The trilogy reaffirmed the standing of federally recognized tribal nations – those with treaties with the United States – as autonomous, sovereign nations with the right to self-government, such that states and local governments may not exert their authority within reservation territories (Cohen, 1945; French, 2007; Anderson et al., 2015).

Certainly, however, sovereignty means more than formal legal status. As prominent native scholar Vine DeLoria (1979: 27) explained, ultimately:

[Sovereignty] consist[s] more of continued cultural integrity than of political powers, and to the degree that a nation loses its sense of cultural identity, to that degree it suffers a loss of sovereignty.

More recently, it has been defined as an ongoing enactment of a “third space” of ongoing negotiation of the nationhood of people with rights to their identity, culture, and lands as a colonizing government seeks their absorption and assimilation into the United States (Bruyneel, 2007; p. xiii). Thus, sovereignty is perhaps better understood as part of complex nationhood, “a layered and performative identity fraught with ambivalence and debate” comprised of the interplay of band and cultural identity, family ties, sovereignty, and the incomplete overlap of all of these features with reservation boundaries (Shepherd, 2016; p. 125). Tribes across the United States define sovereignty and its connection with self-determination differently, meaning that great care must be taken to avoid homogenous interpretations and assumptions (Wilkins, 2008).

Unquestionably, much of the ambiguity about sovereignty – and what makes it particularly important to understand as a central feature of perceptions of safety and opportunities to improve safety in reservation communities – is that it arises from active hostility to American Indians. Federal, state, and local governments and communities have consistently been aggressive to sovereignty and the integrity and protection it affords for American Indian communities’ territories, cultural identity, self-

determination, and access to resources (Deloria & Lytle, 1984; Wilkins & Lomawaima, 2001; D. Treuer, 2012; Grossman, 2017). As Indian law scholar Pommersheim (2010, p. 50) observed, even without constitutional authority or legislative direction to push them in this direction, the courts have become “increasingly inimical to tribal sovereignty, especially in regard to tribal authority over non-Indians.”

In this context, the figurative and literal boundaries of reservations and of tribes’ jurisdictions to formulate, implement, and enforce safety-related policies and plans are constantly questioned and contested by federal, state, and local government authorities. These relationships remain an area rife with ambiguity and inconsistency (Matha, 2016).

An essential part of the shift in tribal authority is Public Law 280 (PL 280), the influence of which cannot be overstated when it comes to the **enforcement** aspects of roadway safety in many reservations. For sixteen states, this 1953 federal law reset the level to which tribal, state, and county entities do and do not have rights and jurisdiction in law enforcement and the court system. Generally considered an erosion of tribal control over public safety and justice within reservation borders (Eid & Doyle, 2010), it was created in 1953 during the Eisenhower Administration “unilaterally.... without tribal consent or input,” and turned what had previously been federal civil and criminal jurisdiction in reservations over to states (French, 2015; p. 57). Minnesota, the location of our case studies, is one of the “mandatory” PL 280 states, meaning that the state has full jurisdiction on reservations, with the exception of Red Lake reservation.

PL 280 means that state and county police *can* make arrests for felonies and misdemeanors in reservations (French, 2015), but the reverse is not necessarily – and probably not – true. Tribal law enforcement has variable levels of authority on and off the reservation. Repeated court cases have established that generally tribal police have jurisdiction over crimes committed by Indians against Indians, but *not* over crimes committed by non-Indians against Indians or other non-Indians, even when they occur on their reservations (Wakeling et al., 2000). The immunities these gaps provide has long been recognized. Supreme Court Justice Antonin Scalia highlighted the continuing opportunities for non-Indians to operate in reservations without having to get involved with tribal law enforcement or courts, by advising, “Just stay on the good roads, and you’ve got nothing to worry about” (quoted by Lash, 1997). While Justice Scalia was referring to the topic of this research – roads – it seems this statement is legal history in a nutshell when it comes to non-Indians taking opportunities to skirt and subvert tribal sovereignty. Despite increasing public attention to the problem that non-natives who sexually assault American Indian women in reservations often cannot be charged without federal intervention (Erdrich 2013; Tharp, 2014), loopholes remain.

Fletcher, Fort, and Singel (2010; p. 43), leaders of the Indigenous Law and Policy Center, summarize the practical complexities of law enforcement in reservations succinctly:

Jurisdiction in Indian country is complicated by federal laws, policies, and court decisions. Police officers in Indian country are asked to navigate a formidable body of law to determine what authority they may wield in a variety of situations. Officers...must consider the location of the crime, their current location, the political identity of the alleged perpetrator, the political identity of the alleged victim, and the nature

of the alleged crime before deciding what action, if any, they are authorized to take.... All questions relating to Indian country criminal jurisdiction must begin with determining whether the alleged crime occurred in Indian country.... While this appears straightforward, the allotment of Indian lands... and the subsequent settlement of large portions of reservation lands by non-Indians have created a confusing 'patchwork' of land ownership.

There are options for improving inter-jurisdictional cooperation to close these gaps and improve public safety options in reservations and surrounding areas. Through cooperative agreements – such as deputation, cross-deputation, or mutual aid agreements – tribal, county, and state police departments *may* expand the powers of each to enforce laws across a region, regardless of the location and legal identity of the perpetrator. However, “the norm is usually to allow non-Indian law enforcement onto the reservation to make arrests, while Indian police do not have the same authority off the reservation” (French, 2015; p. 70). A sheriff’s office may decline to deputize or otherwise limit the reach of tribal law enforcement “for political reasons or general distrust” (Fletcher et al., 2010), which is a dynamic that we observed in some of the case studies described below.

Many of the law enforcement leaders had a sophisticated knowledge of this complicated jurisdictional terrain. This was true of all of the law enforcement professionals working for tribal governments and many of the law enforcement leaders of other jurisdictions. Notably, they seemed to have been able to gather this knowledge *only* through long-term, immersive experience with the details of this complex legal terrain. For the purposes of this report, the important thing to note is that ***options for enforcement approaches to roadway safety in reservations are complicated***: Law enforcement authority is diffuse, often contested, frequently confusing, and sometimes seems to stand in the way of safety.

1.4 EMPIRICAL AND METHODOLOGICAL DEVELOPMENT PRIORITIES

Collectively, previous studies indicate the complexity of the issues and multiple possible explanations for elevated crash risks among American Indians and on reservations. While important, they are insufficient in number, diversity of research methods, and range of disciplinary perspectives to support comprehensive understanding of the nature of the problem, its sources, and what might be the most effective interventions to address it. In addition, these previous studies have frequently not been adequately attentive to issues of sovereignty and interdependence among jurisdictions.

Increasing not only the number of research projects, but also the **diversity of data sources, research methods, and range of disciplinary perspectives** will better support a comprehensive response to this critical issue. In addition, **we need more research that is driven by the questions, knowledge, and priorities of tribal governments and reservation residents**; this is both a matter of respect for sovereignty and self-determination and a matter of designing solutions based on the most informed, knowledgeable perspectives.

To reduce fatalities and life-changing injuries in American Indian populations and on American Indian lands, we need a more detailed and contextualized understanding of the nature of the elevated crash rate, its sources, and what might be the most effective interventions to address them. Such information

can advance more strategic roadway safety policy design and implementation by tribal, state, and national governments.

1.4.1 Complementing crash statistics with situated knowledge of risks

Most prior research relied heavily on quantitative, epidemiological analyses of patterns, which identify key causal explanations for roadway fatalities and injuries at an aggregate population level for the entire American Indian and Alaska Native population of the United States. This is typical of an emerging research topic but presents several limitations (Andrew & Krouse, 1995). Most importantly, it overlooks the great heterogeneity within this group. Such studies associate ethnicity and crashes without looking at other features of the context, such as the affected individuals' socioeconomic status, educational level, or access to health care. Collectively, these studies offer an incomplete view of the dynamics occurring in specific tribal communities and locations, neglecting the heterogeneity and specificity of the policy, cultural, or geospatial features of the problems and potential solutions (Banerji and Inuit and Métis Health Committee, 2012; Pollack et al., 2012).

The traditional practice for assessing roadway safety risks is to use data collected by police departments and submitted to state and federal agencies. Common places to access that data are through NHTSA's Fatalities and Accident Reporting System (FARS, <http://www.nhtsa.gov/FARS>), CDC's Web-based Injury Statistics Query and Reporting System (WISQARS, <http://www.cdc.gov/injury/wisqars/>), and the state equivalents of those systems (e.g., MNCMAT and MIDAS for Minnesota). These databases provide critical information about high-incidence crash sites and are thus invaluable for establishing priorities for roadway safety improvements.

However, the view these data provide of hazards and risks is limited in several ways:

- There is a low absolute volume of traffic in rural areas generally, so the data available for analysis may not provide a very accurate picture of hazards (Nguyen, Munnich, & Douma, 2014).
- They show only crashes that were reported, but there are a number of challenges and needs associated with data reporting, including production, exchange, ownership, and interpretation (Cochran et al., 2008). While fatalities are consistently covered in the FARS database, many other crashes are not reported and/or the quality of data reported is poor. These data issues include uneven crash reporting on reservation lands, failure to relay crash-caused deaths to statewide fatality accident reporting systems, and failure to report missing pieces of potentially key information, for example regarding intoxication, the behavior of involved pedestrians or street lighting conditions (Pollack et al., 2012; Banerji & Inuit and Métis Health Committee, 2012; Bailey & Huft, 2008; Romano, Fell, & Voas, 2011).
- Practitioners clearly express a need for improved data sources and sharing. This emerged in the exploratory interviews we conducted in the initial stages of this research. Some tribal governments prefer not to share full incident data with other entities, and some who do share their data then have problems re-accessing and utilizing state-level crash data to produce safety

management plans. Numerous road engineering and planning managers whom we interviewed, in Minnesota and elsewhere, cannot obtain the crash data they need to identify and address safety issues from their own local police units, whether tribal or Bureau of Indian Affairs (BIA) police. Some tribal governments are concerned that that data they report to the state or federal government will be used for others' gain or to sully their reputations.

- Crash statistics point to incidents that have *already occurred*. There is also important information to be gained from people on the ground about how they perceive and seek to manage or avoid risks. By definition, crash statistics reflect crashes, which are important but do not necessarily reflect all of the important features relating to policy design, resource allocation, inter-jurisdictional coordination, and other features of safety management.

1.4.2 Expanding data sources

In addition, data quality issues are a barrier to traditional data analysis methods for examining crashes. Under-reporting of MVCs in tribal lands affecting American Indians anywhere is a well-recognized problem (Li et al., 2016; Ragland 2016). Data issues include uneven crash reporting in reservation lands, as described above. Poor data quality impedes analyzing and addressing the causes of safety concerns on roadways in reservations. Explanations for poor data quality include limited human resources for law enforcement (and thus limited crash reporting) and crash data analysis in tribal governments, lack of standardization in crash reporting, and a variety of boundary issues in relationships between tribal governments and state governments (Li et al., 2016).

Even when data collection is comprehensive and the data are shared, the data do not provide complete explanations. Crash reports are often missing key information about the context that might be relevant to developing appropriate policies, for example, whether to prioritize additional signage, improved lighting, better snow and ice clearing, or more education about driving while impaired or distracted. Notably, these reports often omit any information about whether or not an accident occurred in a reservation.

This is important information for improving policy: different strategies are required to address risks that are geospatially located (e.g., regions with icy winter roadway conditions) versus those that are associated with particular socioeconomic and cultural groups (e.g., low seatbelt usage rates among the American Indian population as a whole). Neither a geospatial/territorial/jurisdictional nor a cultural/socioeconomic perspective is sufficient to explain and address fatalities, since American Indian people, groups, reservations, and tribal governments are highly diverse.

Therefore, this study is designed to gather a more nuanced, contextualized picture of the causes of crash risks in particular locations, by using qualitative case study methodologies and data collection instruments, as detailed in Chapter 2 and Appendices A through C.

1.5 STUDY OBJECTIVES AND RESEARCH QUESTIONS

To address the gaps just identified, this research involves gathering data about how people who have immediate, direct knowledge of reservation roads perceive, manage, and recommend addressing roadway safety risks. The primary objectives of this study are to:

- provide a more nuanced, ground-level picture of roadway safety risks on tribal lands;
- use those results to produce better informed recommendations about programmatic and policy actions to improve roadway safety in reservations; and
- build long-term relationships with tribal governments around transportation issues, to support ongoing collaboration to improve safety and transportation systems in reservations.

To pursue these objectives, we investigated four research questions, shown schematically in Figure 1.3. Details about data sources shown in the schema – 102 interviews with key experts, brief surveys of 227 expert drivers or interested residents in 4 case study sites, 85 days of fieldwork on reservations, a national survey completed by 151 tribal and 45 state leaders from around the country, statistical data on crashes, and multiple consultations with tribal government partners – may be found in Chapter 2.

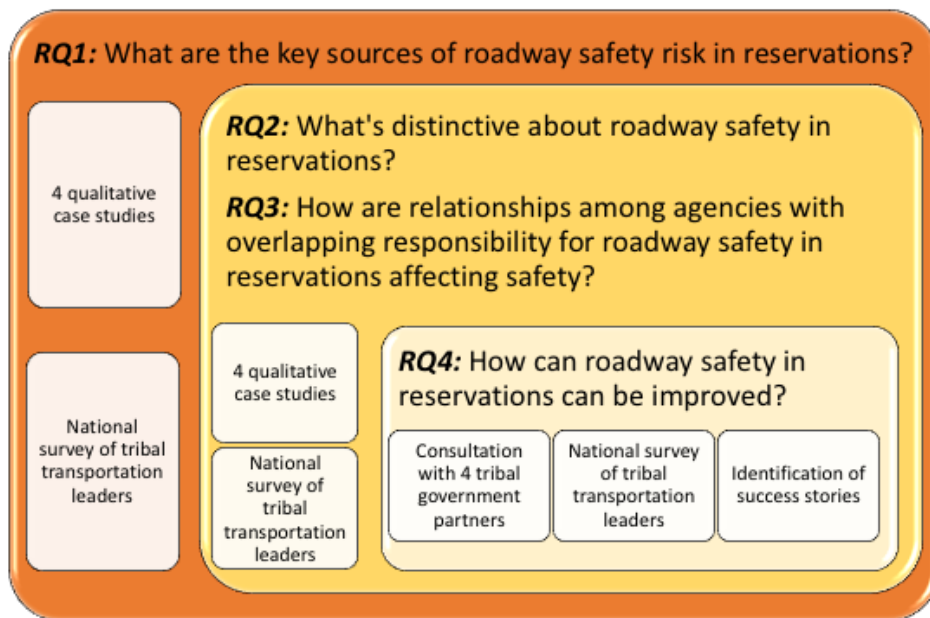


Figure 1.3 The four research questions of this study

RQ 1. *What are the key sources of roadway safety risk in reservations, according to people with direct knowledge of and responsibility for reservation roadway safety?*

To answer this question, we gathered data to gain a situated view from within these communities of the sources of risk and what interventions would be most pragmatic and effective. In particular, we sought data that are not typically available through crash reports, such as the following:

- General opinions on the quality of roads and roadway safety issues in the communities

- General perceptions of key sources of roadway safety risk relating to all “4Es” – engineering and road quality/maintenance, education and driving behavior, enforcement, and emergency medical response (EMS, including ambulance service and medical treatment for crash victims) – plus other environmental factors
- Patterns of risk avoidance that do not turn up in crash incidents: accounts of places, times, or conditions under which people avoid driving because of risk, other patterns of who is not driving (where, when) and explanations about why, and unreported accidents and near misses
- Opportunities, preferences, and safety concerns about getting around, regardless of mode of movement (on foot, bike, private vehicle, bus, etc.)
- Other features of driving behavior or culture by local residents and others passing through (e.g., speeding, knowledge of local conditions, impairment)
- Dark areas, icy spots, vegetation and poor visibility, or other navigation issues
- Institutional concerns, such as the ease, timeliness, or other aspects of gaining a response and service from law enforcement, emergency responders, snow plows, etc.

To answer this question, initially we conducted in-depth case studies of these topics in four reservations in Minnesota. We then had an opportunity to connect our initial findings to a study of the broader context of tribal transportation safety in the United States. We collaborated with the federal Tribal Transportation Assistance Program (TTAP) of the Federal Highway Administration (FHWA) to design and interpret results of a survey of tribal governments around the country to assess key safety concerns and needs. This survey incorporated questions about numerous risk concerns that had turned up in our case study data. The national survey results are presented in Chapter 3 (especially Table 3.1).

RQ 2. *What is distinctive about roadway safety in reservations, if anything, relative to other areas?*

It is vitally important to question whether reservation conditions are an explanation for the elevated MVC rates and MVC fatality rates for American Indians for two reasons. As stated above, the vast majority of American Indian people do not live or spend the majority of their time in reservations, making it highly problematic to assume that something about reservations explains the risk. Second, many reservations are rural in character, which begs the question of whether there is anything distinctive about crash risks in reservations versus any other part of the rural landscape of which they are a part.

The US DOT Strategic Plan for 2012-2016 identifies rural safety as a priority and calls for enhancing data, developing comprehensive safety strategies, and collaborating with stakeholders including tribal governments to improve safety levels. These areas generally have high crash fatality rates; 49% of all MVC fatalities in the United States in 2015 occurred in rural areas. The pattern of heightened risk in rural areas is even more pronounced in Minnesota, where 67% of all MVC fatalities in 2015 occurred in

rural areas (Insurance Institute for Highway Safety, 2016). However, not all tribal lands are rural (and not all rural areas are tribal land), and there may be distinctive features of areas that are both rural in nature and within reservation boundaries, so these relationships need further examination.

Thus, we specifically asked in all interviews whether the study participants saw anything distinctive about roadway safety in reservations. Where they asserted there was a difference, we asked them to express what they believed explained it. Analyses of these data produced especially interesting results, notably including differing perceptions among people with and without immediate, direct familiarity with reservations. The case study results are summarized in Chapter 4.

RQ 3. How are relationships among agencies with overlapping responsibility for roadway safety in reservations affecting safety?

Our early data collection pointed to the importance of inter-agency coordination for transportation safety. Effective boundary-spanning work across domains of expertise (e.g., enforcement and driver education) and across jurisdictional boundaries (e.g., between tribal, county, and state governments that have responsibility for intersecting parts of the complex road network on reservations) is vital to making progress on complex community and policy issues (Buchanan, 1992; Quick & Feldman, 2014; Weber & Khademian, 2008), such as roadway safety. Therefore, it is important to investigate the integration of work on the full array of the “4Es” of road safety. In addition, research on the particular status, challenges, and opportunities related to tribal governments and inter-jurisdictional coordination has very rarely been done around any policy issue, transportation or otherwise (Ronquillo, 2011).

Therefore, we modified the data collection plan to gather and analyze data on two aspects of inter-agency coordination:

1. coordination among units that focused on different aspects of the “4Es” of roadway safety; and
2. coordination among overlapping jurisdictions with some scope of responsibility for roadway safety within the reservation boundaries (tribal, township, city, county, state, and federal).

RQ 4. How can roadway safety in reservations be improved?

Recommendations for improving roadway safety in reservations are summarized in Chapter 5. One of the primary objectives of this study is to use the data to produce better informed recommendations about programmatic and policy actions to improve roadway safety in reservations. As policy and management scholars, we analyzed the case study and national data about key sources of roadway safety risk in reservations, the distinctiveness of reservations relative to other rural areas, and the quality of inter-agency coordination on safety. We then used that analysis to produce recommendations for program and policy improvements. We also asked study participants with special expertise in roadway safety to share their recommendations and identified positive examples of effective interventions and collaboration in the data.

1.6 POLICY AND PROGRAM CONTRIBUTIONS

Fortunately, policy and research attention to the issue of roadway safety in reservations is increasing. The FAST Act (Fixing America's Surface Transportation Act), the major federal highway bill passed in December 2015, recognizes and demands studies on two key aspects of reservation roadway safety, to which this study contributed. The FAST Act mandated that a study be done immediately to improve the quality of transportation safety data collection and that a report be made within two years of the major causes of roadway safety risk in reservations. As mentioned, as part of this project, the researchers collaborated with the Tribal Transportation program of the Federal Highway Administration to design and analyze data from the survey.

In Minnesota, where the case studies were conducted, these research findings can help to address a gap in the state's current Comprehensive Highway Safety Plan. This plan makes no mention of working with tribal governments. There are significant overlaps between commonly found explanations for the elevated crash rate among American Indian populations and lands and the priorities identified in the state plan, namely in the areas of reducing impaired driving, increasing seatbelt use, improving highway design, and keeping vehicles from running off the roadway. The findings of this study can inform efforts by the Minnesota Department of Transportation Office of Traffic, Safety, and Technology to strengthen its goals and activities to improve transportation safety in reservations.

CHAPTER 2: RESEARCH DESIGN AND METHODS

This chapter describes methods developed through this project for identifying roadway safety priorities in American Indian reservations. The methods are tailored to answer the research questions stated in Chapter 1.5.

These data collection resources are for tribal governments as well as researchers. These methods were developed through collaborative research with four tribal governments and the Advocacy Council for Tribal Transportation in Minnesota. They involve doing qualitative interviews with key stakeholders and a simple community survey method using maps to gather residents' knowledge of local road safety hazards. These methods have already proved useful in generating new insights on key safety risks in American Indian reservations, particularly relating to pedestrian and bicyclist safety, policy design and implementation, and inter-agency collaboration. In the associated appendices, we share the list of types of key stakeholders (Appendix A), interview questions (Appendix B), and the community survey methods (Appendix C). The tools laid out in this chapter and the appendices could be used by tribal governments and others to prepare Tribal Safety Plans, to identify focal areas for Road Safety Audits, and to improve transportation and safety policies and implementation.

2.1 QUALITATIVE, PARTICIPATORY RESEARCH APPROACH

Qualitative research methods were used because they are particularly well-suited to analyzing people's perceptions, values, and preferences (Agar, 1980; Bernard, 2011; Feldman, 1995; Hennink, Hutter, & Bailey, 2010), which are essential kinds of data for understanding how people interpret and respond to risk. While qualitative methods are relatively rarely used in roadway safety research, they are particularly apt for analyzing organizational processes and practices, which are important features of the context for policy and program interventions to address safety. In addition, as described in Chapter 1.4, expanded methodologies are needed to discover new sources of data.

These data approaches offer three advantages:

- a) Qualitative methods generate new types of data to address data limitations of typical crash statistics;
- b) Qualitative data complement what we can learn from the more commonly used geospatial and statistical data on crashes and fatalities that have already occurred with local knowledge of road conditions and other risks; and
- c) Qualitative methods can be used to facilitate collaboration among tribal, county, state, and federal entities.

The paucity of American Indian scholars' and community voices in prior research about reservation roadway safety issues is an ethical, empirical, and methodological problem. Gaps in the existing body of knowledge on roadway safety in American Indian reservations are probably made more acute by the historically limited engagement of American Indians as leaders or partners in research on American

Indian transportation safety issues (Andrew & Krouse, 1995). Previous studies have found a need to build partnerships and institutional capacity to enhance knowledge, tools (e.g., road safety audits), and collaborations to address tribal transportation safety needs (Raynault et al., 2010; Bailey & Huft, 2008; Zaloshnja et al., 2003; Sequist et al., 2011).

In recognition of these concerns, the authors worked closely with transportation safety leaders in tribal communities to undertake this research. This approach allowed the authors to engage more appropriately with American Indian communities to pursue research questions of concern to them, to respect their knowledge and tribal sovereignty, and to gather a more complete picture of stakeholders' perspectives on risks and effective options for improving transportation safety.

2.2 COLLABORATION WITH TRIBES AND CASE STUDY SELECTION

We conducted this research in collaboration with transportation planning, law enforcement, emergency medical services (EMS), and injury prevention leaders from American Indian reservation communities in Minnesota. As mentioned, one of the study objectives was to build long-term relationships with tribal governments around transportation issues, to support ongoing collaboration to improve safety and transportation systems in reservations. Creating and sustaining these partnerships – deciding on the study sites, securing permission from their tribal governments, and settling on the specific research designs for those sites are the necessary initial tasks of this work plan. This scoping and relationship-building process is not only necessary to the research project, but also is itself a source of valuable research data and insights, in the tradition of participatory research approaches (LeCompte & Schensul, 2010).

Involvement from the American Indian leaders with direct responsibility for and intimate knowledge of reservation roads, law enforcement, injury prevention, and emergency response provides indispensable information. ***The authors' collaborators on this research, and at least 80% of the 400 study participants, identify as American Indian.*** (Some of these individuals identify themselves in multiple ways, i.e. as American Indian and Latinx, and in some regions of the country people identify as Native American.) The remainder of study participants are staff from county and federal agencies who interface with reservation road safety policy, whom we have also interviewed as key stakeholders. These collaborators and study participants guided us to develop better interview questions and to interpret data about the contexts and complex relationships of causality of the high crash rate; constraints on exchanging and interpreting data; and needs for developing and deploying effective management and policies.

In the first year of the project, the researchers reached out to 11 tribal governments in Minnesota through Minnesota's Advocacy Council on Tribal Transportation (ACTT) to introduce ourselves, describe options for the project, dialogue about ways to re-scope the project to be more interesting to them, and answer questions. ACTT is a clearinghouse for information exchange, policy prioritization, and advocacy for tribal transportation issues in Minnesota, and is comprised of the lead transportation managers of 11 tribal governments in Minnesota, as well as representatives of the Minnesota Indian Affairs Council (a governmental body), the Bureau of Indian Affairs, the regional Tribal Transportation Technical

Assistance Program, USDOT and Minnesota Department of Transportation, US Forest Service, and Minnesota cities and counties.

Four tribal governments –Red Lake Band of Chippewa, Fond du Lac Band of Lake Superior Chippewa, Mille Lacs Band of Ojibwe, and Leech Lake Band of Ojibwe – asked to collaborate with the researchers on this project. Other tribal governments either did not respond to several invitations to discuss the opportunity to collaborate, were so small that it made it difficult to distinguish reservation- and non-reservation conditions or to protect the confidentiality of study participants, or were undergoing staffing or leadership changes that meant the timing of this study was not conducive to their work. Thus, these four reservations comprise the four case studies in Chapter 4.

The most important guiding principle was to work with willing partners and not insert ourselves into reservation communities where the researchers' skills or interest were not needed or welcome. There are recognized methodologies for selecting case study sites (Eisenhardt, 1989; Yin, 2013), but in this context the overriding criteria was an interest in partnership. Voluntary participation is particularly vital in the context of research about reservations and American Indian communities. Nationwide there have been many past breaches of trust committed by researchers working with American Indian communities, including violations of the privacy and protection of the well-being of research participants (Cochran et al., 2008).

Mindful of this history and wanting to build respectful, responsive relationships with tribal collaborators, the authors followed the guidance of the National Congress of American Indians' Policy Research Center regarding good research practices. In addition to checking in often during data collection and analysis with our counterparts in tribal governments, we also consulted with entities that represent or serve tribal governments (e.g., the Tribal Transportation Assistance Program offices of the Federal Highway Administration; the Minnesota Advocacy Council on Tribal Transportation; members of ABE80, which is the Tribal Transportation standing committee of the Transportation Research Board [TRB]; and SMS, which is the Tribal Transportation Safety Management Systems committee of Lifesavers). In these interactions, the authors actively sought guidance and listened for feedback, implicit as well as explicit, about the content of our work (e.g., the questions they would like to have us pursue) and the way we are approaching these relationships. Our aim was to conduct the research in ways that are respectful and responsive, build positive relationships, and enhance the relevance and contributions of this project to these communities.

The key liaison or liaisons for each of the four collaborating tribal governments reviewed their own reservation's case study and Chapters 1, 2, 3, and 5 prior to this report being published. Each tribal government was asked: (1) to provide corrections and updates to the draft report, and (2) for their preference as to whether their case study be included in the final report or be kept confidential for their tribe's own use. Every tribe provided permission to have their case study shared for others to learn from. Each tribe requested corrections (e.g., the Ojibwe spelling of place names, updated tribal emblems) and minor updates (e.g., status updates or photos of recently completed projects), all of which the authors made.

2.3 PROTECTION OF HUMAN SUBJECTS

Voluntary participation applies not only to partnerships with the tribal governments, but to the individual study participants. In accordance with the researchers' commitment to the ethical conduct of social science researchers and in compliance with a protocol for the protection of human subjects developed and approved by the Institutional Research Board of the University of Minnesota (IRB protocol 1407S52686), interviews were conducted exclusively with adults aged 18 years or older who provided voluntary, informed consent to participate. Confidentiality was promised to assure that study participants could speak freely, including to share their criticisms of public engagement efforts. To protect their confidentiality, quotations from study participants are not attributed by name, and there is no list of study participants in this report.

In addition, a national survey (described further in Chapter 2.5, below) was conducted by the Federal Highway Administration (FHWA) under their agency's confidentiality and security protocols, which involved gaining permission from the federal Office of Management and Budget. Subject identifying data were scrubbed from that dataset before the FHWA shared it.

2.4 QUALITATIVE CASE STUDY DATA COLLECTION INSTRUMENTS AND SOURCES

For the case studies, we developed, tested, and refined three basic methodological components: 1) a typology of key stakeholders; 2) questions for interviews with key stakeholders; and 3) map-initiated dialogues with interested reservation residents and expert drivers.

Research in other policy domains that also involve risk and complexity indicates that including diverse and even antagonistic ways of knowing from an array of stakeholders in participatory risk appraisal and planning supports richer understandings of problems and better informed, more effective risk governance (Bier, 2001; Frewer, 2004; Klinke & Renn, 2012; Quick & Feldman, 2014). For example, Minge (2013) used this approach in a study of the role of EMS response in reducing MVC fatalities in high-risk rural areas, by intentionally gathering perspectives from state departments of transportation, EMS agencies, and other stakeholders.

Therefore, the goal for each site was to interview people representing diverse stakeholder positions (Bryson, 2004), so the first resource that we developed for this study was a list of diverse stakeholders to consult with to gather their perspectives, followed by a specific survey, "virtual ride-alongs," and interview instruments that we developed for gathering the data.

The **typology of five key types of stakeholders** (Appendix A) is an ideal list of the key kinds of persons from whom input should be collected. They include not only 1) interested members of the general reservation population and 2) the lead managers or experts for the reservation in the "4E" areas, but also 3) "Expert drivers," who could be any kind of professional driver who knows the road system particularly well and frequently must drive anywhere they are called, in a variety of conditions. This is the most valuable innovation we have discovered through testing different methods. These drivers are a tremendous wealth of information (for example, about bad curves, icy conditions, places to watch out

for pedestrians or animals in the road, etc.), yet are often overlooked in road safety planning. The suggested protocol for interviewing them is in Appendix C, as described below. The other stakeholder types are 4) managers and experts from overlapping or related jurisdictions, from the township to the federal level, as relevant for the reservation; and 5) managers of centers of activity where there is a great deal of coming and going (e.g., schools, community clinics or centers, casinos).

The recommended **interview script for the “4E” experts** – the managers for engineering, education, EMS, and enforcement from the tribal government and related other jurisdictions – is found in Appendix B. A few important features of the protocol should be noted.

First, questions are asked in an open-ended way, not in a leading way that channels or confines responses. For example, it would not be appropriate to ask, “What should we do about drunk driving by reservation residents?” because it would bias responses, not to mention that many people might quite reasonably be offended by the prejudice embedded in that question. Instead, we might follow up with a question about features that the speaker did not spontaneously bring up, such as by asking, “We noticed that some people expect reckless driving (or seatbelt use, or dark and icy roads) to be an issue on the reservation. We don’t want to jump to that conclusion. We noticed that you did not mention it; is that because you don’t observe it to be a problem?”

Second, we asked very broadly about safety on the roads so that we would not foreclose important data in this exploratory study. An example of this is that we intentionally asked about safety on the roads, without narrowing to focus on vehicles, and recommend that others using this tool do the same unless and until it has been established that there are no important pedestrian or bicycle safety issues. Third, we utilized a “snowball” method (Atkinson & Flint, 2001) of asking each study participant to identify and introduce us to others. Interviews occurred in person or by phone. Typically, interviews lasted 35-60 minutes. Permission to audiotape interviews was granted in about 80% of interviews. All recorded interviews were

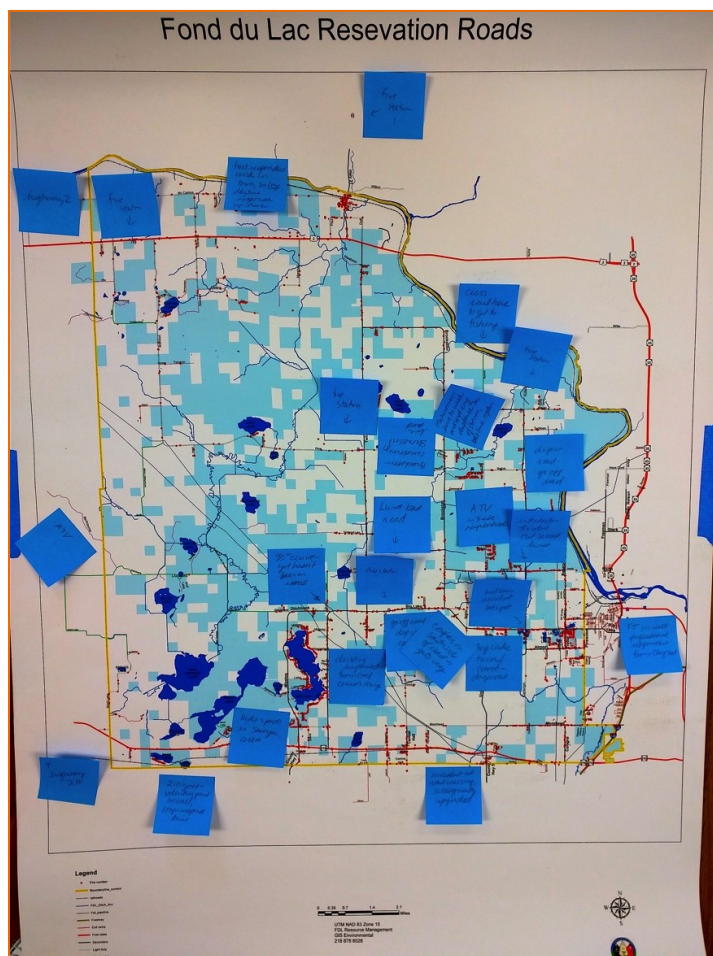


Figure 2.1 Map mark-up of high-risk locations identified by expert drivers on the Fond du Lac reservation



Figure 2.2 Conducting brief surveys with interested residents at community gatherings

Top to bottom: Health fair in Red Lake reservation, health fair in Mille Lacs reservations, and pow wow in Leech Lake reservation.

Photos by Guillermo Narváez or Kathy Quick.

other tribes in the region (at the biannual Minnesota Tribal Transportation Summit), in national venues where there is a high concentration of interested parties, such as podium sessions sponsored by the Standing Committee on Native American Transportation Issues (ABE80) at the Transportation Research Board annual conference, a meeting of the Safety Management System (SMS) Steering Committee of

transcribed. For non-transcribed interviews, the researchers took notes during the conversation and filled out these notes with additional details from memory shortly after the conversation concluded.

The recommended protocol for **brief surveys of expert drivers and interested members of the general public** is in Appendix C. We used a detailed road map of the reservation and adjacent areas as a boundary object for conversation and recording some input. We used it to conduct a kind of virtual ride-along with expert drivers – school bus and public drivers; casino shuttle drivers; propane delivery drivers; visiting health care providers, road crews, and emergency responders – who know the reservation roadway system particularly well. Working with one to three drivers at a time, we posted sticky notes on the map to record their insights and engage them in dialogue to make sure we were capturing their perspectives (Figure 2.1).

We used a similar method of using a photocopied map to initiate and record input from interested members of the reservation public, sometimes in very short interactions, by tabling at community fairs or at the entrance of a major center of activity (e.g., a school or community clinic), with the invitation and permission of the organizers (Figure 2.2).

The authors have received consistently positive feedback from practitioners and scholars working on roadway safety in reservations about the necessity of developing and the value of using these tools. This feedback was gathered in workshops with our partners and

FHWA's Tribal Transportation Program at the annual Lifesavers conference on roadway safety, a National Tribal Transportation Conference, and the scholars' track of the National Congress of American Indians. We also presented the methodologies and preliminary research findings in a national webinar sponsored by the National Academy of Sciences and attended by 235 people.

While these methods are not typically found in this community of scholars and practitioners, several scholars are now developing them. For example, the California Tribal Transportation Assistance Program (TTAP) program has begun trying out what they describe as "crowdsourcing" to encourage reservation residents to post input about pedestrian safety onto maps that they have posted in two reservations (Ragland, 2016). The California TTAP approach is less systematic than the methods we have developed for this project, but also has the potential to be developed further.

All told, between October 2013 and July 2018, the authors spent 90 researcher days of fieldwork in reservations in Minnesota or in meetings of the Minnesota Advocacy Council on Tribal Transportation. By "researcher day," we mean that one of the two authors conducted fieldwork on a given reservation for three to ten consecutive hours. Sometimes we did the work together and sometimes separately. In 2013 or early 2014, we visited all 11 reservations in the state and met with tribal transportation leaders on 7 reservations to discuss safety concerns. When four of the tribal governments whom we had visited or spoken with became partners for the reservation case studies, we returned to these reservations repeatedly to conduct extensive additional fieldwork. (To be clear, these 90 days are a fraction of the researcher time spent on the project; they do not include phone interviews, reviewing policy documents, and extensive time devoted to data analysis.)

In addition, we participated and gathered notes in 15 meetings or dialogues regarding tribal transportation concerns, including four national policy summits or research meetings on tribal transportation, ongoing participation in the ACTT group, two tribal safety plan team meetings, and the Minnesota and Wisconsin Tribal Transportation Safety Summits.

Being present for conversations among tribal transportation leaders and on the reservations was critically important for building relationships, understanding the nuances of these policy issues, and getting to know the context of the case study reservations. While on the reservations, we traveled the roads and got to know the community, often in the company of the tribe's engineering, maintenance, enforcement, or emergency response leaders. We also conducted interviews in-person, did actual or virtual (with map) ride-alongs with expert drivers, and participated in 9 community events.

Altogether, we conducted 102 semi-structured interviews in person or by phone, usually with individual stakeholders, but occasionally with two to three people at a time. We also conducted brief surveys of 220 community members at nine community events on the four case study reservations, and conducted four focus groups involving seven additional expert drivers on the four case study reservations.

2.5 NATIONAL SURVEY DATA COLLECTION INSTRUMENT AND SOURCES

One of the data sources for this study is the Tribal Transportation Safety Data Survey (<https://survey.max.gov/586164>), conducted in 2016. The authors helped to design this online survey of all federally recognized tribal governments, transportation leaders of the Bureau of Indian Affairs offices, and safety engineers or tribal liaisons for transportation departments of all US states. The survey was done in fulfillment of the FAST Act, passed in 2015, which mandated two studies on tribal transportation: on reservation roadway safety data quality issues and on the major causes of roadway safety risk in reservations. In 2016, the survey was made available through a web-based form, an email questionnaire, and by inviting tribes to call FHWA's Tribal Transportation Program. 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 authors participated in designing the national surveys of tribal and state government leaders. Our objective was to expand beyond our case studies and literature review to examine what tribes across the United States identified as key sources of risk and priorities for safety improvement. The survey and a subsequent report to Congress were developed by Federal Highway Administration (2017), with assistance from the Tribal Transportation Safety Management System Steering Committee to develop and distribute the survey. Through cooperation with the FHWA team, the authors were able to insert some questions and access the data (with subject identifiers scrubbed for confidentiality).

The survey has intrinsic value for providing stronger evidence about priority needs for improving reservation roadway safety. It also allows us to evaluate how the findings from the in-depth case studies align with national patterns. Details on respondents and questions are found in the introduction of Chapter 3.

2.6 DATA ANALYSIS

Analyzing data from diverse perspectives allowed the research team to triangulate among various interpretations of the roadway safety risks (Altheide & Johnson, 1994; Yin, 2013) and to perform comparative analysis across the four case studies (Eisenhardt, 1989; Yin, 2013).

Our analysis of these data involved identifying key themes. We identified many of the themes *a priori*, led by the review of the literature and initial conversations with key practitioners. These themes included, for example, engineering issues, driver behavior issues, and observations about anything that is distinctive about reservations. However, we also inductively identified new themes by listening to issues that were consistently raised during the interviews. Notably, issues relating to coordination among jurisdictions were so prominent in the first 10-12 interviews that we began coding the data for this topic, and indeed inserted into our data collection instruments an additional, open-ended question relating to inter-jurisdictional coordination in order to gather more data.

Within both the *a priori* and the inductively identified themes, we analyzed the data for consistency and for divergence. In the results presented in the following chapters, we emphasize areas in which we

found strong patterns of convergence in the data, particularly strong consistencies in what study participants identified as sources of risk. However, we also present some areas in which there is divergent data. There are two important reasons to pay attention to divergence, both relating to what Jick (1979, 607) describes as “an opportunity for enriching the explanation.” First, sometimes ambiguities in the data point to areas where more research is needed. Second, if the divergence seems to be systematic – for example, if there are consistent divergences between tribal government and adjacent jurisdictions – those differences in perspective may call for more communication or coordination.

CHAPTER 3: NATIONAL SURVEY OF TRIBES' AND STATES' RESERVATION ROADWAY SAFETY PRIORITIES³

American Indians nationally experience distressingly high incidences of fatalities and severe injuries from motor vehicle crashes (MVCs) at rates higher than any other racial or ethnic group in the United States, as described in the preceding chapters of this report. What happens on reservations coincides in part with this national phenomenon. To improve roadway safety for American Indians, it is therefore especially useful to gather perspectives from the most informed, on-the-ground safety specialists working in reservations about what the key roadway safety hazards and opportunities are.

This research project included helping to create and analyze the results of the Tribal Transportation Safety Data Survey (<https://survey.max.gov/586164>). Conducted in 2016, the survey was sent to the FHWA Tribal Transportation Program's lead contact for all federally recognized tribal governments, to transportation leaders for the Bureau of Indian Affairs offices, and safety engineers or tribal liaisons for transportation departments of all US states. The US Federal Highway Administration's Office (FHWA) was charged by congressional mandate to conduct a study and thus led the creation of the survey and administered it. We collaborated with them to include a few questions targeted to address concerns and knowledge gaps we had identified in the literature review and our preliminary case study analysis, as well as to share our methodological expertise in social science data collection and analysis. While these data were actually collected after and informed by the case studies presented in the next chapters of this report, we present them here first as a foundational, big-picture context of roadway safety issues in reservations across the United States as a whole.

The survey was conducted in 2016. All federally recognized tribal governments, transportation leaders for the Bureau of Indian Affairs offices, and safety engineers or tribal liaisons for transportation departments of all US states were invited to participate. The responses received represented 151 tribal governments, primarily from tribal police, BIA law enforcement, and tribal departments of transportation. In addition, 45 individuals from 22 state governments responded to the survey. Each respondent was given a choice about whether to complete each of four separate sections relating to crash data collection (15 questions), crash data sharing (8 questions), safety data use (8 questions), and roadway (basemap) data. All questions were voluntary, so the total number of tribes or states responding to any given survey question were variable.

³ Co-PIs Quick and Narváez gratefully acknowledge collaboration with Adam Larsen to develop this chapter. Larsen administered and curated data collection for the survey. Quick and Narváez then interpreted the survey data to create a previous version of this chapter, which we then shared with Larsen. Together, the three of us improved and revised the chapter to create a conference paper co-authored by all three of us. Some of the new, mutually created content of the conference paper was then worked back into this chapter.

3.1 TRIBAL GOVERNMENTS' HIGHEST AREAS OF CONCERN

There are 573 federally recognized tribes in the continental US and Alaska (Bureau of Indian Affairs, 2018). Their reservations are diverse in terms of features expected to influence roadway safety, such as their terrain, resources, inter-connection with other transportation networks, weather conditions, and size. In Alaska, for example, tribes do not have reservations, and roadways are not viable means for transportation for much of the year, so native community leaders often need to remind national policy-makers of the importance of airstrips and other non-road infrastructure to connect them with cities and services (US Senate Committee on Indian Affairs, 2014). Despite the great cultural, geographic, and institutional diversity among tribes and their reservations, however, the survey found several strong



Figure 3.1 Frequency of tribal governments' self-identified roadway safety priorities

convergences in areas of concerns, opportunities, and need.

The first question was open-ended: ***What are your primary concerns related to transportation safety for your tribe?*** These responses are telling because they were what tribal government representatives identified in their own terms as their top-of-mind concerns regarding roadway safety. Figure 3.1 is a word cloud representing the frequency of issues named by survey respondents from tribal governments. To create it, the researchers read all responses to this open-ended question and simplified like terms into common terms. For example, responses referencing drunk driving, impairment, drinking and driving, impaired driving, drugged driving, DUI, and DWI were all categorized as "impaired driving."

In a subsequent question, respondents were asked to

select their **top** concerns from a menu of the key roadway safety risks for American Indians and Alaska Natives and for reservation environments. The selection options were pre-determined by FHWA staff, the authors of this research, and a group of tribal transportation safety scholars and practitioners with whom FHWA consulted. Thus, they reflected key concerns previously identified among practitioners and in the academic literature, including the top four factors in American Indian traffic fatalities (regardless of location, on or off reservation) identified in the 2011-2015 FARS data (NHTSA, 2017, & Insurance Institute for Highway Safety, 2016, described in Table 1.1): the lack of proper seatbelt or child seat restraints (found in 47% of all American Indian traffic fatalities), alcohol-impaired driving (42%), speeding (33%), and being a pedestrian (19%).

Respondents were asked, but not forced, to choose their top three concerns, as well as given a chance to specify other top issues. Some respondents found it difficult to narrow their choices, given the magnitude of concerns they are facing, as exemplified by several who wrote comments along the lines of, “Only three?” in the “other” response area. Figure 3.2 is weighted to three points per respondent (e.g., 3 points for the item if they selected only one item, or 0.5 points for each item if they selected six).

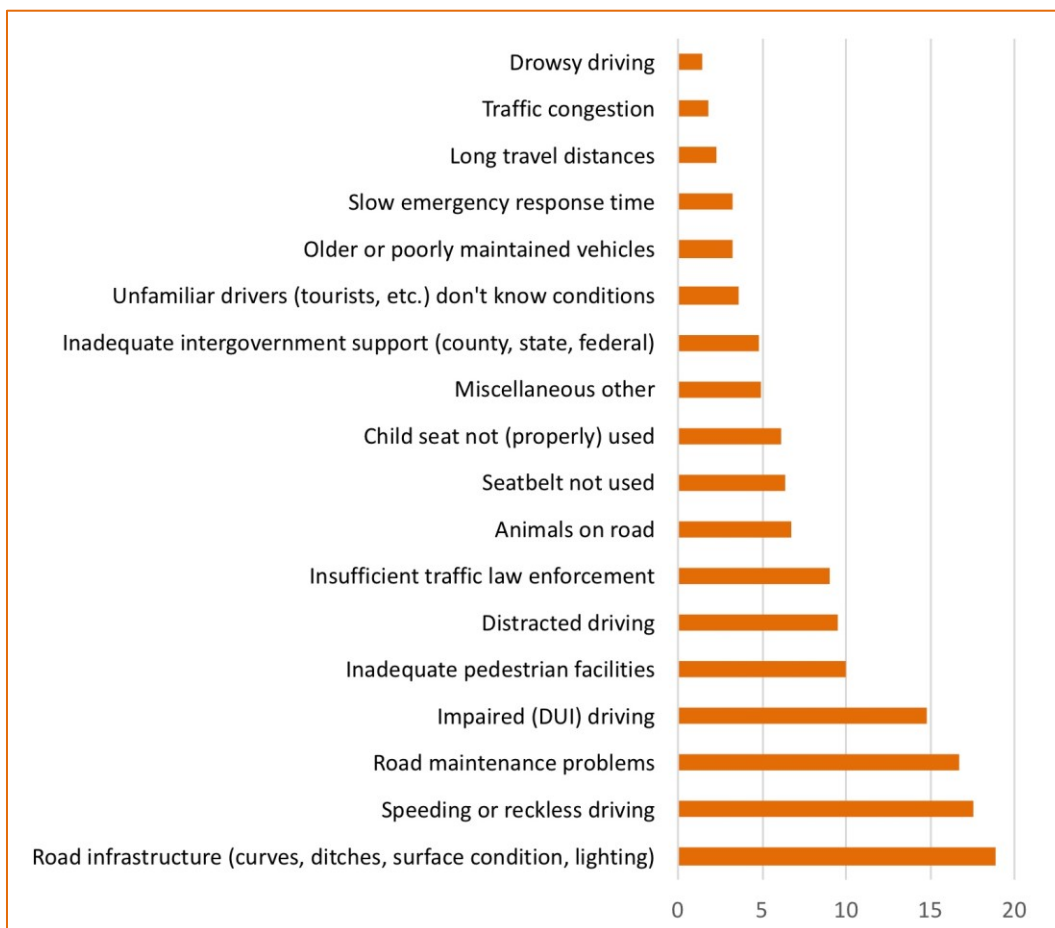


Figure 3.2 Ranking of tribal governments' highest concerns from a menu of roadway safety issues

Tribal leaders' initial, open-ended responses and their selection of top priorities from the pre-set menu align closely. This is **positive** because it suggests that the previously existing understandings expressed by policy leaders and found in the research literature *do* closely parallel the perceptions of transportation safety leaders with the most intimate knowledge of the conditions in their reservations. From these two ways of asking the question, several high-priority areas emerge with a high level of consistency: **road engineering and repair** (road design, maintenance, signage, and lighting), **driver behavior** (impaired driving, speeding, and distracted driving), **vulnerable roadway users** (pedestrians, cyclists, and children), and **restraint use** (seatbelt or car seat) (Table 3.1).

Table 3.1 Highest roadway safety priorities identified by tribal governments in national survey.
(Number in parentheses is # of respondents naming the issue.)

Area of concern	Tribal government responses to open-ended question about priority concerns	Tribal governments' prioritization of pre-determined options
Consistently very high priorities		
Road quality (engineering and repair)	<ul style="list-style-type: none"> • Road maintenance and repair (34) • Roadway engineering (27) • Signage (15) • Lighting (9) • Dust control (5) 	1 st most frequently selected as top priority: Road infrastructure (curves, ditches, surface conditions, lighting) 3 rd most frequent: Road maintenance problems
Driver behavior	<ul style="list-style-type: none"> • Impaired driving (23) • Speeding (19) • Distracted driving (7) • Unlicensed driving (7) • Need more driver safety education (5) 	1 st most frequent (when combined): <ul style="list-style-type: none"> • Speeding or reckless driving • Impaired driving • Distracted driving
Vulnerable roadway users	<ul style="list-style-type: none"> • Pedestrians (23) • Bicyclists (8) • Children needing safe school access (5) • ATV users (5) • Child seat use (8) 	4 th most frequent: Inadequate pedestrian facilities
Restraint use (seatbelts, car seats)	<ul style="list-style-type: none"> • Seatbelt use, adult or child (22) • Child seat use (8) 	3 rd most frequent (when combined) <ul style="list-style-type: none"> • Seatbelt use • Child seats not properly used
High priorities		
Inter-jurisdictional coordination (among tribal, federal, state, local governments)	<ul style="list-style-type: none"> • Data consistency and sharing (20) • Other coordination issues: competing and misaligned priorities, challenges to sovereignty, conflicts or overlaps in enforcement, and communication (12) 	<u>Not</u> frequently selected as a top priority
Law enforcement	<ul style="list-style-type: none"> • Lack of complete safety laws, laws not being enforced, or inadequate resources for law enforcement activities (15) 	5 th most frequent top priority
Inconsistently or infrequently named priorities		
Resource constraints	<ul style="list-style-type: none"> • General budget shortfalls (8) • Inadequate maintenance equipment and law enforcement resources 	** Unclear. This was not one of the pre-set options provided for selection.
Emergency response	<ul style="list-style-type: none"> • Poor response time or quality (8) 	<u>Not</u> frequently selected as top priority.
Other	<i>Occasionally</i> identified: <ul style="list-style-type: none"> • Animals in road • Traffic congestion or volume 	<i>Occasionally</i> selected: <ul style="list-style-type: none"> • Animals on road • Drivers not familiar with reservation conditions • Old or poorly maintained vehicles • Long travel distances • Traffic congestion

3.2 INTER-JURISDICTIONAL COORDINATION ISSUES

State governments participated in a national survey regarding tribal transportation that was issued at the same time. Altogether, there were 45 respondents from 22 states, almost exclusively from state transportation agencies (not, for example, from health or law enforcement agencies). The focus of the surveys of states was communication with tribes, state-tribal crash data sharing, and coordination of assistance available to tribes for data analysis and safety improvements.

To be clear, the states were not asked the question which tribes answered regarding the highest priority roadway safety concerns in reservations. Thus, the useful insights to be gleaned from the data from the state government respondents relate to processes and quality of relationships between state and tribal governments generally, as well as into issues of data quality and data sharing in particular.

3.2.1 State reports of their processes and relationships for working with tribes

Approximately half of the state respondents (49%) have a standard method or process for state agency/tribal interactions. The most common structure described by states was having a designated tribal liaison between the state transportation agency and tribes. When asked, “Please rate the government-to-government relationship and communication between your state agency and the majority of tribes in your state,” the mean response was a 3.3 on a scale of 1 to 5, with 5 being most positive. Analysis of the responses to open-ended questions in the survey reveals that the attention to tribal land concerns seems to be passive. Several respondents provided responses similar to the following comments:

Yes, we provide data [or guidance, or cooperate on a project] when asked, just like with any other jurisdiction.

The tribes can always ask [for data, guidance, or partnership] and we will respond.

Generally, the states do not make a point of using the data to assess or inform needs and policy development for tribal areas. Most do not routinely share data back with tribes, although most respondents indicated that this could be requested. Only 40% of respondents indicated that their state does any specific crash data analysis to evaluate tribal areas. In part, this may be because the data are too sparse to be very illuminating; as one state respondent explained:

So few reports are submitted it's hard to do any analysis. If more were submitted we would be happy to do this.

3.2.2 Poor recognition of tribes' special status

Frequently, the responding state government representatives did not seem to recognize the special status of tribes. There are lots of survey responses that refer to working with tribes “like any other local

unit of government.” Here are two such statements, from state engineering departments in two different states:

We accept and have funded HSIP improvements for local jurisdictions within the state. Tribal entities would/have received the same support.

We consider the tribal government just like a county or city government and will help them with the HSIP process and solutions.

These statements should not necessarily be interpreted as having ill intent, since both statements are about providing resources to tribes to support them. However, given the sovereign status of tribes, it is inappropriate to equate tribes with local governments, especially given the nested hierarchy of authority – with state government being more senior – implied by the local-state relationship comparison.

Other state respondents were well aware of tribal sovereignty. Several brought it up while responding to an open-ended question about “barriers that prevent tribal law enforcement from sharing their crash data with the state.” Some do not want to share data to “*protect data sensitive to the tribes,*” and state that they manage data confidentially and sharing carefully “*due to tribal sovereignty concerns.*” Several

stated that they do not want to have the state be in the position to make decisions about actions to take (issuing tickets, revoking license) on licenses issued by tribal governments because of sovereignty concerns.

Regardless of whether state governments seem ignorant of sovereignty, handle it with sensitivity, or experience it as a barrier to pursuing what they believe to be shared goals with the tribes, additional capacity of states to work with tribes productively would be welcome. The Minnesota Department of Transportation has spent years developing an award-winning short course on tribal-state relationships which serves as a positive model for other states to explore (Table 3.2).

Table 3.2 MnDOT Tribal-State Relations Training: A model for building positive relationships

The Minnesota Department of Transportation offers **Government-to-Government Tribal-State Relations Training**. This short course orients participants to tribal sovereignty and the requirements and proper procedures for consultation and decision-making. This award-winning program is designed and led by American Indian MnDOT staff and faculty from the masters of tribal administration and governance program at the University of Minnesota-Duluth. The training is hosted by tribal governments around the state, providing opportunities for state agencies to support tribal enterprises and for the tribes to educate others about their history and values. The training is offered to key employees in all state departments, not just transportation, and is in such high demand that spaces are at a premium. This is a model that other states should consider. For more information: <http://www.dot.state.mn.us/tribaltraining/index.html>

3.2.3 Tribe-state data sharing and quality

From the state's side, despite the anxieties just stated regarding respecting boundaries on data confidentiality, respondents expressed desires to build capacity for better data collection, data management, and data sharing. One respondent used the optional space for extra comments at the end of the survey to emphasize arguments for better information exchange:

This is a very big need for our tribal agencies and our collaboration and information sharing. I have worked to gain this information for over 14 years with little success. This survey gives me hope that changes could occur to improve our crash data collection and analysis with our tribal partners. They want to do this but have been limited by the BIA. Regular communication with our Tribal Agencies is key to continuing our improvements with in the tribal nations areas.

States' assessment was that the sharing of crash data is generally poor, although at least half of the state respondents asserted that they have communicated with tribes about the benefits of mutually sharing crash data. Some explained the failure to connect with arguments that tribes are "not interested in sharing crash data," or "do not collect crash data that is usable," or have data that is "not fully accurate."

Others attributed data sharing issues not to a lack of will, but rather to limited capacity. Some stated that many of the same tribes who don't have usable data are in favor of collecting and sharing it but are "hampered with no equipment and limited staff." Another elaborated:

Based upon comment shared from tribal officials, it was noted that the one major barrier to improving tribal crash data sharing is the lack of funding to enable tribal law enforcement agencies to increase their staffing and hardware/equipment capacity to carry out use of the software and data sharing/analysis processes.

3.3 SUMMARY OF KEY INSIGHTS FROM THE NATIONAL SURVEY OF TRIBES AND STATES

Generally, there is a high convergence between responses from the tribes, the states, and previously published literature on key sources of roadway safety risks on reservations, accompanied by a few surprises. Analysis of these data yields five key findings:

1. Confirmation of the priority of **road quality engineering and repair**. This is an extremely high concern among tribes nationwide, which indicates the continuing importance of federal and state programs to fund roadway infrastructure improvements and repair in American Indian reservations.
2. Confirmation of the priority of **driver behavior and education**. Reckless driving (speeding, impaired driving, and distracted driving) was the single most frequently raised concern among tribal government respondents, followed closely by seatbelt and child car seat use (3rd most frequent). This indicates that continuing investment in injury prevention programs, roadway

safety enforcement, and public health campaigns – including the Safety Circuit Rider program – remain critically important.

3. Rising concerns regarding vulnerable road users, ***especially pedestrians***. “Inadequate pedestrian facilities” was the fourth most frequently identified concern among tribal government respondents. While there has been relatively little previously published research to indicate that this is a high priority in reservations, the consistency of these results and the overwhelming prominence of this issue in the case studies with four Minnesota tribes (Chapter 4) indicate this is a high priority deserving additional attention.
4. Rising concerns about ***gaps in tribe-state inter-jurisdictional relationships***. States’ responses to the survey imply high potential for strengthening these relationships. Notably, states have a desire to improve connections for data sharing to support analysis and problem-solving around shared goals. However, the data also imply a need for: 1) more education of state employees to understand and recognize of tribes’ special status; and 2) more resources for tribes to have the capacity to document, share, and analyze data.
5. New questions regarding ***emergency medical services (EMS)***. Among the 150 tribal government responders, 18% identified “slow emergency response time” as one of their top three concerns. The California Tribal Road Safety Data Project has gathered similar data (Ragland, 2016), but relatively little work has been done on this topic, which therefore seems to merit additional study.

CHAPTER 4: MINNESOTA RESERVATION CASE STUDIES



Figure 4.1 Four collaborating tribal governments

Four tribal governments –Red Lake Band of Chippewa, Fond du Lac Band of Lake Superior Chippewa, Mille Lacs Band of Ojibwe, and Leech Lake Band of Ojibwe – responded to an invitation the researchers made to tribes in Minnesota to be part of the project (Figure 4.1). These reservations have a few features in common that support comparison: 1) all are communities of Ojibwe people, sometimes also identified as Chippewa, or more rarely as Anishinaabe, people (D. Treuer, 2012); 2) among the 11 reservations in Minnesota, these four are among the largest; and 3) all are located in the northern part of the state (Figure 4.2). The other tribal governments did not respond to several invitations to participate, declined to participate because of staffing or leadership transitions, or are too small to conduct a meaningful study of the reservation context.

We preface these four case studies with two reminders regarding the researchers’ partnerships with the respective tribal governments and what they mean for the presentation of the findings.

First, our agreements with all four tribes were that we would not share detailed data on their communities, with the exception of cases where they expressly encouraged and gave permission for this. Thus, these case studies do not include detailed maps of areas of concern, nor do they include images of people or sites that are identifiable unless they were previously published in news media or the tribe’s own communications.

Second, the case studies are uneven in terms of the depth of data collection, which reflects our respect for the opportunity to work with the four tribal governments and their guidance about how they wished the research to be done. On two reservations, we were encouraged to be present on the reservations, were asked to undertake extensive data collection, and were actively assisted with introductions and invitations to participate in community events. In partnership with these governments, we gathered and provided more data to the tribal governments than we had initially expected. In the other two reservations, the tribal governments were less active, possibly because they were less interested in the research or possibly because of staffing constraints. After we made several attempts to coordinate additional data collection, we received and respected that their interest or resources for partnering were limited.

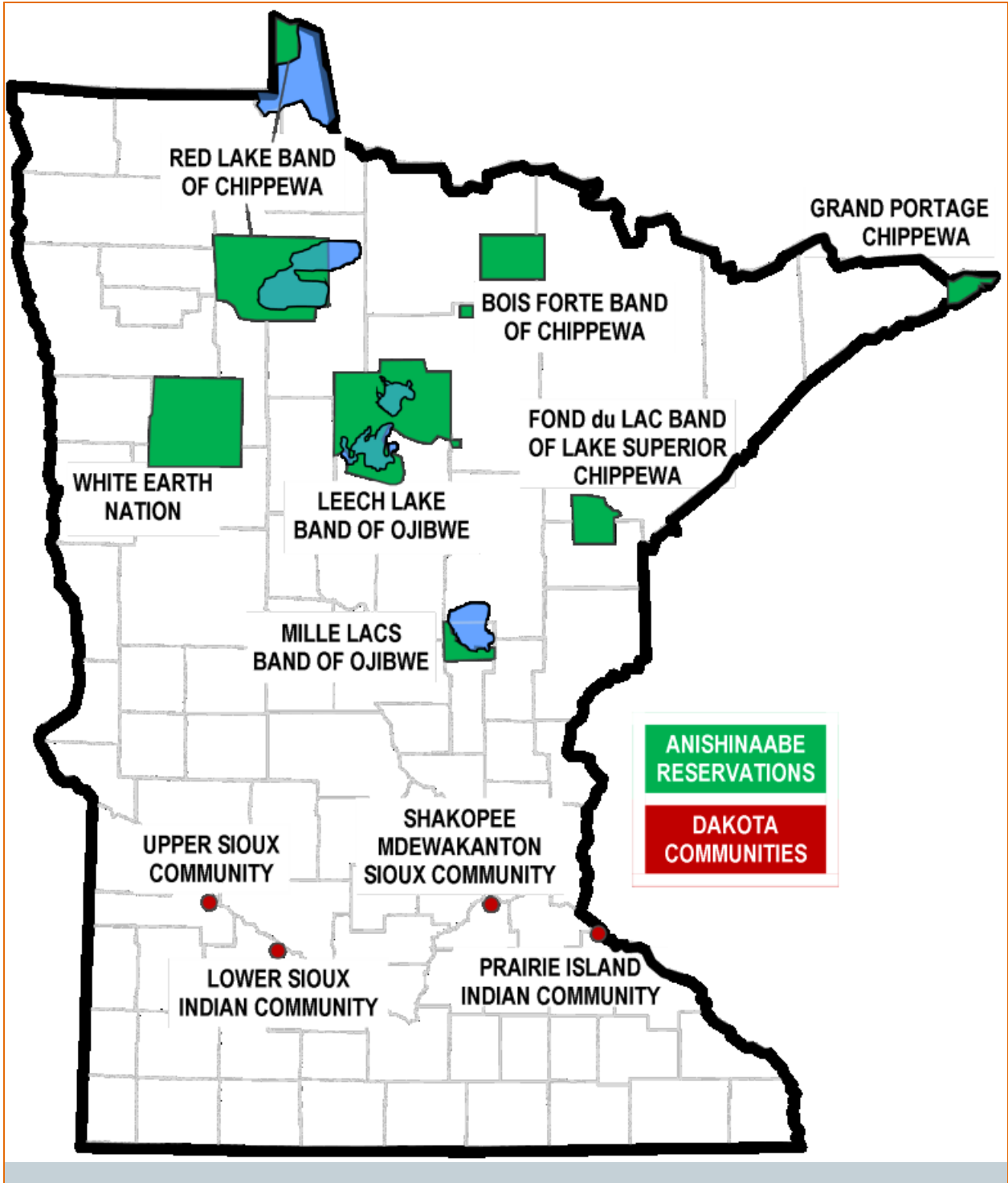


Figure 4.2 Location of reservations in Minnesota

Source: Indian Affairs Council of State of Minnesota. “Anishinaabe” means Ojibwe people (Ojibwe People’s Dictionary, 2018).

4.1 RED LAKE BAND OF CHIPPEWA

4.1.1 The reservation context

The Red Lake Band of Chippewa reservation encompasses 1,259 square miles in northwest Minnesota (Figure 4.2), covering an area comparable in size to the state of Rhode Island. The tribe, the reservation, one of the towns in the reservation, and the lake are all sometimes referred to as “Red Lake”; unless otherwise specified, all references in this study are to the tribe and/or the reservation.

The Red Lake Band’s territories, per its treaty agreement with the United States government, are shown in Figure 4.3. The reservation is comprised primarily of two large areas – one nearly surrounding the lake and one much further north in a region known as the Northwest Angle, a US practical enclave surrounded entirely by Canada – plus hundreds of small, non-contiguous enclaves. Red Lake is one of only a small handful of closed reservations in the United States, meaning that the tribe has consistently maintained ownership of all or nearly all of the contiguous lands within the tribal boundary (D. Treuer, 2012).



Figure 4.3 Red Lake territory per treaty with US government

Source: Kade Ferris, Red Lake Tribal Engineering Division.

As of 2016, there were an estimated 5,934 residents on the Red Lake reservation, 94.4% of whom identify as American Indian alone (American Community Survey 5-Year Estimates, 2012-2016). Most residents live in or near four small towns: Little Rock, Redby, Red Lake, and Ponemah. **The focus of this study is the area surrounding the lake** – a large body of water (188 square miles in area) comprised of Upper and Lower Red Lake – because it is the part of the reservation where almost all of the residents and centers of Red Lake community activity are located (shown in Figure 4.4).

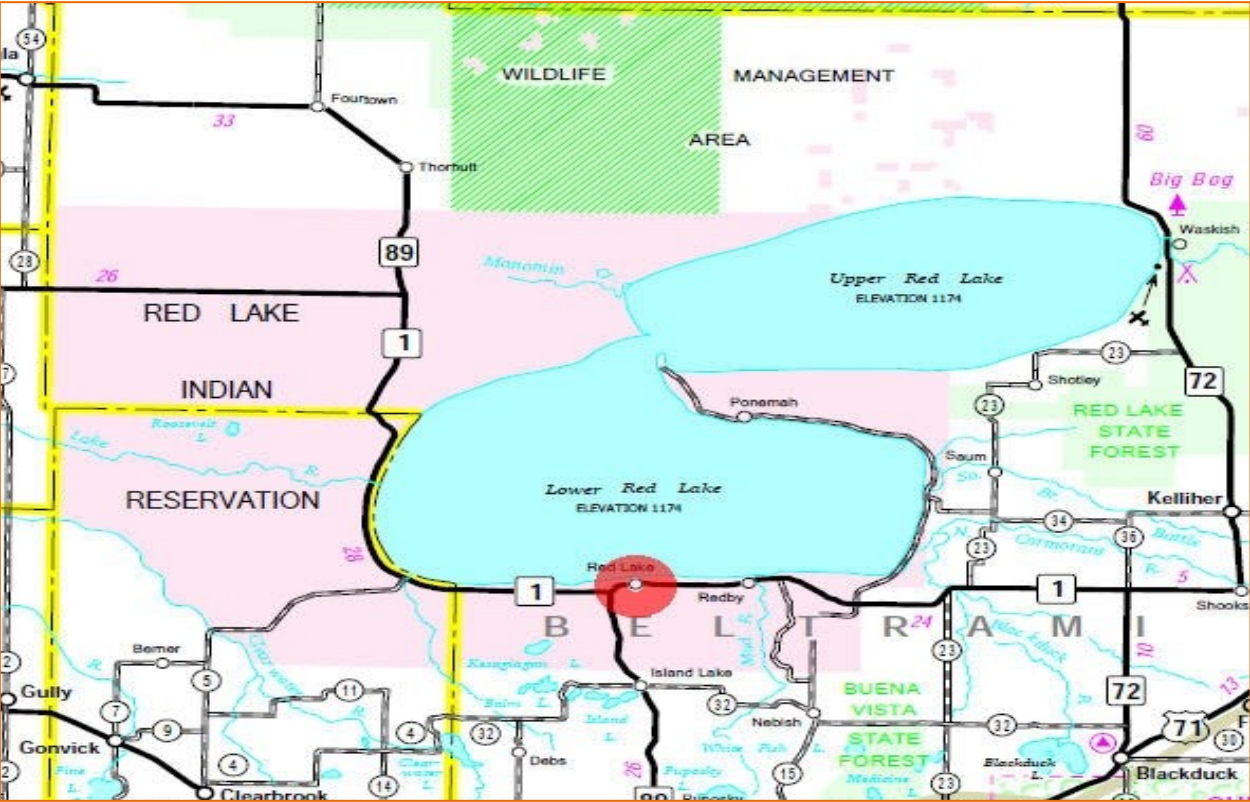


Figure 4.4 Main area of Red Lake reservation

Source: Minnesota state highway map. This map serves only for general orientation purposes. The exact boundaries are contested and there is no publicly available map from the tribe.

The tribe is responsible for maintaining an enormous quantity of roadway, namely 1,600 miles of paved and unpaved roads (Red Lake Tribal Engineering Division, 2018), including many minimum maintenance roadways. In addition, two Minnesota state roads – Minnesota State Highway 1 (MN-1) and Minnesota State Highway 89 (MN-89) – cross through the most populous areas of the reservation. Segments of several county roads are also inside the reservation.

4.1.2 Data sources

On 37 occasions between October 2013 and July 2018, a member of the research team spent three to ten consecutive hours on the Red Lake reservation conducting fieldwork, building relationships with roadway safety leaders, getting to know the roads and landscape, attending community events, and occasionally being shown around the reservation by tribal government staff with responsibilities for some aspect of roadway safety. Altogether, 13 individuals from the tribal government and 5 from related public agencies were interviewed, many of them multiple times. In addition, the team accepted an invitation to participate in a big annual health fair organized by the tribal government, which gave us unusually good access to a large number of people from throughout the reservation and to table at a back-to-school night at the elementary school; between those two events, 88 reservation residents participated in brief surveys. Finally, in cooperation with graduate student Laura Dorn, Co-PI Narvaez observed school drop-off or pick-up conditions at four schools on the reservation as part of a complementary assessment of traffic safety at the schools.

4.1.3 Key safety concerns and opportunities

The major areas of concern for roadway transportation safety on the Red Lake reservation are as described below. The reservation area is so large that fine-grained detail would be overwhelming. Therefore, we are focusing just on the highest priority, most consistent areas of concern in this short case-study. The following key themes emerged:

The two state highways in the reservation – MN-1 and MN-89 – are the highest priority roadway safety risks named by all study participants. In July 2015, the researchers attended a community resource fair attended by people from all over Red Lake reservation. At the fair, we conducted brief interviews with 89 residents of the reservation. When asked if they had any concerns about safety on the roads, virtually every individual named one or both of these highways. These were short interactions of 2-5 minutes with each individual, and it is therefore highly telling that so many people pointed directly to these roads as areas of high concern.

Their concern is that these highways have a high volume of high-speed traffic and that reservation residents must constantly navigate them without traffic signals or sidewalks. The highways cut right through the middle of centers of activity on the reservation. Not only are they the major routes in and out of the reservation, but MN-89 is also an internationally important truck route for moving goods between the United States and Canada. Thus, a high volume of vehicles – including 18 wheelers – routinely pass right through the major areas of reservation activity, often at very high speeds.



Figure 4.5 Improvements to stop sign and street lighting at MN-1 and MN-89 intersection, Red Lake

Source: Guillermo Narváez.

Yet, there are no traffic signals to slow movement on MN-1, even at the T-intersection of MN-1 and MN-89. Fortunately, in mid-2018 this intersection was improved by the addition of a street lamp and by replacing the old sign with a larger stop sign outfitted with a high-visibility flashing light to draw drivers' attention to it (Figure 4.5).

The Red Lake Tribal Council has stated that it is a priority to make similar improvements – a flashing stop sign and street light – at the T-intersection of MN-1 and Reservation Highway 18. This intersection is the only entry and exit point into Ponemah, the community located on the peninsula between Lower Red Lake and Upper Red Lake (Figure 4.4).

Residents constantly travel on and cross MN-1 or MN-89 to access all of the major residential areas, schools, centers of employment, hospital, grocery stores, recreation facilities, and tribal government offices. Figure 4.6 illustrates the clustering of services around MN-1 in Red Lake, the busiest area. But in the village of Redby as well, residents must frequently travel on and cross MN-1 to get between residences, the basketball court and playground, and key centers of economic activity (the Red Lake Nation Foods processing and sales center and Red Lake Nation Fishery, where residents sell, are employed to process, or purchase foods harvested on the reservation), and the Redby Community Center.

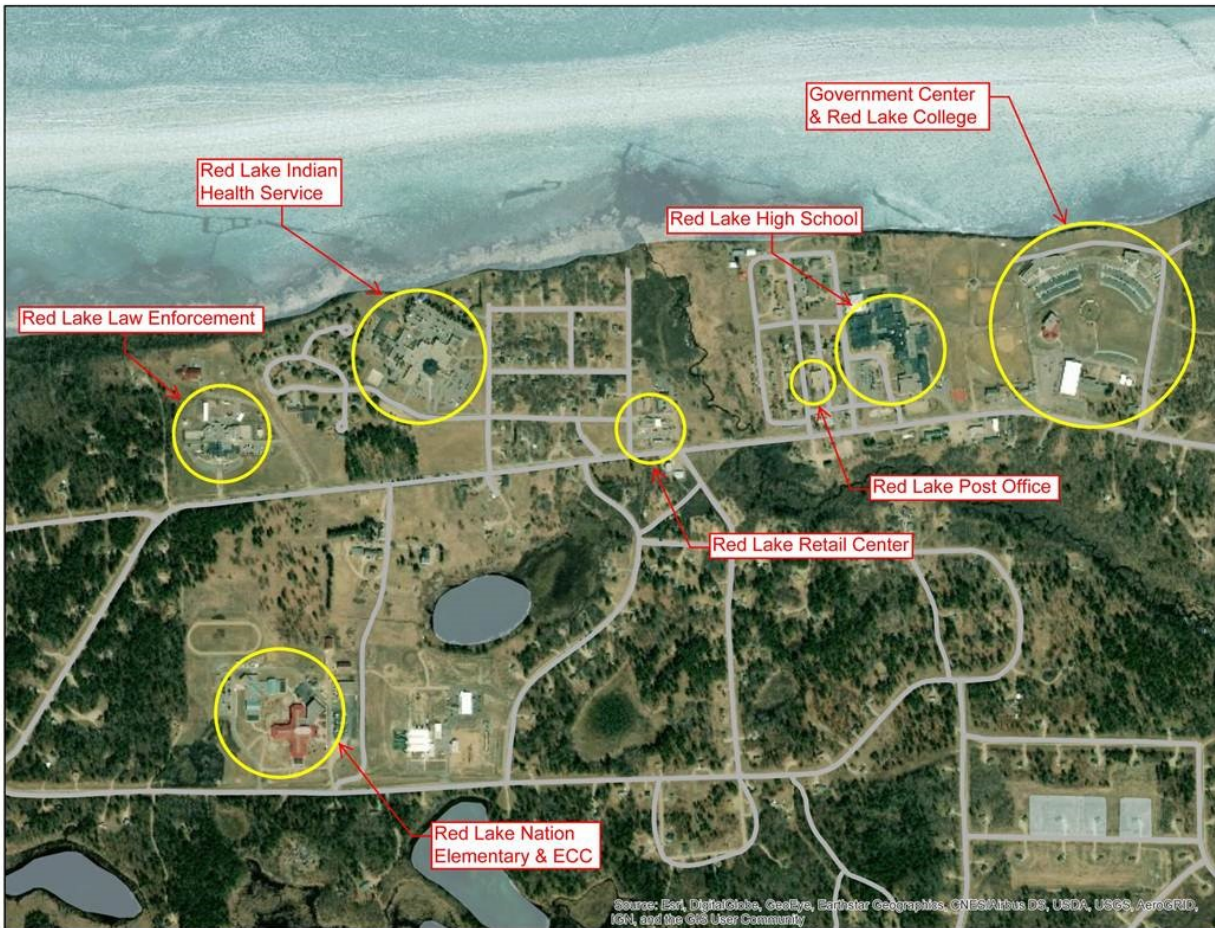


Figure 4.6 Multiple centers of activity around MN-1 in the town of Red Lake

Source: Kade Ferris, Red Lake Tribal Engineering Division.

Pedestrian safety, especially adjacent to and crossing MN-1 is of particular concern. Reservation residents regularly navigate the shoulders of these highways and cross them on foot, ATV, or bicycle. Notably, Red Lake Foods is the best place on the reservation to purchase everyday groceries and supplies, the nearest full grocery being 32 miles away, off the reservation in Bemidji. This store is located just feet from Highway 1, and people walk to and from it, including across the busy highway, all day long. Red Lake Foods also sells gasoline, so cars constantly enter and exit the parking area (Figure 4.7). An aerial photograph of the area, taken in 2018, documents the amount of foot traffic coming in and out of the area (Figure 4.8).



Figure 4.7 Pedestrian walking on berm of Minnesota Highway 1 across from Red Lake Foods
Source: Google maps 2012.



Figure 4.8 Footpaths worn by heavy pedestrian movement around Red Lake Foods
Source: Google maps satellite image, 2018.

The bridge crossing over Ogaakaaning-ziibing (Pike Creek) on MN-1 is a particular concern for pedestrian safety (Figure 4.9). The shoulder of MN-1 is how pedestrians get across the creek when moving between Red Lake Foods, Head Start, or the hospital and health clinic (to the west of the creek) and the tribal government center, tribal college, gymnasium, and post office (all located to the east). There is a narrow shoulder here and a well-worn footpath through the grass immediately next to the highway.



Figure 4.9 Narrow footpath in pinch point of MN-1 crossing Pike Creek

Source: Google maps 2012.

Not surprisingly, then, residents surveyed at the community fair constantly mentioned their concern about pedestrian safety while walking adjacent to or crossing MN-1. Similarly, transportation and public safety leaders in the community consistently name this as a very high concern. The following is an excerpt from one of multiple interviews in which tribal government staff involved in all aspects of the “4Es” of roadway safety repeatedly mentioned pedestrian safety on MN-1:

It is a super high priority to improve the area between Red Lake and Redby [on MN-1], where you have so many people walking and it is not safe.

Similarly, residents and tribal government staff are concerned about pedestrians crossing MN-1 in Redby, particularly to get back and forth to the playground and ballcourt adjacent to the highway

Limits of inter-jurisdictional coordination. Despite Red Lake’s strength as a sovereign nation, there are features of roadway safety in which cooperation with other governments – federal, state, and county – are essential.

1. *Tribe-state coordination.* Tribal government staff are extremely eager for the state of Minnesota – which owns and has responsibility and control over MN-1 – to invest in a trail or other pedestrian/bike safety improvements along the road. While Highway 1 and 89 are the sites of the highest priority roadway safety risks named by all study participants, the tribe has neither responsibility nor control over their engineering, maintenance, and policing because they are state highways. Often there is positive cooperation between Red Lake and MnDOT on infrastructure improvements to the road itself. For example, because road width standards have increased over the years, road improvement projects often require road widening. Red Lake’s tribal government takes the lead on right of way issues for road widening and typically performs or contracts out the construction work, and the state then pays for the acquisitions and road work. However, the tribal government is eager to see the state also invest in pedestrian improvements along these highways.
2. *County coordination.* Altogether, nine Minnesota counties overlap with some part of the reservation. Segments of several county roads are inside the reservation. They are counted by the federal government as part of roadways for which the tribe is responsible, so that tribe receives some funds and takes responsibility to maintain them.
3. *Limited federal funding for maintenance.* However, this arrangement is also problematic; federal allocations for tribal roads and funding formulas have meant that this fund has not risen even as communities have grown. Altogether, the tribal government is responsible for 1,600 miles of roads in the reservation. Reservation residents are not necessarily familiar with the funding formulas that limit federal funds for reservation roads, but in the statements that they made during brief surveys at the community fair, they did point to differences in road maintenance between the roads maintained by the tribe and roads off the reservation or state roads within the reservation. Several community leaders expressed frustration about the important everyday implications of poor road maintenance. For example, a parent of a Red Lake school district student reported:

Not long ago, a whole bus load of students got delayed. The road maintenance is so bad that their school bus got stuck in a pothole. They had to wait for another bus to come get them.

4. *Law enforcement coordination.* On the law enforcement side, the Minnesota State Patrol and the county sheriff’s departments do not get involved in roadway safety within the reservation. Red Lake is a closed reservation with a proud, hard-won history of sovereignty. The tribal government has its own police department, and other police departments may not enter the reservation and do not have authority to act there (with a few narrowly bounded exceptions, relating to non-members committing crimes against non-members). Study participants from the reservation stated that this arrangement increases trust between reservation residents and law enforcement, which is important for the mutual safety of community members and residents. However, there are hints in some of the interview and survey data collected that Red Lake residents and possibly some

government employees would welcome more Minnesota State Patrol presence to regulate reckless driving on MN-1 and MN-89. A senior law enforcement officer from a county overlapping Red Lake reservation spoke highly of Red Lake Police Department’s willingness to cooperate on areas of shared concern and observed, “*Now, we’re working together on problems more than we ever have before.*”

Severe winter conditions are dangerous.

On average, the low temperature for the winter season in the main area of the reservation is -36F/-38C (Minnesota Indian Affairs Council, 2017). Winter conditions often make roads slippery, especially in wooded areas of rural roads with low traffic volumes, making driving conditions hazardous. Children getting to school and other pedestrians are at risk of exposure to extreme cold unless they have very warm clothing and places to shelter. In addition, snowplow operators, school bus drivers, and residents stated during interviews that ice surges – drifts of snow and ice blowing off Lower Red Lake – sometimes block the only road in and out of the community of Ponemah, home to over 700 people. The tribe’s maintenance and police departments prioritize responding to these issues so that people are able to get to and from school, work, and services, and so that emergency responders can access the area (Figure 4.10). Nonetheless, sometimes the road remains partially obstructed by large drifts for days at a time, causing visibility and other navigation hazards.



Figure 4.10 Ice surge blocking Ponemah's only access road

Source: Red Lake PD, 4/30/18.

Safe routes to school. Red Lake has been paying special attention to safe routes to school for children. In 2017, MnDOT allocated \$70,000 for a lighted pedestrian trail and walkway for students attending the largest elementary school. Still, the tribal government and school leadership remain concerned about safety right around schools during student drop-off and pick-up. The school district welcomed the researchers into an elementary school during a back-to-school event to talk with parents about safety concerns, where a number of parents explained that they prefer to drive or carpool to get their children to school because of concerns about winter weather, stray dogs, or about younger children being mixed in with much older children without adult supervision on the school bus. These issues are not addressed by typical pedestrian and bicycle improvements, so working to improve safety of pedestrians at pick-up and drop-off sites is an important part of the overall safety solution.

Therefore, as an extension of this research project, Red Lake invited the researchers and a graduate student to collaborate on master’s project to study how to improve circulation on the campuses of the

early childhood development center, three elementary schools, and the middle/high school complex to improve circulation and safety.

On the basis of observations and interviews with key stakeholders, the study recommended several improvements, including raised pedestrian crosswalks, one off-site drop-off location, changes in the flow and configuration of drop-off areas in two of the school campus, and design improvements in adjacent roadways (e.g., turn and bypass lanes) (Dorn, 2017). The Red Lake government is now seeking resources for implementation, including funds for a pedestrian path connecting the Red Lake Elementary School and Red Lake Foods area.

4.2 FOND DU LAC BAND OF LAKE SUPERIOR CHIPPEWA

4.2.1 The reservation context

The Fond du Lac reservation, created through the La Point Treaty of 1854, is located in northeast Minnesota, about twenty miles southwest of Duluth (Figure 4.2). It is the reservation of the Fond du Lac

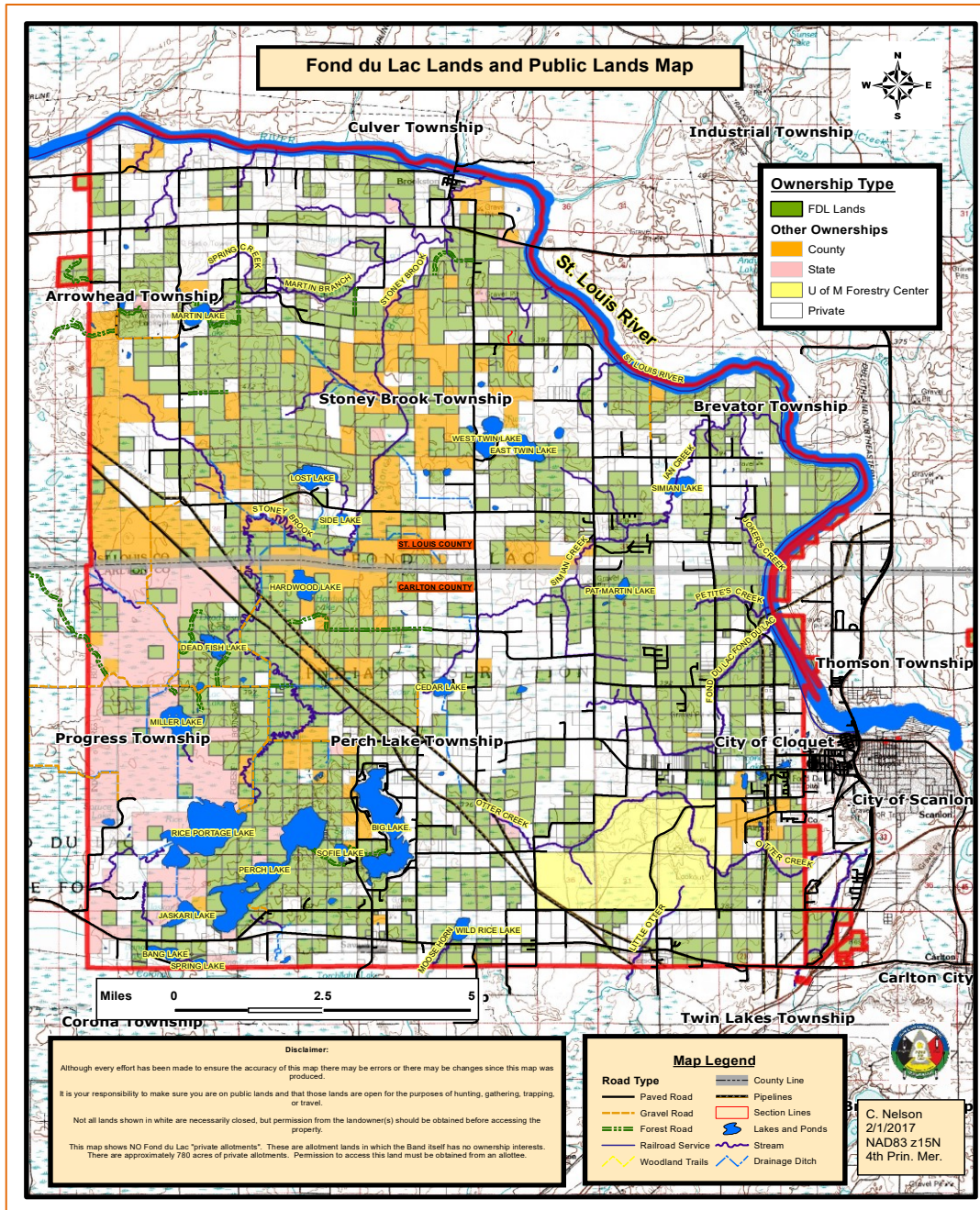


Figure 4.11 Land ownership and overlapping jurisdictions in the Fond du Lac reservation

Source: Fond du Lac Band of Lake Superior Chippewa GIS division. Land ownership as of 2/1/17.

Band of Lake Superior Chippewa, which has over 4,200 enrolled members, of whom about 1,500 live on the Fond du Lac reservation. In addition, 2,800 people who are *not* members of the tribe live on the reservation, reflecting a long history of land being lost to settlers and “checker-boarded” into fragmented tribal ownership through this process (as explained in Chapter 1.3). Of the approximately 100,000 acres of the reservation, approximately 43% are currently in tribal ownership (Figure 4.11). The reservation overlaps with several other jurisdictions, including Carlton and St. Louis counties, the City of Cloquet, and six townships.

The 402 miles of roads on the reservation are owned and managed by a blend of these jurisdictions as well as federal and state government. Only a small portion of the roads – approximately 17 miles in total – are Bureau of Indian Affairs roads that are owned and managed by the Tribe. In addition, there are 13 miles of state highway (MN-210 and state-managed forest roads), about 10 miles of federal or BIA roads (Interstate 35 and US-2), 104 miles of county-owned roads, 54 miles of township roads, and 32 miles of city roads (Fond du Lac Band of Lake Superior Chippewa, 2016).

4.2.2 Data sources

On 30 occasions between October 2013 and June 2017, a member of the research team spent three to ten consecutive hours on the Fond du Lac reservation conducting fieldwork, getting to know the roads, generally familiarizing ourselves with the context, and doing of interviews. Data collection involved interviews with 19 tribal government managers with direct responsibility for transportation safety (e.g., planners, law enforcement, injury prevention educators, public works managers), 6 expert drivers with extensive knowledge of the roadways (school bus, public transit, and propane delivery drivers), managers and employees of major centers of activity (schools, community centers, or the casino). In addition, we conducted brief surveys with 31 other members of the Fond du Lac community at two community events (Fond du Lac enrollee days on June 26-27, 2015 and the Police Department Barbeque on July 25, 2015). Thus, most of the data comes from tribal government managers who have direct and primary responsibility for the roadway safety on the reservation, from residents, and from non-resident enrollees (mostly through face-to-face meetings on the reservation). We supplemented that data by gathering perspectives from 11 individuals who have transportation safety responsibility – through engineering, enforcement, or first response teams – from adjacent and interrelated jurisdictions (mostly via phone interviews). Altogether we interviewed or surveyed 66 individuals for this case study.

4.2.3 Key safety concerns and opportunities

The major geographic areas of concern for roadway transportation safety on the Fond du Lac reservation are as follows:

Pedestrian safety. Pedestrian safety in general was by far the top concern we heard from residents at community fairs about any aspect of roadway safety on the reservation. We have heard many accounts of injuries and fatalities that people attributed in part to the lack of paths or adequate shoulders to protect pedestrians from traffic, compounded sometimes by poor visibility (mostly from hilly conditions,

occasionally also from poor lighting) or icy conditions. Other people told us that they avoid sending their children out to walk or bicycle because there is no safe shoulder or sidewalk for them to do that. Leaders in the tribal government also name pedestrian safety as a very high priority, not only because they are concerned about safety, but also because the tribal government is actively encouraging walking for health and recreation. Managers of many tribal government departments and expert drivers (from transit, school bus, and propane delivery units) all name this as a very high area of concern and a distinctive need of the reservation.

Several hotspots of concern for pedestrian safety were consistently found in the data, as follows:

1. *Big Lake Road*, where there is heavy vehicle and foot traffic but no trails, particularly between University and Whispering Pine and between the Convenience Store and Highway 33.
2. *Mahnomen community*, both in the community and on approaches to it along Belich/Mahnomen Roads and the smaller surrounding roads. Residents report speeding (and speed bumps being removed) and erratic driving in areas where kids play and many people walk. Some also stated that people are walking at all hours and that there needs to be better lighting to illuminate the Brookston Road and Mahnomen Road intersection at night. They also reported snow/ice conditions especially on Belich Road, where they remain worried about slippery winter conditions on uneven sections with poor visibility following a pedestrian fatality. Several residents stated that, when they call to report icy conditions (they did not specify to whom), they experience confusion or avoidance among the city and two counties over who is responsible. This seems to be a safety issue of especially elevated concern and sensitivity because of a tragedy the community already experienced, when a child walking along the road was killed.
3. *Sawyer community*, especially where kids bicycle and walk around the Sawyer Community Center, especially on Mission Road. We have not talked with many people from this community, but the few we talked with consistently named this.
4. *Tribal government center*. We heard concerns from expert drivers and from the tribal government's school, recreation, transit, and planning professionals about kids navigating inner roads and dealing with parking lot traffic when walking between the Fond du Lac Ojibwe High School and Head Start center, Fond du Lac Community Center, and the pow wow grounds.

When it comes to pedestrian safety, however, it depends on whom you ask. The data from tribal government leaders – across departments, including law enforcement, planning, public works, education, and public health – was extremely consistent about pedestrian safety being a very high priority. Similarly, virtually every resident or frequent reservation visitor who participated in the brief surveys also mentioned pedestrian safety. In fact, for many this was the distinguishing feature of roads and roadway safety on the reservation, as expressed by this person:

Well, as soon as I get on the rez I know I need to start looking out for pedestrians. That's really the only difference between off and on the rez when it comes to being safe on the roads. [Fond du Lac enrollee who lives off the reservation]

In contrast, coordinating jurisdictions did **not** seem to see this concern so acutely. When we interviewed key leaders from other jurisdictions with some overlapping engineering, maintenance, or enforcement responsibility for roadways on the reservation, they rarely mentioned pedestrians at all. We began with an open-ended question, asking them to describe safety on the roads on the reservation and to name their key concerns. After listening to their responses, if we did not hear them mention pedestrians, we would share with them that tribal government leaders and reservation residents had repeatedly stated they were especially concerned about pedestrians. At that point, the coordinating jurisdictions sometimes mentioned plans to extend the pedestrian trails along Big Lake Road and stated their support for the project. However, they would typically not respond to this prompt by stating that they saw pedestrian safety as a particularly high need or something distinctive about the reservation community.

There are a few possible interpretations of this **apparent disconnect over prioritizing pedestrian safety**. One possible explanation is that state or county officials are simply not very in touch with residents' perceptions of conditions on the reservation. These two comments from representatives of other jurisdictions – both with responsibility for some geographic area or aspect of roadway safety on the reservation – suggest they have very little familiarity with local conditions, or a very different perspective on them:

I travel those roads off and on and you do see a lot of youngsters out and about there. I don't know if there's anything special about it because I am only up there about once or twice/year. [County commissioner]

[Interviewer: We've heard that pedestrian safety issue an issue. You didn't mention that. Is that your impression as well?] *That people are hitting pedestrians?* [Researcher: Or that there are more pedestrians in the road?] *Hm. I haven't heard that.* [Law enforcement officer, non-tribal government]

Another explanation may be that pedestrian safety does not stand out as a very elevated concern in the databases that most transportation safety experts would use. As Figure 4.12 (right side) shows, only three crashes involving pedestrians on the reservation are recorded for the entire 2006-2014 period in the MNCMAT (the Crash Mapping Analysis Tool of MNDOT and MNDPS Department of Driver and Vehicular Safety).

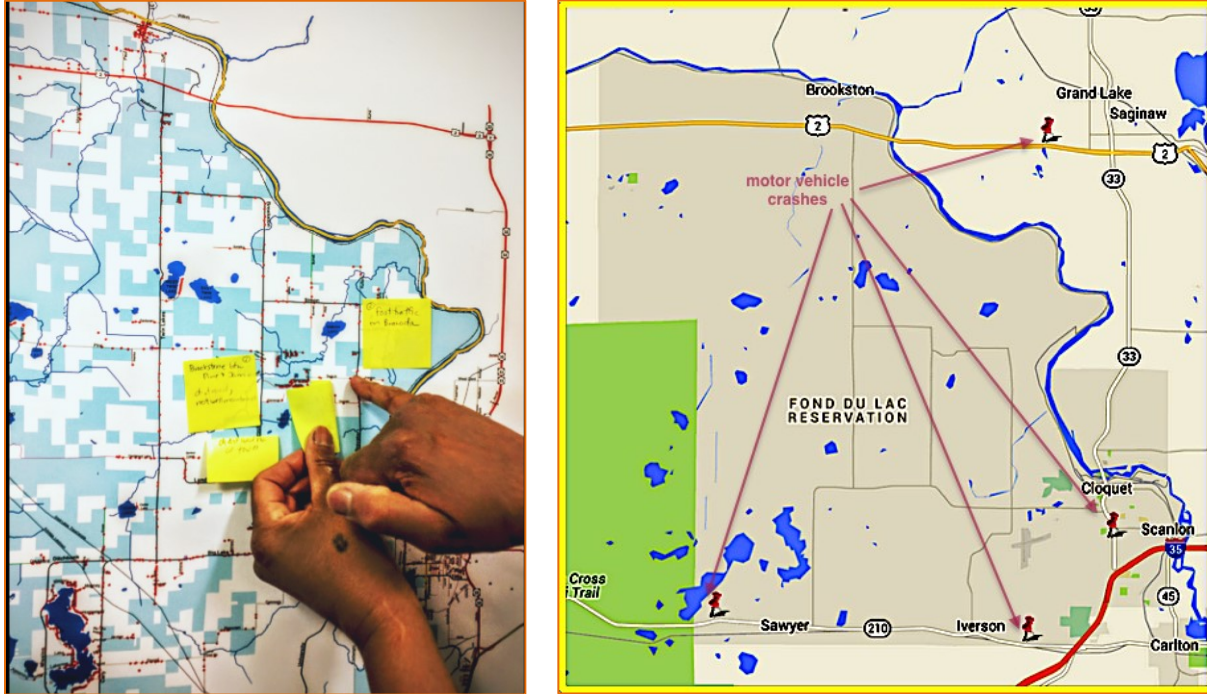


Figure 4.12 Divergent resident and crash record perspectives on the same problem: pedestrian safety

Left: Resident using map to point out areas of concern. Right: FARS data from 2011 showing a total of 3 crashes in the reservation area.

Physical road infrastructure and maintenance. Generally, the feedback on road conditions was extremely positive, with a few exceptions. We repeatedly heard key stakeholders inside and outside the tribal government, expert drivers, and residents say that there was really no difference in the roads on and off the reservation. The pattern we observed was that people with responsibility for road engineering and maintenance take great professional pride in equally applying universal standards of excellence for safety. Numerous people said some version of this:

If there wasn't a sign to tell me I was entering the reservation or street signs in Ojibwe, I don't know that anyone would notice. There isn't really any difference in how the roads are built or maintained.

[Asked if there was anything special about roadway safety on the reservation] *I don't think so.... As far as road maintenance and road condition, it's kind of the universal countywide, I guess, and citywide. [a county engineer]*

I may be blind, but there's no obvious difference in the roads as you enter the reservation. [EMS responder]

Everything looks the same.... All the roads look like relatively good shape and all the signs and traffic lights, everything else, seems to be just fine. [state patrol]

Positive feedback on infrastructure. We consistently heard very positive feedback about safety conditions and improvements in a few locations:

- Improvement to the intersection of Big Lake and Brevator Road;
- The walking and biking trails that exist or are under construction;
- I-35 and MN-210 interchange improvements in road geometry, signage, and Black Bear Casino signal;
- Bridge and road improvements on Reservation Road following St. Louis river floods (except uneven road surface on the northbound approach to the bridge that can send cars towards the ditch when it's icy);
- Improvements to Cartwright Road, especially the high-visibility stop sign where it ends at Moorhead; and
- Improvements to University Road.

Areas of concern regarding infrastructure. The most persistent concerns and complaints we heard were:

- First and foremost, the pedestrian safety concerns described above;
- Cartwright Road improvements: straight, smooth surface, more direct route, and less shelter make residents and key stakeholders concerned about increased speeding, traffic volume, and maybe snowdrift;
- Highways 210 and 2, especially as they are undivided with high speed and traffic volumes. Numerous older residents told us they are afraid to drive on these roads;
- The Highway 33 & I-35 interchange. While this is not on the reservation proper, it's worth mentioning that residents and key stakeholders frequently mentioned that they are frightened to drive in this area, even after recent engineering changes to improve safety;
- Winding roads near Big Lake, hills, poor visibility, and icy conditions. Most residents and expert drivers felt this was an inevitable consequence of the natural features of this area and had no complaints about maintenance or road engineer. They simply reported that they have to take extra care in this area, especially at night and in winter driving conditions;
- Brookston Road near the county line: potholes, unpaved area, corduroy conditions, ice and snow maintenance. Residents and expert drivers stated that they fear heading into the ditch when there are slippery winter conditions on top of this ice;
- Reservation Road on the northbound approach to the bridge. There is some unevenness where residents state they must take extra care when it is icy so that they do not go off the road or across the center line; and
- Connors' Corner is one of the places where cars go off the road in winter driving conditions.

Driver behavior. Law enforcement, emergency responders, and injury prevention specialists are acutely concerned about texting while driving. Otherwise, in our preliminary analysis, we do not find any strong and unambiguous messages regarding driver behavior and safety. The data is mixed with regards to how much speeding, driving while impaired, unlicensed driving, or the use of safety restraints are safety risks on the reservation. Nothing stands out as a difference in conditions on versus off the reservation.

When we asked whether there is anything distinctive about driving behaviors and violations on and off the reservation, law enforcement officers from the Fond du Lac Band and other jurisdictions stated that

there is not anything special or different about drivers on the reservation. We asked this question directly in every interview and there was a very consistent response that there is no difference, either in the statistics and reports or in their behavior.

Impaired driving. When we spoke with reservation residents and other enrollees at Fond du Lac community events, numerous residents told us they were concerned about impaired driving. Asked if she had concerns or suggestions about improving safety on the roads in Fond du Lac, one resident said only, “Yes. Could you see to it that all the drivers are properly licensed and sober?” Another observed, “It’s like people don’t think the law applies on the reservation, that they can drive like idiots on their ATVs where there are people all around, or just party and drive.”

However, we also noticed that some key stakeholders also seemed nervous about discussing impaired driving. Law enforcement professionals from outside jurisdictions were reluctant to speak for themselves about this at all, so we often had to ask about this in at least two different ways during interviews. They would make comments such as, “They would be the first to tell you there’s a problem with alcohol and drugs on the reservation,” and in one case one of the people we interviewed asked us to erase from our record a statement they had made about a case that seemed to involve drunk driving.

The research team wants to be very clear that we did not try to force this issue, but did attempt to follow up since there is a “conventional wisdom” explanation that the elevated rate of fatalities and severe injuries from motor vehicle crashes among American Indians is related to substance abuse. Indeed, law enforcement professionals seem to be aware there is a lot of prejudice in play that they should not unthinkingly replicate. This is how one officer put it:

I’ve heard people say American Indians are more likely to drive drunk. I have conflicting responses to that. I have spent a lot of time living in or working professionally with reservation and American Indian communities in a few different places. Yes, reservations are hurting. Yes, alcoholism is a problem. But I am not sure that is tremendously different from other populations that are hurting. I have not seen any stats to suggest that DUI and accident incidence is substantially higher on-reservation than off.

At the request of a few people in the tribal government, the researchers looked at whether there are any patterns emerging relating to speeding or impaired driving among patients or drivers traveling between the reservation and methadone clinics where people seek treatment for opiate addiction. When we asked law enforcement and emergency response specialists whether this is an emerging area of concern, they said they knew about the highway construction worker who was killed by someone impaired by methadone and could imagine this could be an issue. But, they have not seen reports to suggest it is commonplace or particularly more consequential than any other form of impairment or distraction.

Use of safety restraints. Several injury prevention professionals suggested that there is a lower rate of using seatbelts and car seats at all or properly on the reservation, but that there has been steady improvement in this. It is our impression, from discussions with several people who do car seat distribution and education in reservations around the state, that Fond du Lac is doing particularly well with documentation, education, and enforcement. The tribe’s injury prevention lead staff have been

recognized with awards from the Minnesota Toward Zero Deaths program. The Fond du Lac police department and tribal court have recently increased enforcement and penalties for not using seatbelts.

Inter-jurisdictional coordination. Generally, there was very positive feedback about coordination among the Band's planning and public works and law enforcement departments and the corresponding agencies in other jurisdictions, particularly in three areas: (1) policing; (2) public works; and (3) emergency response.

1. *Policing.* Some of the most positive feedback gathered in interviews and surveys was about the Fond du Lac Band having its own police department. The researchers heard this especially from residents and tribal government leaders, but also from other jurisdictions. The positive comments included compliments to the Fond du Lac police department for providing high levels of service, providing culturally appropriate outreach that is trusted by band members, and for affirming tribal sovereignty. Other law enforcement entities appreciated that the Fond du Lac department increases police coverage in the area, is friendly to work with, and indicated that they often check in with each other regarding PL 280 and other tribal law and sovereignty issues.
2. *Public works.* Staff of public works or transportation departments of overlapping jurisdictions mentioned that they found the Fond du Lac Band very easy and positive to work with and explained that there were projects that were prioritized because of cooperation, advocacy, funding, or other resource sharing with the band. They regarded these projects and their cooperation very positively.
3. *Emergency response.* Study participants rarely raised concerns regarding responses to accidents, the quality of emergency treatment, or coordination among jurisdictions on emergency response. It appears that this is not a problematic area, and inter-jurisdictional coordination through the Cloquet Area Fire District is working fine.

4.3 MILLE LACS BAND OF OJIBWE

4.3.1 The reservation context

The Mille Lacs Band of Ojibwe reservation is located in central Minnesota (Figure 4.2). The reservation areas are non-contiguous and comprised primarily of three districts centered around the communities of Vineland (near Onamia), McGregor, Isle, and Hinckley, Minnesota. As established in the Treaty of 1855, the land area of the reservation is approximately 61,000 acres. This study utilizes the reservation boundaries and trust lands as defined by the tribe and mapped in the Minnesota Chippewa Tribe's maps of trust lands and resources (Figure 4.13).

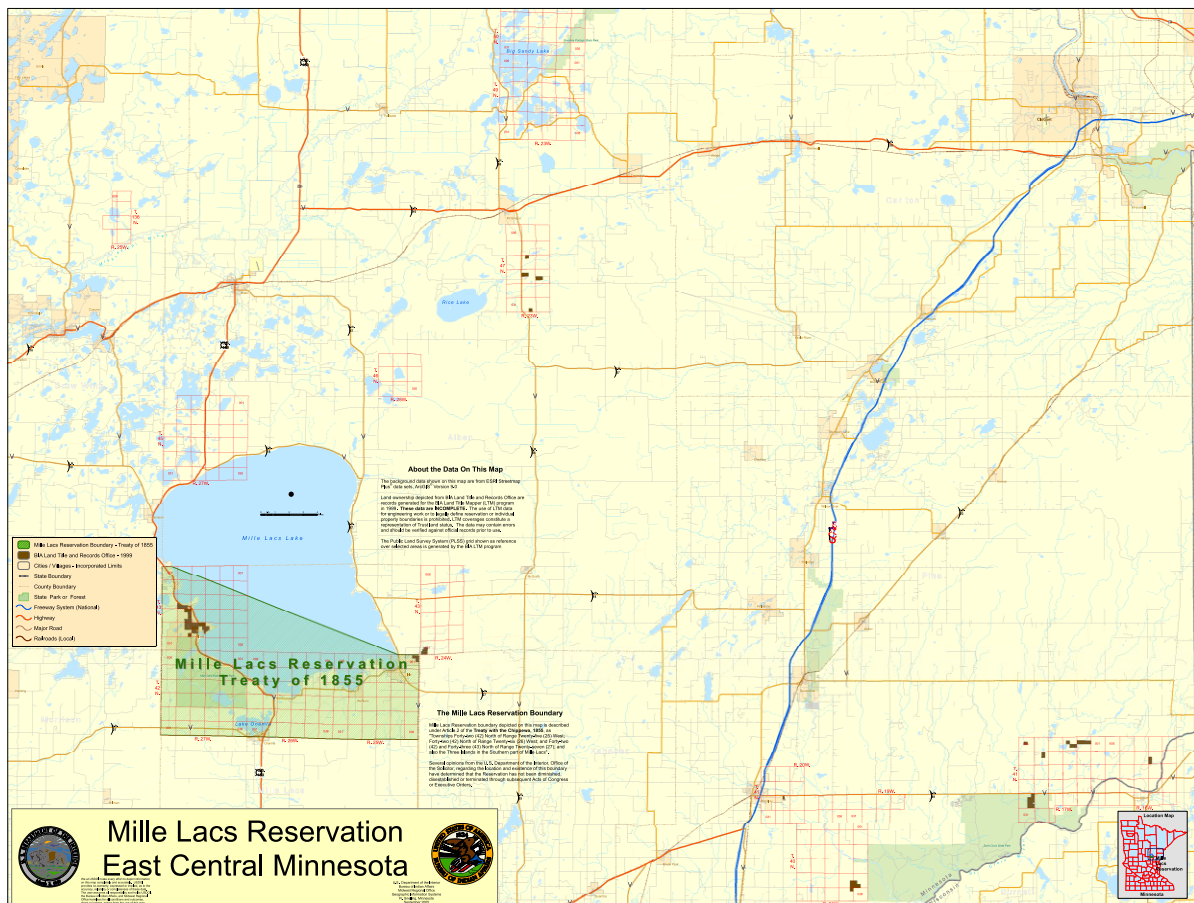


Figure 4.13 Boundaries and areas of the Mille Lacs reservation

Source: Bureau of Indian Affairs.

However, to make sense of the discussion of inter-jurisdictional arrangements, it should be noted that some other jurisdictions do not accept this full area, or the rights the tribe reserved to hunt, fish, and gather on millions of acres of ceded land. In 2004 Mille Lacs County lost a case disputing the reservation boundaries in the US Eighth Circuit Court of Appeals (Mille Lacs Band of Ojibwe, 2018), and the tribe's

exercise of its natural resource rights – especially relating to fishing and fisheries management in Lake Mille Lacs – remain hotly contested to this day (Kennedy, 2018).

The Mille Lacs Band has over 4,300 members as of 2018 (Benjamin, 2018). Approximately 2,000 – almost half – of Mille Lacs Band members live on the reservation, along with many non-Band members. For example, in the section of the reservation with the highest concentration of Band members (District I, around Vineland), just under 30% of the 4,539 residents of the area identify as American Indian or Alaska Native from any tribe (American Community Survey 5-Year Estimates, 2012-2016). Notably, the tribe employs over 4,000 employees – including many non-Band members – across the Band’s many enterprises (hotels, casinos, golf courses, banks, grocery stores, etc.) and government services (Mille Lacs Band, 2018).

4.3.2 Data sources

On 12 occasions between October 2013 and November 2016, a member of the research team spent three to ten consecutive hours on the Mille Lacs reservation conducting fieldwork, building relationships, getting to know the roads, becoming familiar with the context, doing interviews with people with key knowledge of roadway safety issues on the reservation, or participating in community events. Additional interviews were conducted by phone. In total, we interviewed 14 people with specialized knowledge and responsibility for roadway safety on the reservation, including engineers, planners, and law enforcement, 5 additional persons with those leadership responsibilities from overlapping/adjacent jurisdictions (e.g., county public works or sheriffs’ departments), 89 members of the general public, and 6 others who work on reservation roadway safety at a statewide level, including in the Mille Lacs Band lands.

Data collection in this case was done primarily with Mille Lacs Band tribal government representatives and band members living on the reservation. Due to the acute conflict between the Band and Mille Lacs County during the period of this study over coordinating law enforcement in the region, as described further below, it was not a conducive time to conduct interviews with representatives of the overlapping county governments, although a few people were willing to speak with us for deep background. As a consequence of this controversy, however, there was relatively more press coverage and discussion in the media of safety issues in this reservation than in the other case study areas, which provided some relevant data. In addition, the Band’s health department invited us to participate in four community health fairs. These were well attended and held at the community center in each district of the reservation, so we achieved good coverage with our brief surveys of residents.

4.3.3 Key safety concerns and opportunities

Pedestrian safety is a very high priority area for improving safety in the roadways in this reservation.

Minutes 1:50 to 2:45 of “Finding Solutions to Save Lives” (<https://youtu.be/fa0hp8hHvHc>) show multiple pedestrians navigating the roadways in the Mille Lacs Band reservation. This footage was captured in a single 2-hour period and demonstrates that many people are moving about on foot – even on a cold,

windy winter day – to go about their everyday business of getting to school, work, or the grocery store, to visit friends and family, and to access community services (Figure 4.14).

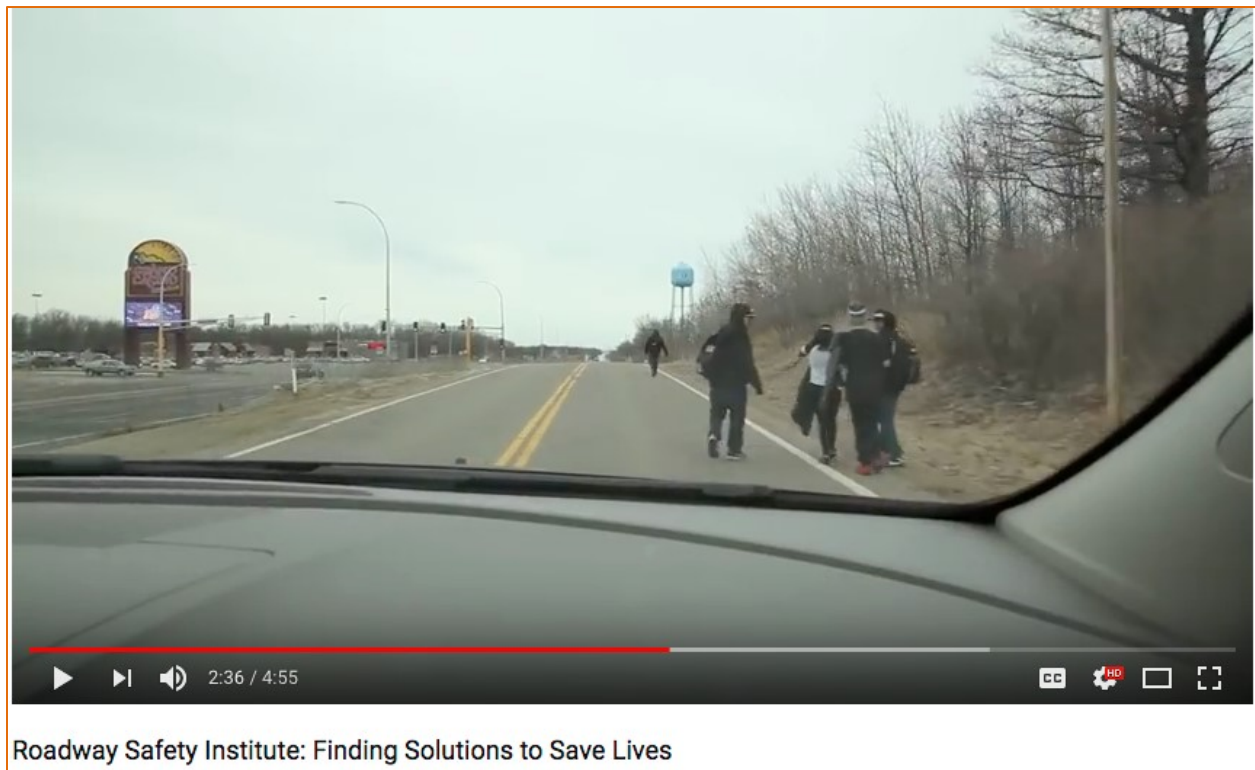


Figure 4.14 Multiple pedestrians on freeway frontage road, Mille Lacs reservation

Source: Roadway Safety Institute (2016). <https://youtu.be/fa0hp8hHvHc>

Pedestrian safety was *the* prominent concern in our interviews with key stakeholders and in our brief surveys with residents. The tribes' leaders with primary responsibility for roadway safety issues – transportation engineers, law enforcement, and health leaders involved in injury prevention and rehabilitation – repeatedly emphasized this issue, as did the reservation residents with whom we spoke at community fairs. We heard many accounts of injuries and some fatalities that people attributed in part to the lack of separate paths or adequate shoulders to protect pedestrians from traffic, poor road crossing infrastructure on busy roads, or poor visibility due to lighting or vegetation. Many described their reaction to pedestrian risk in terms of an avoidance strategy, which means they prefer and may try to avoid walking or biking except where there are trails. However, even in the absence of pedestrian trails, road crossing infrastructure, or good lighting, there are still many people moving on foot in, on, or across roadways, by choice or necessity.

The study participants very consistently pointed to two locations that particularly concerned them. One is **State Highway 169** through the main reservation area (District I) on the west side of Mille Lacs Lake. This area is sometimes referred to as Nay Ah Shing – or “the Point” – and is located north of the town of Onamia. This busy, four-lane highway runs through the middle of the reservation, separating the grocery store and the casino (a major center of employment) from a large area of housing, the high school,

government center, community recreation center, health care clinic, and assisted living facility. High-speed traffic travels on this road around the clock. State Highway 169 is one of the primary connections between the Twin Cities metropolitan area and the central part of the state, which is a popular site for second homes and for summer vacationing, boating, hunting, and fishing.

In interviews and surveys, multiple transportation safety specialists for the tribal government and many residents stated their grave concerns about the high volume of traffic during peak seasons and weekends, especially because the drivers are non-locals who would not necessarily expect to see pedestrians walking along or attempting to cross such a busy highway. During fieldwork on the reservation, the researchers frequently observed pedestrians navigating across this very busy road (Figure 4.15).



Figure 4.15 Pedestrians crossing Minnesota Highway 169, Mille Lacs reservation

Photo by Guillermo Narváez.

A law enforcement officer summarized concerns about Highway 169 like this:

Highway 169 splits the reservation, so there are tons of people walking on the frontage road or crossing the highway. We've had 5-10 pedestrian accidents in the last decade on it, including some serious ones. The top three dangerous intersections are all on 169: at Bugg Hill (the access road to one of the major housing areas) because there's a steep grade and you can easily overshoot into the highway when it's icy; at Timber Trails and 169; and at the casino entrance intersection. Drivers run that light (and can

easily take out someone). We see people crossing there on foot every day, standing in the highway median [See Figure 4.15] waiting to cross to get to the market, casino, or the movie theatre.

State Highway 65 in the East Lake reservation area is the second area of special concern for pedestrian safety. In surveys with community members at a health fair in the East Lake Community Center, which serves the Minisinaakwaang (District II) area of the reservation, and subsequent interviews with tribal government leaders, there was strong concern for band members who walk up and down this road. There is high-speed traffic, a lack of sidewalks or lighting, and a rapid drop-off from the berm to a ditch on both sides. Therefore, the band's community development department is planning for a separate pedestrian trail, with lighting and signage, along a 2-mile section of Highway 65 in this area (Figure 4.16). Mille Lacs is currently seeking resources for this improvement.



Figure 4.16 Proposed location of new pedestrian trail, Minnesota Highway 65, Mille Lacs reservation

Source: Google maps © 2014.

Divided, contentious relationship with county law enforcement. This research on roadway safety was being conducted at exactly the same time as some particularly acute stages of headline-attracting conflict over the suspension of a law enforcement agreement between the Mille Lacs County sheriff's department and the Band's police department (Benjamin, 2016)

Mille Lacs County and Band had been cooperating through a joint law enforcement agreement, but the County unilaterally severed the agreement in summer 2016 – despite the objections of the tribal government and reservation residents – stating concerns about the work of the tribal police department. The Mille Lacs Band rejects those concerns as baseless, and on the contrary, has repeatedly asserted that the break-down in law enforcement cooperation and coordination between the tribal police department and county sheriff has serious and negative consequences for the timeliness, consistency, and overall quality of public safety services, not only on the reservation but throughout the county, for native and non-native people alike. After 15 months with no resolution of the dispute, in late 2017 Minnesota Governor Mark Dayton urged the county and band to end what he described as a “public safety crisis” (Smith, 2017), but as of the writing of this report, no resolution has been reached.

Not long before Mille Lacs County cut off the policing agreement, the Department of Interior had sided in favor of the Band in the latest round of many years of efforts by Mille Lacs County to dispute the Band's ownership of land within the 1855 treaty reservation boundaries, to which the Band insists it

never ceded (Mille Lacs Band, 2018). Many have read the County's policing decision as retaliatory.⁴ There has been a long history of ups and downs in the relationships among the Mille Lacs Band of Chippewa, Mille Lacs County, and the State of Minnesota over tribal members' boundary recognition, hunting and fishing rights, law enforcement and many other issues (A. Treuer, 2012; Smith, 2017). Indeed, the Mille Lacs Band has played a prominent role nationally in advocacy for tribal sovereignty and for native hunting, fishing, and gathering rights in ceded territories through a series of precedent-setting court cases (Anderson et al., 2015; Jorgensen, 2007).

Due to this context, it was not timely for the research team to request interviews with the tribal police department or county sheriff's department. Although four individuals from tribal and county law enforcement units did agree to do background interviews, we do not have data to analyze and thus cannot draw conclusions regarding the law enforcement aspects of roadway safety in Mille Lacs. Nonetheless, it is essential to mention this context because it potentially has important consequences for roadway safety. And, it should be noted that at the same time that the band was in an unresolved dispute with Mille Lacs County, it was **strengthening** its policing coordination agreements with Pine County, which overlaps other parts of the reservation (Smith, 2017).

⁴ In the short period between the 2015 Department of Interior decision and the County's decision to sever the policing arrangement, this issue also arose in the data from a completely separate research project about public participation in infrastructure funding in Minnesota (Narváez & Quick, 2017). One of the Co-PIs on this project was told by a Mille Lacs County commissioner that the county intended to reject nearly any initiative by or cooperative arrangement with the Mille Lacs Band. This comment was made as a blanket statement, apropos of nothing in particular, without awareness of the Co-PI's involvement with the tribe on this reservation roadway safety project. This implies that an oppositional stance is a pervasive feature of Mille Lac County's relationship to anything involving the Band government or reservation area.

4.4 LEECH LAKE BAND OF OJIBWE

4.4.1 The reservation context

The Leech Lake Band of Ojibwe reservation is located in northern Minnesota (Figure 4.2). The reservation boundaries encompass a contiguous area of 1,350 square miles (Figure 4.17). The 11 communities of Leech Lake Band members are dispersed widely over this very large area, in the city of Cass Lake (which is also tribal headquarters) and villages of Ball Club, Bena, Cass River (also known as Pennington), Inger, Onigum, Mission, Smokey Point (including Kego Lake and Boy Lake), Sugar Point, Oak Point, and S. Lake (Leech Lake Band, 2018).

As of 2015, the Leech Lake Band had 9,509 enrolled members, approximately half of whom lived on the reservation (Leech Lake Band, 2018). Approximately 4-5% of land within the reservation boundaries remains in tribal ownership (Figure 1.2), the smallest percentage of tribal land control among the six members of the Minnesota Chippewa Tribes. Over half of the land is in the ownership of other government entities, including county, state, and federal governments. In fact, 75% of the US Forest Service's National Chippewa Forest lies within the reservation (Leech Lake Band, 2018). The reservation intersects with four counties: Beltrami, Cass, Hubbard, and Itasca (Leech Lake Band, 2018).

With national forests and three large lakes in this particular area of the "North Woods," the land and water within the Leech Lake reservation are popular destinations for tourists and Twin Cities residents who have cabins in the region. American Indian people – of any tribal affiliation – comprise about 46% of all residents of the Band's reservation and trust lands, a smaller number than the 51% of the total 10,660 residents who identify as White alone (American Community Survey 5-Year Estimates, 2012-2016).

These three features – the diffusion of band members and dilution of tribal land ownership over this large area; the rural, wooded landscape; and the strong presence of non-American Indian residents, businesses, and seasonal tourists – impact roadway safety in several ways. Many band members travel long distances to access the centers of activity for the tribe in Cass Lake (e.g., the schools, Indian Health Services clinic and hospital, and services, entertainment, and employment in the government offices and casino). Many roads have the same roadway safety risks as other rural roadways of the state. And, much of the property is owned by non-native people – owners of private cabins, resorts and other tourism-related businesses, the US Forest Service – who have representation and influence through other jurisdictions overlapping the reservation. Thus, even if the Leech Lake Band police department were sufficiently resourced with people and equipment to cover this large area, it is not certain that non-tribal members would recognize their authority.

4.4.2 Data sources

On 17 occasions between October 2013 and July 2018, a member of the research team spent three to ten consecutive hours on the Leech Lake reservation conducting fieldwork, getting to know the roads,



Figure 4.17 Leech Lake reservation communities and boundaries

Source: Ryan Anderson, using source data from the Leech Lake Band of Ojibwe, Minnesota Department of Transportation, and Bureau of Indian Affairs. Downloaded from Leech Lake Band website May 1, 2018.

becoming familiar with the context, doing interviews with people with key knowledge of roadway safety issues on the reservation, or tabling at community events. A total of 18 interviews were conducted with tribal, county, or state government leaders with responsibilities for some aspect of roadway safety in the reservation. In addition, on the encouragement of staff of the tribal government, we tabled at pow wows in Cass Lake and in Onigum, where we spoke with 25 members of the general public. While we

interacted with a relatively small number of reservation residents (in comparison with the other reservation case studies), these interviews tended to be longer and more in-depth, with four of the 25 people each speaking with us for over 30 minutes regarding their roadway safety concerns.

4.4.3 Key safety concerns and opportunities

Positive feedback on roadway safety improvements. Tribal government leaders (across transportation, law enforcement, and public health), reservation residents, and coordinating government agencies (county governments, the school district, Indian Health Service facility, and Minnesota Department of Transportation) all praised a number of recent engineering improvements, described below. They are particularly positive about completed or planned improvements to US-2, the US-2 and MN-371 intersection, the US-2 and Cass County 75 intersection, re-engineering of Mission Road, and pedestrian/bike trail connections with the Cass Lake Middle School/Cass Lake-Bena High School complex.

Pedestrian safety. Transportation safety experts with extensive knowledge of Leech Lake repeatedly emphasized pedestrian safety risks as their most distinctive and strongest concern about roadway safety in this reservation. As they emphasized, people move around the reservation on foot a lot, because of preference, long traditions or habits of walking between villages, or lack of access to vehicles or transit. When asked if there was anything distinctive about the reservation relative to the rest of the region, people commented:

It's not an urban area, but there are pedestrians like an urban area. [comment made by the county engineer of an overlapping county]

I see lots of people walking along the road or in the bike trail, but if there is no bike trail they will walk in the road. [reservation resident]

You should use a crosswalk to cross the road, but there isn't always one available. [reservation resident]

Residents expressed special concern for children's safety. When we tabled at pow wows, two residents made pointed comments about a double standard that seems to prioritize protection of tourists over local, reservation residents:

I live in Pennington. About 20 kids cross the road to get to and from the playground all of the time. It must be about five times a day that we hear [car] horns, or sometimes tires squealing, because kids are crossing the road. Up the road where the tourist resorts are, there are Kids at Play signs, but none for our kids. I called the county to ask for them, and they said, "If you want signs, put them up yourself."

Why are there "Kids playing" signs as you approach resorts, but none around rez housing?

United States Highway 2 (US-2). US-2 is a very busy, four-lane highway with a posted speed limit of 65 mph just outside the city limits of Cass Lake. There are four areas of concern along US-2, mostly relating

to pedestrians: 1) between Cass Lake and Bena; 2) in Cass Lake at the intersection of US-2 and MN-371; 3) in Cass Lake where US-2 runs between the Cass Lake-Bena Elementary School (south side) and the tribal headquarters (north side); and 4) in Cass Lake at the intersection of US-2 and Cass County 75.

1. *Cass Lake to Bena 18-mile stretch.* Bena (one of the major residential areas of Leech Lake Band members) and Cass Lake (the largest town on the reservation, location of the tribal government headquarters, one of the elementary schools and the junior and senior high serving most tribal members, grocery stores, and hospital) are 18 miles apart. Study participants reported and the researchers observed that people often set out on foot to travel between Bena and Cass Lake, walking along the berm of MN-2 (near Bena) or along a regional bike path that parallels it for a short distance near Cass Lake. These comments are typical of the feedback from people who stopped at the researchers' table at the Labor Day pow wow to discuss their roadway safety concerns:

Recently I moved away, but I always noticed, and I still do when I come back, how many people are walking in town and between Bena and Cass Lake. I worry about them being protected from traffic, especially in town and also west of Bena on the highway.

I drive between Cass Lake and Bena almost every day [on US-2]. Where there are conifers [evergreen trees], the road is shaded and it's always very icy. I love trees. I'm a tree hugger, but something needs to be done here. Someone did lose their life there in an accident where it was icy. The road is getting better with improvements made recently, like turning lanes, and road widening, and removing some trees, but they need to remove more trees right up close to the road.

Drivers passing by often offer rides to people walking along US-2, which reinforces the pedestrians' desire to walk close to the highway. Indeed, the tribe's police department told us that they make a point of regularly patrolling this stretch of highway in winter to protect pedestrians from extended exposure to very cold temperatures.

2. *Intersection of US-2 and MN-371.* There is particularly high pedestrian movement right around the intersection of US-2 and MN-371. MN-371 was recently widened to 4 lanes for much of its length to accommodate a heavy volume of people that use it as the major north-south route for traveling between the Twin Cities metro region and cabins and recreation in the Leech Lake region. MN-371 effectively ends at this intersection (because traffic north of the intersection is almost entirely local), meaning that almost all traffic traveling northbound on MN-371 turns through the intersection onto US-2 (Figure 4.18).

While there is a traffic light at the MN-371 and US-2 intersection, pedestrians are still in danger here. There is heavy foot traffic here because this is the location of the closest grocery store to residential areas, the town of Cass Lake, and many of the tribal service centers (e.g., the hospital and tribal government offices), yet there are no crosswalks and the traffic island in the middle is not designed as a pedestrian refuge.

The Leech Lake Band is building a new casino facility at the northwest corner of this intersection, which will likely increase both vehicular and foot traffic through this intersection. As the Leech Lake transportation department leadership recognizes, this presents both potential risks and positive opportunities for improvements in vehicular and pedestrian safety. The final configuration for the roadway improvements are not yet decided, but one proposal under discussion is to improve sidewalk facilities along MN-371, at least as far north as the new casino and as far south as the railroad crossing to the south of the intersection. The data collected throughout this case study strongly indicate that improving pedestrian safety in this area is an exceptionally high priority.



Figure 4.18 Pedestrian in busy intersection of US-2 and MN-371, Cass Lake

Source: Guillermo Narváez.

3. *US-2 by Cass Lake-Bena Elementary School.* While there have been many improvements made to safe routes to school elsewhere on the reservation (as detailed below), there is particular concern about pedestrian movement across US-2 near the Cass Lake-Bena Elementary School. The school is immediately south of US-2, across the highway from several popular businesses (e.g., Dairy Queen) and two key tribal government offices (the Leech Lake government headquarters and the housing authority). During interviews with tribal officials, school staff, and residents, we repeatedly heard that young children are discouraged from walking to and from the school because of the extremely heavy, high-speed truck and car traffic on US-2, and the school district does provide bus service for them. Nonetheless, there are multiple, well-worn footpaths across the grassy, median strip of US-2 where older youth, school employees, and other residents regularly cross (Figure 4.19).

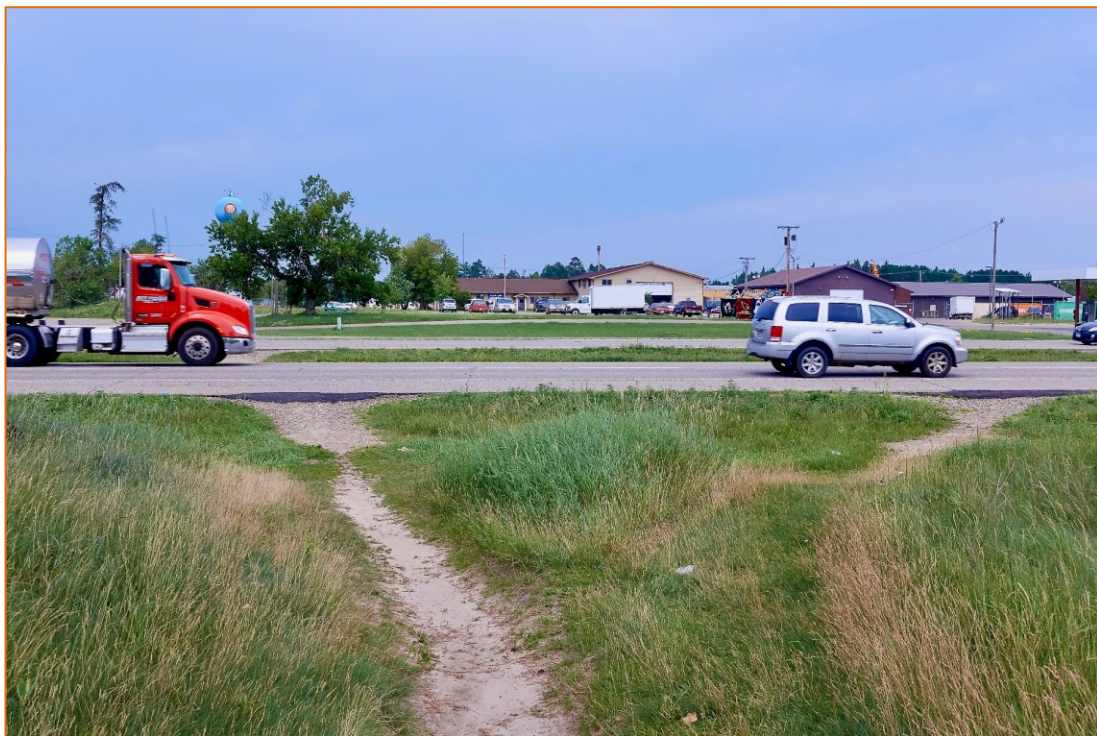


Figure 4.19 Multiple pedestrian footpaths across dangerous stretch of US-2, Cass Lake.
Sources: Google © 2018 (top); Guillermo Narváez (bottom).

The pedestrian improvements proposed for the area around the intersection of US-2 and MN-371 are 0.4 miles east of this stretch of US-2. Because it is unlikely that people would walk an additional 0.8 miles to cross move between destinations just across US-2 from each other, additional measures may be needed specifically in this area to improve pedestrian safety.

4. *Intersection of US-2 and Cass County 75.* Study participants also expressed acute concern about pedestrians crossing US-2 to get back and forth between the center of town (south side, location of grocery store, schools) and the Leech Lake tribal college and the current location of the Palace Casino (north of US-2 and CR 75). When we tabled at a pow wow in the pow wow grounds between the Palace Casino and the Leech Lake Tribal College, multiple reservation residents mentioned that there had been serious pedestrian accidents, including a fatality, along this stretch of CR 75. They were somewhat reassured by a new pedestrian and biking trail that parallels part of this section of CR 75, although they were also concerned that it was on the opposite side of CR 75 from the school and casino and did not go as far north as the casino.

However, they remained especially concerned about people getting to and from CR 75 across Minnesota Highway 2. This was also a prominent concern of transportation engineers and public safety professionals from the tribe, county, and state of Minnesota, during interviews. The Band's tribal roads director, Art Chase, had previously identified US-2 and CR75 as a "sustained crash location" (Chosa, 2018).

Fortunately, the Band and Minnesota Department of Transportation successfully collaborated to create a reduced conflict intersection, which includes turning lanes on US-2 and a J-turn configuration to prevent vehicles crossing US-2 directly at this intersection (Chosa, 2018). These are promising safety improvements but concern remains regarding pedestrians moving on foot between town and the school and casino, which are major centers of employment and activity.

Safe Routes to School. The Leech Lake tribal government, School District, and Leech Lake Community College have been emphasizing safe walking and cycling routes to school. They have made several exciting infrastructure improvements in the last several years. Residents who participated in brief surveys at community events, expert drivers who travel the area extensively, and leaders of the tribal government and school district consistently name this as a success and priority for continuing improvement. The three main points regarding safe routes to school, are: (1) the serious consequences for students of closing schools in winter; (2) praise for improvements and inter-jurisdictional cooperation on pedestrian/bicycle connection improvements to the middle and high school complex; and (3) the aforementioned concerns about pedestrians crossing US-2 by the Cass Lake-Bena Elementary School.

Serious consequences of closing schools in winter. An important feature of safe routes to school is winter roadway access and safety under snow and ice conditions. Schools everywhere are not only educators but daytime caretakers for children. In Leech Lake, the vast majority of students in the public schools qualify for free or reduced lunches, and thus the schools' care for the whole child has another level of significance. School district and tribal government leaders worry that many children may be hungry or

cold at home if schools must be closed because roads are not passable due to winter weather conditions. Fortunately, there have been no bus accidents in winter driving conditions. However, the district covers a large area and is dependent upon multiple local governments to sustain attention to clearing snow promptly and managing cleared roads to minimize ice from low temperatures and roadway shading in these forested areas. Policy-makers and road maintenance managers for other jurisdictions need to keep at the top of their minds the particular consequences of school closure for these students.

Cass Lake-Bena Elementary School. The serious, unresolved concerns about pedestrian safety for employees, parents, and children crossing US-2 are discussed above (Figure 4.19).

Cass Lake Middle School and Cass Lake-Bena High School campuses. In 2015, the Cass Lake-Bena School District Board adopted a Safe Routes to School plan to encourage youths to walk or bicycle safely to the middle and high school south of Cass Lake, which serve most each Lake Band students of this age.

Many youths were already using the Heartland State Trail to travel between the town of Cass Lake and school (Figure 4.20). The Heartland Trail is a long-distance bike and pedestrian trail that is part of the statewide trail system. The segment which runs parallel to MN-371 between Cass Lake and the school district was created and is maintained through collaboration between the tribe, school district, Minnesota Department of Natural Resources,



Figure 4.20 Students using Heartland Trail to get to school

Source: Cass Lake-Bena School District (2015).



Figure 4.21 Extension of bike/pedestrian trail into school

Source: Guillermo Narváez.

MnDOT, Cass County, City of Cass Lake, and Pike Township.

However, until recently there was not a continuous sidewalk or bike path for students to travel the final 0.4 miles between the Heartland Trail and the middle school and high school buildings. Before and after school, pedestrians and cyclists were sharing a crowded, narrow road into the school campuses with buses, employees, young drivers, and parents dropping children off. Happy with walkers' and cyclists' physical activity but concerned for their safety in the final approach to the school, the Cass Lake-Bena School District (2015) conducted a community walking audit of this area. It resulted in the creation of a beautiful, protected path to the school as well as other improvements to signage and traffic circulation (Figure 4.21).

Cooperation with local governments. Leech Lake overlaps with parts of four counties. Not surprisingly, the Band's relationships with the public works, emergency response, and law enforcement units of the respective counties are variable. In some cases, there is little interaction, for example because there are few Leech Lake Band members residing in that county. In other cases, there is a strong or improving relationship. Examples of positive collaborations to produce mutually desired outcomes include:

1. *Safe routes to school improvements.* The positive outcomes of cooperation between the school district, tribal government, MnDOT, Cass County, and Pike township to improve bike and pedestrian facilities to access the middle and high school campuses, were just described.
2. *Law enforcement cooperation.* The sheriff's departments of all four counties cooperated with the Band's police department in 2017 to disrupt illegal drug activity on the reservation, which contributes to addiction and has other community impacts, including impaired driving (*Bemidji Pioneer Staff, 2018*).
3. *Mission Road improvements.* This Beltrami County road was a very high priority to reengineer due to sharp corners, steep shoulders, and trees close to the road, and thus the risk – and indeed the history – of severe injury. The Mission community, one of the major housing areas for tribe members is along the road, and traffic to and from this area was unusually heavy for a rural area. The tribe identified it as the worst Beltrami County road, and while Beltrami County does not rank its roads, the county transportation department agreed that the road was dangerous because it was narrow and had sharp curves with trees. The tribe had a strong desire for a wider road because many

Table 4.1 Mission Road: Features of a success story of inter-jurisdictional cooperation

- The roadway safety danger was high and compelling to both parties.
- Both parties were willing to prioritize the project and commit resources.
- The two parties were mutually dependent on one another to assemble funding for engineering and construction, labor, and property owners' permissions.
- Both parties faced a shared obstacle – getting property owners' or federal agency permission to proceed – that they resolved by cooperating.
- The design was modified to respect tribal members' values, e.g. to protect trees.

Leech Lake community members walked along the road, and there had been pedestrian fatalities on a nearby road (County Road 75, near the Palace Casino). Thus, improving Mission Road was a high priority for both Beltrami County commissioners and Leech Lake Band tribal leadership (Table 4.1).

Even so, it took years to complete the project, primarily because the allotment system and resulting checkerboard of land ownership (explained in Chapter 1.3) meant that there were hundreds of property owners to work with on right of way arrangements. One project participant explained the challenges and their solution this way:

There could be 300 people who owned a part of that parcel; you have to make an effort to get the signature of everyone not just for allotment but for noticing, permission to enter land to survey, etc. [The tribal government] went door to door, we all had a community meeting on site, and we made some design changes to satisfy people living there, such as a curb and gutter instead of ditches, and a heavy-duty fence instead of a guardrail at a curve, so we didn't have to remove so many trees. But, you'll never get 300 people to say yes, so this was primarily to get to the point of being able to get BIA [Bureau of Indian Affairs] to agree that the project is for a public benefit, that we'd done lots of outreach, and waive the requirement that we literally hear back from enough of those people. Normally the county would make that request to BIA because it's a county road, but the tribe handled it.

Both Band and county leadership stated in interviews that \$1 million in funding from the tribal government and the tribe's advocacy "pushed the project to the top" of the county's road



Figure 4.22 Mission Road engineering and signage improvements, Leech Lake reservation

Photo by Guillermo Narváez.

construction and improvement list. The finished project features rumble strips, curve and chevron signage to warn drivers of the sharp turn, and straightening to reduce the risk of off-road crashes at curves (Figure 4.22).

Driver behavior concerns include impairment and non-resident drivers. Data from Leech Lake exemplify the difficulty of finding patterns in study participants' responses to questions about impairment and driver behavior. Their statements about whether impairment is – or is not – a particular problem on the reservation were sometimes directly in conflict with one another:

It doesn't change much, between the reservation and off the reservation. We get issues with speeding across the whole area and impaired driving across the whole area. [Law enforcement professional of county overlapping the reservation]

I'm concerned about drunk driving. I see it a lot. [Researcher: Are there any particular places or times where you see it?] *I would prefer not to say.* [Leech Lake enrolled member who resides on reservation]

We saw more people driving while impaired – not necessarily alcohol, it might have been drugs – than I've ever seen in other areas. [Road construction professional, talking about a recent experience doing road work on the reservation]

Making assumptions about impairment is a feature of racial profiling of American Indians. Thus, many study respondents took great care not to overstate or exaggerate, possibly sometimes erring on the side of understanding their concerns. Generally, the question of impairment among racial minorities probably qualifies as a “nervous area of government” (Gooden, 2015) which people are reluctant to discuss. Our analysis is neither the data cannot be trusted nor that there clearly is or is not a problem; rather we recognize that the data must be interpreted within this very sensitive context.

On the other hand, there was a high level of consistency in concerns about non-residents driving on the reservation. As mentioned, there are many second homes (e.g., hunting cabins, lakeside vacation homes, etc.), hotels, and rental properties in the area. Consequently, there are regular influxes of people coming through reservation communities who do not know the area. On top of the typical roadway risks they expect in rural and wooded areas – poor visibility, narrow shoulders, or deer and other animals on the road – they typically do *not* expect to find so many pedestrians on the road. As the quotations above from reservation residents about pedestrian safety attest, visitors are often cued to drive carefully through resort areas because vacationers may be crossing the road. The reservation residents who participated in this study are concerned for the safety of children in reservation communities, and resent that there are not more signs to warn drivers to be aware of and protect American Indian children.

CHAPTER 5: KEY FINDINGS AND RECOMMENDATIONS

This research has generated new sources of data and provided important insights to address the unusually high rates of MVC fatalities and injuries among American Indians. Very little prior research has focused on roadway safety in reservations, which – as home to 22% of American Indians – is a significant context for understanding the roadway safety risks for this population.

The contributions of the study are:

- **Identification of high-priority reservation roadway safety concerns.** Analysis of the case study and national survey data indicate five key areas – *pedestrian safety, road engineering and repair, reckless driving (not necessarily due to impairment), seatbelt and car seat use, and inter-jurisdictional coordination* – as described in the recommendations below (Chapters 5.1-5.5).
- **Inter-agency coordination needs:** Case study and survey data strongly indicate the vital importance of high-quality coordination between tribes and federal, state, and local governments in reservations. This is the first study to investigate the positive – or negative – consequences for reservation roadway safety and resource efficiency of cooperative, complementary, or divisive relationships among these entities.
- **Data generation through qualitative methodologies:** This study developed and modeled qualitative research methods that create new data sources and facilitate in-depth analysis and problem-solving in particular reservations (Chapter 2, Appendices A-C). They emphasize the perspectives of people with the most direct, informed knowledge of reservation conditions. (Additional empirical and methodological research development needs are summarized in Section 5.6).

In this final chapter, we recap the key findings related to the research questions driving this study:

1. What are the key sources of roadway safety risk in reservations, according to people with direct knowledge of and responsibility for reservation roadway safety?
2. What is distinctive about roadway safety in reservations, if anything, relative to other areas?
3. How are relationships among agencies with overlapping responsibility for roadway safety in reservations affecting safety?
4. How can roadway safety in reservations be improved?

In the following sections, we state findings that are consistent across multiple sources, including previously published literature, national statistics, these case studies, and the national survey. We also identify the key concerns and recommend policies, programs, or resources to reduce roadway injuries and fatalities in reservations. The key concerns and recommendations are summarized in Chapter 5.7.

Before presenting findings from the data about the key sources of roadway safety risk in reservations, and what (if anything) is distinctive about reservations, we need to recall an unspoken factor: *pervasive*,

systemic poverty and isolation in reservations, which threaten driver safety. Paradoxically, these dynamics are such a strong feature of reservation life that they often escape explicit mention by study participants. Poverty and isolation have multiple implications for roadway safety. To name a few, reservation residents have long drives to access employment, education, or services. Reservations often, though not always, are rural, meaning they have the same elevated roadway safety risks – e.g., poor visibility, wildlife, or slippery conditions – as other rural areas. With higher rates of poverty, fewer residents have access to vehicles in good repair. These features interact to elevate injury risk.

5.1 PEDESTRIAN SAFETY IS A CRITICAL, DISTINCTIVE, AND UNDER-RECOGNIZED PRIORITY

The data from all sources are unequivocal that pedestrian safety is a critical, distinctive, and under-recognized priority in reservations. We have extensive data from interviews and brief surveys with hundreds of people with intimate knowledge of four reservations in Minnesota, as well as 75 days of observations during on-site fieldwork in reservations. In all four case studies, everyday roadway users (residents and expert drivers) and tribal government leaders from all “4E” sectors (engineering, enforcement, education, and emergency response) repeatedly stated, in response to open-ended questions, that pedestrian safety was their greatest concern and priority. Furthermore, the data clearly establish that in reservation communities many people move around on foot by necessity and preference and that pedestrian safety is the **single most distinctive feature of reservations**, relative to rural areas more generally. Dozens of study respondents, safety experts and laypeople alike, make statements to the effect that the big difference between roadways in reservation and non-reservation areas is the number of people walking.

Similarly, in the national survey of tribes, “inadequate pedestrian facilities” was the fourth most frequently identified concern – among over a dozen possibilities – by the 150 tribal government respondents. In contrast, non-reservation residents – for example, local government, state, or federal agency staff – were less likely to name pedestrian safety as a particular concern, even when asked directly about it. Our interpretation of these data is that they lack familiarity with reservation contexts. While it may be true that pedestrian fatalities do not turn up with notably high frequency in crash reports and statistics, which would be the lens that most outsiders have into reservation contexts, the data from the ground is unequivocal about the level of perceived risk to pedestrians and the self-protective behaviors that residents use to manage the risks (e.g., not allowing children to walk or bike on the roads).

Thus, **pedestrian safety** is the answer to the first and second research questions. It is a key source of roadway safety risk in reservations, according to people with direct knowledge of and responsibility for reservation roadway safety. And, it is a distinctive feature of roadway safety in reservations when compared to roadway safety generally in rural areas.

This is a novel and important finding of this study. While there has been relatively little previously published research to suggest that pedestrian safety is a particular concern in reservations, the overwhelming prominence and consistency of this issue in the case studies and national survey indicate

that pedestrian safety is a priority. In addition to the accident risks, there is another public health implication of this finding: there is a paradoxical tension between encouraging people to walk, jog, or bicycle for health and recreation, and lacking the infrastructure for people to do so safely. Walking is not going away, nor should it. ***Infrastructure investment, signage, enforcement, and education to protect pedestrians in reservations is extremely important.***

5.2 ROAD ENGINEERING AND REPAIR NEED SUSTAINED RESOURCES.

In the case study data, road quality does not appear as a key concern for roadway safety. In fact, the most consistent assertion made across the four study sites – by engineers for tribal governments and other agencies – is that they see no particular difference at all in roadway engineering, off and on reservations. Public works professionals who are responsible for county, city, or state road systems that are partly inside reservations seem to take great pride in a high degree of quality and consistency in roadway engineering of county and state roads, regardless of location. This is a positive practice and value to sustain, for the purposes of both roadway safety and equity.

Conversely, In the national survey, ***road quality engineering and repair are very high priorities for both tribes and states.*** Asked to identify their top three priorities for reservation roadway safety from a long set of options, the single most frequently selected item among the 150 respondents from tribal governments was road infrastructure (curves, ditches, lighting, and surface conditions), while the third most frequently selected was road maintenance. The fact that road quality engineering and repair is an extremely high priority concern among tribes nationwide indicates the continuing importance of federal and state programs to fund roadway infrastructure improvements and repair in American Indian reservations.

5.3 IMPAIRED DRIVING MUST NOT BE ASSUMED TO BE “THE” EXPLANATION.

The case study and national survey data strongly confirm that ***enforcement and education to reduce reckless driving are high priorities.*** In the national survey of tribal governments, reckless driving – speeding, impaired driving, and distracted driving – was the single most frequently raised concern among tribal government respondents. This indicates that continuing investment in injury prevention programs, roadway safety enforcement, and public health campaigns – including the Safety Circuit Rider program – remain critically important.

Similarly, the case study data are strong and unambiguous about another form of impairment, namely ***driving while distracted by texts and other cell phone use.*** Reservation residents, expert drivers, and law enforcement officers in all four case studies repeatedly stated their acute concern about the dangers of this particular driver behavior, which they observe increasingly more frequently in their reservations.

These findings challenge prior research and conventional wisdom in two ways. First, the finding about cell phone use is novel; while this relatively new phenomenon is an increasingly recognized roadway

safety issue generally in the United States, to our knowledge, no research has been done in reservation environments, and this implies a need for additional study.

Second, this research **challenges commonplace assumptions and understandings about drinking and driving or drug use** as an explanation for American Indian mortality rates. Discussions about impaired driving were complicated in this study, as they would be in any research on the question of roadway safety and American Indian drivers. On the one hand, many people with no little or no experience of reservation contexts confidently told members of our research team, “Drunk driving must be the explanation” for high rates of MVC among American Indians. Yet, they seemed to have no data or experience that would ground them to make a conclusion, one way or the other, about the presence or absence of impaired driving and its effects in reservations.

Fortunately, many other people are well aware of the context of prejudice that has given rise to and made use of damaging stereotypes about American Indians and alcoholism (Trimble, 1988). This awareness made many participants in interviews and in-person surveys not only cautious to avoid overstating issues, but seemingly reticent to discuss the issue at all. Because impaired driving is implicated in negative profiling of American Indians, like other areas of race and policy, it is what Gooden (2015) describes as a “nervous area of government.” To be clear, as scholars and authors of this interpretation, we are neither saying that these data are “contaminated” nor that they can be read with a particular conclusion about impairment and reservation roadway safety. Rather, the data must be interpreted with this highly charged context in mind. In a future paper, we expect to revisit the data on impairment in much greater depth to illuminate these nuances. For now, the conclusion we reach is: **impaired driving must not be assumed to be “the” explanation for high fatalities among American Indians or in reservations.**

5.4 EDUCATION AND ENFORCEMENT TO INCREASE SEATBELT USE ARE ESSENTIAL.

The literature identifies the incomplete use of safety restraints – not using seatbelts or child safety restraints, or not installing and using them properly – as key explanations for the high rates of fatality and severe injury among American Indians nationwide. This study is not designed to determine whether or not people do or do not use seatbelts and car seats regularly and properly in reservations. That kind of question is better addressed through a quantitative research approach involving a statistically significant, randomly selected sample of reservation populations that would be representative in terms of gender, age, and household composition. Nonetheless, these data do reveal some important trends.

The national survey of tribes confirms that **improving seatbelt and car seat use is a high priority.** Combined, seatbelt use and proper use of child seats are the third most frequent response to a survey question asking respondents to select their top three priorities from a menu of safety concerns. In addition, of the 150 respondents, 22 named seatbelt use and 8 named child seat use in response to an open-ended question about their major roadway safety concerns.

Seatbelt and child safety restraint use was *not*, however, a commonly identified, high-priority concern in the data from our case studies, which is why there is little discussion of this question in the case study

write-ups. An injury prevention expert in one case study site sadly shared an observation that many child safety seats seemed to be thrown away without being used very much. In contrast, the Fond du Lac reservation has won statewide “Toward Zero Death” awards for its work in Minnesota and is well recognized for its active and successful injury prevention efforts to improve access to and use of child safety restraints. In other settings the injury prevention specialists were cautiously optimistic because, over a series of periodic roadside surveys of seatbelt and restraint use among passing cars, their data indicated increasing rates of use. In the Leech Lake reservation, the tribe’s self-described “car seat lady” is accustomed to being flagged down in grocery store parking lots and elsewhere while she is out in the community by families who ask her to check their car seats. The positive examples from the case studies **reinforce the importance of having a steady, familiar, trusted person or group work persistently on these issues on the reservation**. This indicates that continuing investment in injury prevention programs, roadway safety enforcement, and public health campaigns – including the Safety Circuit Rider program – remain critically important.

5.5 TRIBES NEED BETTER COOPERATION WITH LOCAL, STATE, AND FEDERAL AGENCIES.

Previous research hinted that coordination problems among jurisdictions might impede enforcement, road engineering and maintenance, and record-keeping to identify and address key roadway safety concerns (Fleisher et al., 2016), and that productive collaboration is valuable for reducing motor vehicle fatalities in reservations (Letourneau & Crump, 2016). However, little empirical research has been done on tribal governments and inter-jurisdictional cooperation around any policy concern (Ronquillo, 2011), and roadway safety is no exception. Therefore, we included a third research question: How are relationships among agencies with overlapping responsibility for roadway safety in reservations affecting safety? The answer, based on analysis of the case studies and national survey data, is that **the quality of relationships among different functional areas (e.g. engineering, enforcement, education, EMS) and among different units of government (e.g., tribe, state, and county) is critically important for addressing roadway safety concerns**. The data confirm hunches that tribal governments find these relationships important and that there are serious gaps and barriers in these relationships. Analysis of the data also points to two specific areas for improvement.

5.5.1 Need 1: Address mismatched perceptions of ground conditions through improved data quality and sharing and an expansion of knowledge sources.

The gold standard for most roadway safety planning is crash data. Problems with crash data quality, completeness, and sharing between tribes and other jurisdictions are a frequent topic of national technical assistance programs and studies of traffic safety in reservations. In this study, one of the prominent, consistent patterns in the national survey of state transportation agencies is that state agencies have a great appetite for improving connections for data sharing to support analysis and problem-solving around shared goals. Responses from state agencies also indicate that they recognize that tribes need more resources to have the capacity to document, share, and analyze data.

However, when we turn to the case study data, we find patterns that suggest that ***longstanding concerns about roadway safety data need to be revisited so that other ways of knowing and kinds of data are shared and valued***. In the case study data, there is a strong mismatch of perceptions of roadway safety risks between tribal government employees and reservation residents (on the one hand) and state or county governments (on the other hand), particularly relating to pedestrian safety. We find a strong pattern of acute concern about pedestrians expressed by people with on-the-ground knowledge, compared with inattentiveness of safety experts outside the reservation to pedestrian concerns (Chapter 4). For example, the failure of state database users to recognize pedestrian risks that were patently obvious to dozens of residents of the Fond du Lac reservation – as depicted in Figure 4.12 – suggests that the “data problem” is not just a matter of making on-reservation crashes visible to safety engineers and policy makers through traditional data sets.

Rather, the solution also involves paying more attention and respect to the expert, local knowledge and informed judgment of people with intimate familiarity of the conditions on the ground. While crash data is very informative, it is limited in a few ways. First, in rural areas the crash counts may not be very high (fortunately), so problems do not stand out the same way that they might in areas with higher traffic volume. In addition, crash statistics are records of what has already happened *and* been reported, not about near misses and strategies people use to avoid risk. These records do not reveal behaviors that people use to manage what they interpret as safety risks, such as where or when they do not drive or walk when it is icy, after dark, etc. Notably, one of the key areas left out of crash reporting is the strategies people use to avoid harm as pedestrians.

The data collection resources developed in this project are useful for tribal governments as well as researchers. Data quality, quantity, and access are well-recognized concerns in reservation roadway safety management. The tools laid out in Chapter 2 and Appendices A-C were developed to fill some of the gaps. They involve doing qualitative interviews with key stakeholders and a simple community survey method using maps to gather residents’ knowledge of local road safety hazards. These methods can be used by tribal governments and others to prepare Tribal Safety Plans, identify focal areas for Road Safety Audits, and improve transportation and safety policies and implementation. These new methods offer three advantages: 1) they generate new types of data to address data limitations; 2) complement data on accidents and fatalities that have already occurred with local knowledge of road conditions and other risks; and 3) facilitate collaboration among tribal, county, state, and federal entities. As this research demonstrates, these data collection methods support the discovery of new insights on key safety risks in American Indian reservations, particularly relating to pedestrian and bicyclist safety, policy design and implementation, and inter-agency collaboration.

5.5.2 Need 2: Improve coordination for resource sharing, planning, and implementation, especially for infrastructure and enforcement.

The case studies demonstrate that coordination among overlapping jurisdictions with some scope of responsibility for roadway safety within the reservation boundary (tribal, township, city, county, state, and federal) is consequential. For example, it matters a great deal whether the relationship among

county and tribal public works departments, tribal and township road maintenance crews, or tribal police and county sheriff's departments, is cooperative, complementary, or divisive. The case studies reveal examples of both positive, synergist relationships (e.g., between the Leech Lake Band of Ojibwe and Beltrami County and the Minnesota Department of Transportation for road and pedestrian infrastructure improvements) and antagonistic, damaging relationships (e.g., the breakdown of cooperation between the Mille Lacs Band police department and Mille Lacs County sheriff's department).

It is not productive to recommend a single set of best practices to improve relationships. As the case studies demonstrate, the situated context of each tribal government, community, and reservation is important. For example, law enforcement relationships are complex. In some reservations, tribes defend strongly their sovereignty and self-determination and find that it is vital for mutual trust and safety to have their community members interact with tribal police department officers, and thus do not welcome engagement from other law enforcement entities. In other reservations, the tribal police departments and other law enforcement units collaborate to accomplish synergetic responses to shared concerns. However, both the case study data and states' responses to the national survey imply a need for: 1) more education of state employees to understand and recognize sovereignty and tribes' special status in consultation arrangements; and 2) more resources so that tribes can have the capacity to document, share, and analyze data.

5.6 SUSTAIN AND EXPAND RESEARCH ON RESERVATION ROADWAY SAFETY.

Sustain additional research on the three research questions of this initial study. This study has produced new findings relating to the three research questions, regarding the key roadway safety risks in reservations, what distinguishes roadway safety in reservations from other areas, and the current conditions of inter-jurisdictional cooperation for roadway safety in reservations. These questions have rarely been explored, and thus much more research is needed in all of these areas.

This study also points to the need to expand research into several additional areas:

1. ***Study the effectiveness of roadway safety improvement interventions through empirical research in collaboration with tribes.*** This study gathered informed perspectives from key stakeholders regarding roadway safety risks. It is also important to study their assessments of whether, what, and how well different policies and programs work, especially those involving behavior. For example, reservation leaders and residents would have invaluable insights about how effective different efforts to improve safety belt and car seat use actually are, and whether the keys to success (or barriers) are resource availability, attitudes, and/or enforcement.
2. ***Apply the qualitative methods introduced here and continue developing qualitative approaches to roadway safety in reservations.*** In this project, we elaborated research methods that have not previously been utilized to study sources of roadway safety risk in reservations. These qualitative methods provide a valuable complement to equally important and more commonplace approaches of performing statistical and geospatial analysis of crash data.

Qualitative methods are especially well-suited to analyzing people’s perceptions, values, and preferences, which are essential kinds of data for understanding how people interpret and respond to risk and thus for mobilizing positive behavioral and organizational changes to improve safety. In addition, through emphasizing the perspectives of people with the most direct, informed knowledge of reservation conditions, these methods begin to address the ethical, empirical, and methodological problem that there is a paucity of American Indian scholars’ voices and community voices in prior research about roadway safety issues in reservations.

3. ***Expand research on emergency management systems (EMS), because inadequate EMS response is a priority concern of people with the greatest knowledge and interest in roadway safety on reservations.*** Analysis of the national survey of tribes, performed toward the end of this study, found that 18% of the 150 tribal government respondents identified “slow emergency response time” when asked to name the top three sources of roadway safety risk on their reservations. The California Tribal Road Safety Data Project has gathered similar data (Ragland, 2016). Emergency response barriers *may* include condition of the roadway, access and connectivity to remote areas, long travel times to trauma centers, and poor address and mapping data for emergency dispatch (Miller & Killia, 2017). Case study data in this project is not well developed on the topic of EMS, but the existing data imply that the presence of Indian Health Service (IHS) facilities on the reservation and coordination among EMS agencies may improve responses.

However, no systematic research has been done to identify what the EMS problem is. To identify EMS issues and inform effective interventions, additional research combining geospatial analysis, MVC data, and qualitative methods is needed. Therefore, the authors of this report are now launching a new study on this topic. In 2018, we will issue a national survey of tribal governments and other entities involved in EMS response in reservations, followed up with a set of interviews (clustering 4-5 different entities each in 4-5 regions of the country) to triangulate different organizational perspectives on the nature of the EMS response problem and possible solutions.

5.7 SUMMARY OF KEY CONCERNS AND RECOMMENDATIONS

1. ***The data from all sources are unequivocal that pedestrian safety is a critical, distinctive, and under-recognized priority in reservations.*** Pedestrian safety was the most frequently named concern in all case study data, while “inadequate pedestrian facilities” was the fourth most frequently identified concern – among over a dozen possibilities – by the 150 tribal government respondents to the national survey. Furthermore, pedestrian safety was consistently named as the single most distinctive feature of roadway safety in reservations, relative to rural areas more generally. This is a novel and important finding of this study; there has been relatively little prior research indicating this is a particular concern. Infrastructure investment, signage, enforcement, and education to protect pedestrians in reservations is extremely important (Chapter 5.1).

2. **Road engineering and repair need sustained resources.** The national survey data indicate that road quality engineering and repair are high priorities for both tribes and states, indicating the continuing importance of federal and state programs to fund this work. The case study data indicate that public works professionals take great pride in a high degree of quality and consistency in roadway engineering of county and state roads, regardless of location, which is positive for both safety and equity (Chapter 5.2).
3. **Impaired driving must not be assumed to be “the” explanation.** The case study and national survey data strongly confirm that enforcement and education to reduce reckless driving are high priorities. The case study data strongly indicate great concern about driving while distracted by texts and other cell phone use. They also challenge common assumptions about drinking and driving or drug use as an explanation for American Indian mortality rates (Chapter 5.3).
4. **Education and enforcement to increase seatbelt use are essential.** The national survey of tribes confirms that improving seatbelt and car seat use is a high priority. Positive examples from the case studies reinforce the importance of having a steady, familiar, trusted person or group work persistently on these issues on the reservation (Chapter 5.4).
5. **Tribes need better cooperation with local, state, and federal agencies.** Two needs in particular stand out: 1) Addressing mismatched perceptions of ground conditions through improved data quality and sharing and an expansion of knowledge sources; and 2) improving coordination for resource sharing, planning, and implementation, especially for infrastructure and enforcement (Chapter 5.5).
6. **Further research is needed** to improve reservation roadway safety, particularly to evaluate roadway safety implementation in reservations with tribes; advance qualitative methods and expand qualitative data sources; and assess emergency response quality in reservations (Chapter 5.6).

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APPENDIX A

KEY STAKEHOLDERS TO CONSULT ON SAFETY CONCERNS AND PRIORITIES

Typology of Key Stakeholders to consult on safety concerns and priorities. This is an ideal typology, which is not always implemented due to partners' preferences or time constraints. The case studies in this research project are shown as an illustration.

	<i>Red Lake</i>	<i>Fond du Lac</i>	<i>Mille Lacs</i>	<i>Leech Lake</i>
1. Interested reservation residents	Yes (n=76)	Yes (n=30)	Yes (n= 89)	Yes (n= 25)
2. Road & Safety Experts				
Road Construction and Maintenance	X	X	X	X
Planning Department	X	X	X	X
Police Department (chief, highway safety officer)	X	X	X	X
Car Seat & Injury Prevention leaders	X	X		X
EMS and Emergency Room		X		X
Executive Director and/or Tribal Council member	X	X		
Drivers' education teachers				
3. Expert drivers				
Transit service	X	X		X
Propane delivery		X		
School bus drivers	X	X		X
Road/snow crews	X	X		
Casino shuttle drivers				X
Home health care/visiting nurses			X	
4. Related Jurisdictions				
County public works department	X	X		X
City engineer	NA	X		NA
MNDOT regional staff	X	X	X	X
County sheriff	X	X	X	X
US Forest Service	NA	NA	NA	X
5. Centers of Activity				
Casino		X		X
Schools	X	X		X
Other community centers	X	X	X	

APPENDIX B

INTERVIEW PROTOCOL

Questions for Interviews with Key Stakeholders, including script (list of questions) and tips for the interviewer. This is for use with transportation, safety, injury prevention, and emergency medical service professionals. Estimated time: 40-75 minutes

Question or script	Purpose/notes
Introduction	
Thanks for making the time! Ice-breaker (for example, make connection w/previous interactions or w/network that provided introduction).	Purpose: Warm-up Interview tip: <ul style="list-style-type: none"> • Address questions and concerns regarding interview, confidentiality, etc.
General background on participant’s role/agency	
What is your affiliation and current role? How is your agency/your role related to reservation roadway safety?	Purpose: Gather context of their comments and ideas Interview tip: <ul style="list-style-type: none"> • It is not important to go into a lot of depth here. It is good to move through this fairly quickly.
Nature/extent of roadway safety risk	
How would you describe roadway safety issues on the reservation? <i>Either:</i> For example, is roadway safety a problem? If so, how big of a problem is it? <i>Or:</i> You work on a lot of issues. How important is roadway safety, among all of those areas? I am not asking because I am going to judge you or try to talk you into making it more important. I am asking so that I understand the whole context of what you work in, to be sure I am not over-estimating the importance of this issue.	Purpose: Gather their expertise and point of view on safety risks. Interviewing tips: <ul style="list-style-type: none"> • These are open-ended questions. Do not lead! An example of leading would be, “So this is not really a big deal here, right?” A better option would be, “Would you say this is a big problem, or not really?” • If you are hearing very general statements, ask them “What are the signs that you see of that problem?” • Listen for different ways of describing issues. Some people will share statistics, others general impressions, and other stories. All of these are important forms of information.
Hazard identification and sources	
What are the major risks or hazards for roadway safety on the reservation? We’re interested in what seems to be causing the problems you have observed and in whatever concerns or other hunches you have about transportation risks that might be a problem.	Purpose: Tapping their expertise to uncover key areas that need attention and their theories about root causes. Interview tips: <ul style="list-style-type: none"> • If necessary, prompt them to talk specifically about their area and experience. Discourage them from talking in generalities and redirect them to talk about what they do or observe on the reservation.

Question or script	Purpose/notes
	<ul style="list-style-type: none"> Avoid leading. It is important to get their perspectives on what the top causes are. However, once they have answered the question, follow up to explore all of the “4Es” (engineering, education & driver behavior, enforcement of highway safety, and emergency medical services). For example, say “I don’t believe I heard you mention ____.” Then stop and give them time to think, without rushing them.
Management and coordination suggestions	
<p>What are you <u>most</u> interested in doing to improve safety? Maybe you are most interested in continuing to do something that is working very well, maybe there is something you would like to get started, or maybe there is something you wish that another agency would do. We’re interested in all of those areas, depending on what seems most important to you.</p> <p>What do you wish other agencies or jurisdictions would start doing, or do more of, for you to be successful with your road safety efforts?</p>	<p>Purpose: Tapping their strategic and problem-solving wisdom. Identifying inter-jurisdictional coordination issues.</p> <p>Interview tips:</p> <ul style="list-style-type: none"> If you or they are running out of time, offer to come back to this another time. Skip ahead to wrap up questions. After they have responded, if they did not mention it, ask what would need to happen for them to accomplish their “wish list” or address those priorities. Listen for all kinds of ideas, such as: more money, better data, political support, training, stronger cooperation with other entities, etc. Also listen to what kinds of partners (real or hoped for) they mention, ex. roads department, transit providers, EMS, etc.
Wrap-up	
<p>We’re getting close to the end of our time. I really appreciate you sharing your ideas with us. I want to make sure I’ve captured what is most important to you about safety on the reservation. So, I’d like to invite you to summarize the 1 or 2 “take aways” that you want to be sure we understand from all that we’ve been discussing.</p> <p>Your perspectives are valuable. We are interested in talking with a range of people with different perspectives and useful insights. Can you suggest other people that we should contact?</p>	<p>Interview tips:</p> <ul style="list-style-type: none"> This should be quick. Ask them to summarize in 1-2 sentences, if they need help to keep it short. Get the contact information for other people, if possible. Clarify whether it is or is <i>not</i> okay to mention this person suggested it.

APPENDIX C

GUIDE TO DIALOGUES WITH EXPERT DRIVERS AND INTERESTED RESIDENTS

This is to be done with a large-scale, detailed map of the reservation road system, plus either many small, inexpensive photocopies that you can mark up with their feedback, or the use of “post-it” type stickies that you place on the map as they talk, photograph, and then remove so that the next person has a clean slate on which to comment. Plan on short conversations (approximately two to ten minutes each) with interested reservation residents. With expert drivers, it is often good to do this with more than one driver at a time (e.g., a few school bus drivers), and plan on 25-45 minutes to give them lots of time to think about and share their very detailed knowledge of the roads.

Question	Interviewing tips
1. What are your ideas or concerns about being safe on the roads on the reservation?	If they need help to get started, ask this all as a set and then let them choose the priorities. Are there places where you often see pedestrians or bicyclists? Deer on the road? Dangerous curves? Icy spots? Speeding?
2. What do you think about the conditions of the roads that you frequent on the reservation?	<p><u>Important note:</u> The map is just a conversation starter! It is also an easy way to record information about hotspots. However, do not worry about turning all of the input into a spatially specific idea. For example, if a person says, “We need Kids at Play signs in all of the residential areas, because kids play in the street a lot,” or “I don’t see enough police out to enforce speeding,” that is useful, general input. Even if your expertise tells you that street lighting would be better than a “Kids at Play” sign, for example, this is important as a suggestion that something needs to be done to protect children on the street.</p>
3. What would you tell someone who is not from here, or a young person who is biking to school or just learning to drive, about being safe on the roads?	
4. Are there places or times that you avoid traveling on the roads, or if you have to go you really don’t like to, or you take a lot of extra care? Where and when? Why?	