

Journal of Rural and Community Development

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Citation:

Shinstine, D., Denzer, A., & Ksaibati, K. (2015). Livability and transportation on Indian reservations. *The Journal of Rural and Community Development*, 10(2), 21-34.



Publisher: Rural Development Institute, Brandon University.

Editor: Dr. Doug Ramsey

Open Access Policy:

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Livability and Transportation on Indian Reservations

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Abstract

Few resources exist that address the livability and sustainability of rural and Tribal communities. In order to improve transportation safety and other transportation issues in these communities, they need programs that meet their specific needs and culture and the ability to sustain these programs. This paper identifies the many programs that address livability and sustainability. It identifies the challenges Tribes face in providing opportunities and quality living options. This paper endeavors to identify a framework for transportation strategies to give rural and Tribal communities the tools for increased livability. Each Tribe has different goals and priorities that would affect how they define livability. Transportation is a large factor in improving quality of life and economic opportunities in rural and Tribal communities. Roadway safety is a primary goal among Native Americans in their efforts to improve life among their people with high fatality rates among their young people which is attributed to crashes due to alcohol, lack of seatbelt use, speeding and roadway conditions.

Keywords: Livability, Indian reservations, transportation, safety, rural

1.0 Introduction

As American Indian tribes in the United States struggle with addressing their transportation safety concerns with high crash rates and roadway fatalities, roadway safety and the expansion of safe and secure transportation facilities becomes a quality of life issue. Transportation safety and mobility are key elements of livability on Tribal lands. These issues should be considered along with the cultural and specific needs of the individual tribes when developing a livability program for Indian reservations.

Because American Indian Nations are sovereign, they have a right to self-governance and to protect their heritage. However, they typically have limited resources to manage the vast responsibilities needed to provide their people with quality transportation infrastructure and services. Much of their transportation infrastructure is a complex network of tribal roads, state and US highways and other local roads. These roads are usually minimally maintained and they must rely on the state and federal agencies as well as local governments to obtain the support needed to improve these facilities. The tribes have their own unique needs and concerns that do not necessarily fit the frame of requirements for other localities set forth by the federal government.

The objective of this paper is to explore the concept of livability in the context of Tribal Lands. It will discuss challenges that are encountered when applying principles of livability to the specific conditions and needs of Tribal culture. Examples of successful programs are discussed on how tribes have overcome these challenges and how tribes can partner with other agencies to obtain sustainability of their programs that address these concerns. Finally, a case study is presented introducing a methodology to assist tribes in creating their own definition of livability and developing a livability program that addresses their specific needs and concerns.

2.0 Literature Review

2.1 Livability

The concept of livability emerged in the 1980s as planners and designers examined the effects of current practices. Urban centers were deteriorating, suburbs were continuing to spread farther from the urban centers — creating their own problems, and rural communities were being neglected and becoming totally dependent on vehicular travel. Integrating transportation, land use, housing and environmental issues became the focus of community and urban design (Federal Highway Administration, 2010). Many studies questioned the traditional model and identified the need for sustainable growth as it relates to jobs, transportation and housing. Economic, environmental and social issues became the foundations of smart growth.

The Livable Communities Initiative was established during the Clinton-Gore administration so that the federal government could work with communities to help them sustain prosperity and expand economic opportunity, enhance the quality of life, and build a stronger sense of community (Clinton-Gore Administration, 2000). Under this initiative, the Federal Transit Administration formalized efforts to expand transit and transit oriented development (TOD) by publishing *Building Livable Communities with Transit* (FHWA, 2010).

Livability can be difficult to define. The concept “does not come packaged in a single accepted definition” (Godschalk 2004); and consensus is lacking among government agencies. However, most definitions include transportation, community and quality of life (Young & Hermanson, 2012).

In the context of transportation engineering, U.S. Department of Transportation (US DOT) Secretary Ray LaHood defined livability as, “Livability means being able take your kids to school, go to work, see a doctor, drop by the grocery or post office, go out to dinner and a movie, and play with your kids at the park—all without having to get in your car” (US DOT). This definition does not necessarily address the broad spectrum of what different communities consider important. However it includes the key elements of transportation, community and quality of life.

The Interagency Partnership for Sustainable Communities was formed in June 2009 between the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA). These agencies joined together to help communities across the country improve access to affordable housing, increase transportation options, and lower transportation costs while protecting the environment.

They developed six livability principles as the foundation of their partnership (HUD, USDOT, & EPA, n.d.):

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate policies and leverage investment.
- Value communities and neighborhoods.

Since the formation of the partnership, many communities have adopted livability goals that are defined by these six principles. This has helped agencies and communities find common ground when working together to plan and build their communities.

The Federal Highway Administration (FHWA) works within the Interagency Partnership to coordinate and leverage policies and investments. According to the FHWA, livability is defined as “tying the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, quality schools, and safety streets and roads” (FHWA, 2010).

2.2 Sustainability

In 1987 the United Nations’ Report of the World Commission on Environment and Development identified the need for sustainability stating their concern “about the accelerating deterioration of the human environment and natural resources and the consequences of that deterioration for economic and social development” (Department of Economic and Social Affairs, 1987). In other words, the commission is saying that we need to look at being able to meet the needs of the current generation without compromising the ability to meet the needs of future generations.

This concept takes into account the social, economic, and environmental quality of life issues, which is also referred to as the triple bottom line. According to this model, sustainability can only be achieved by considering the impact on all three of these aspects of quality living. It serves well as a compass for communities when determining their development needs.

In simpler terms, a livable community is expected to survive at its defined quality of life through self-supporting strategies that will sustain for future generations. Applying these principles to transportation takes on various forms depending on the specific needs and concerns of the community. Typically, more and affordable transportation choices are needed. Transportation decisions which are made based on the triple bottom line will provide for a more comprehensive cost-effective transportation system that actually meets the needs of the community.

2.3 Livability Programs and Initiatives

There is not one all-encompassing program that provides direction or guidance to planners and engineers for the development of livable communities (Young & Hermanson, 2012). Several programs and initiatives have emerged as a result of government and community organizations recognizing the need to change how we address growth and transportation needs. Some common programs and initiatives that are being utilized by communities to achieve their livability goals and sustainability strategies include:

- Smart Growth
- New Urbanism
- Transit-Oriented Development
- Complete Streets
- Lifelong Communities
- Safe Routes to School
- Context Sensitive Solutions & Design
- Placemaking
- Leadership in Energy and Environmental Design

Smart growth planners generally seek compact urban patterns, revitalization, infill development, and less automobile dependence (Godschalk, 2004). New Urbanism proposes principles for development, including the promotion public space, mixed-use neighborhoods, and historic preservation (Calthrope & Fulton, 2001). The Federal Transit Administration (FTA) defines TOD as “compact, mixed-use development near transit facilities and high-quality walking environments” (Federal Transit Administration). Complete streets policies provide consistency for roadways to be planned and designed for use by everyone whether pedestrians, bicyclists, public transportation, and for people of all ages and abilities (Smart Growth America, 2010). Lifelong communities programs adopt livability principles to provide for the needs of the aging population (Young & Hermanson, 2012). Safe Routes to School is a federally funded program designed to promote walking and biking to school for primary and middle school children (FHWA, 2013). Context Sensitive Solutions (CSS) has its roots in the National Environmental Policy Act passed in 1969 which requires that transportation agencies are to consider the impacts of roadway construction on the environment. Placemaking is a targeted approach to achieve livability goals through collaboration with the citizens and stakeholders of a particular community (Young & Hermanson, 2012). The U.S. Green Building Council developed the Leadership in Energy and Environmental Design for Neighborhood Development (LEED-ND) for local governments to be able to include livability and sustainability principles into their local plans, codes, and policies to incorporate national standards for green planning and design (US Green Building Council, 2013).

All of these programs are built on the principles of livability which improve the social quality of life, economic growth and environmental preservation. They provide a means to implement sustainable strategies. All have a transportation element. For most, transportation is the main focus of improving livability.

3.0 Livability Applications

3.1 Urban Areas

Many of the programs described above were developed for urban communities and work well to address problems of urban sprawl such as traffic congestion, run down and abandoned neighborhoods and city centers. Much of the work that has been accomplished focusses on urban communities and the re-development of these densely populated areas incorporating transit and multi-modal transportation modes.

Cities are investing in revitalizing these areas and addressing the transportation needs. Transportation initiatives such as ride sharing, tele-commuting, and enhancement of public transportation and complete streets initiatives are transforming these cities to livable, sustainable communities.

3.2 Rural Areas

Rural communities are more challenging to address because higher density may not be achievable, and the needs vary greatly from one community to the next. One rural community could be heavily influenced by tourism where another may be comprised of farmlands and be driven by agriculture.

Rural America makes up about 16 percent of the country's population and covers 75 percent of the land area. It includes towns and small cities, as well as working lands, farms, prairies, forests, and rangelands (Partnership for Sustainable Communities & USDA, 2011). The geographic challenges alone, call for a whole different perspective on livability. Small towns struggle to attract business so their citizens are forced many times to travel long distances to quality shopping and other necessary services. Their town centers no longer have the life and character that at one time made them a great place to live. Many small towns were built adjacent to some type of transportation hub—whether a river, railroad or major highway—in order to transport agricultural goods or natural resources.

What does livability and sustainability mean to these communities? How can they address the problems they face with better transportation options, mobility and accessibility? Typically, rural communities lack transportation choices and must rely heavily on personal vehicles. This can be a problem for elderly, disabled or financially disadvantaged. Also, requiring people to drive frequently or for long distances affects their quality of life in time and fuel expense and is an adverse impact on the environment.

Many of the challenges in transportation choices could be addressed by enhancing town centers, providing inter-city public transportation and safe travel ways for bicycles along rural networks. Additionally, rural communities struggle with attracting business. The lack of diverse shopping and entertainment choices requires citizens to travel in personal vehicles to larger metropolitan communities to obtain these choices. Ideally these small towns wish to stay small and provide their citizens with quality services. Most of these communities struggle with lack of resources.

3.3 Tribal Lands

Tribal lands have their own unique challenges with livability and sustainability. Many reservations are rural in nature and face many of the same struggles as other rural communities. They too, like so many of their rural counterparts, suffer from

lack of resources. They are sovereign nations and do not fall under the jurisdiction of the respective states. Their governments are typically small and the several responsibilities are distributed among a few individuals. A tribe will rarely have its own planners, engineers and public works department. They must rely heavily on a variety of outside sources. The Bureau of Indian Affairs (BIA), Tribal Technical Assistance Program (TTAP), Local Assistance Programs (LTAP), the Federal Highway Administration (FHWA) and state agencies are among the many agencies that can provide the tribes with assistance in addressing their development and transportation needs.

In order for them to address their livability concerns, collaborative efforts are necessary to provide them with the resources needed. With all the programs and initiative available, having partners with state, federal and other local governments is key to successfully implementing programs to improve their transportation options, preserve the natural beauty of their lands and improve the quality of life among their people.

4.0 Tribal Challenges

4.1 Sovereignty and Jurisdiction

Relations between the U.S. government and American Indian Tribes have evolved over the past 200 years. Changes in these relationships were a result of the different approaches the government took at the time to address the current situation. Six time periods define these changes which started with the Formative period from 1780 to 1825 and includes the current period of Self-Determination that started in 1961 (Hamilton, 2000). The Tribal Transportation Program (TTP) was established in 1983 through a Memorandum of Agreement between the BIA and FHWA. This program is intended to address the transportation needs of the Tribes across the U.S. and provide safe and adequate transportation on these public roads (FHWA).

Since the 1960s, the U.S. government has worked to increase tribal self-determination, giving the tribes more power to decide their own direction on transportation issues. This is a shift from the direction the government had been taking concerning tribal sovereignty. From the early days of the "Agreements between Equals" in the late eighteenth and early nineteenth century the notion was to endeavor to assimilate rather than allow self-determination. Building trust between the Tribes and the government is key to this success.

On reservations, the roadway system is typically made up of Indian Reservation Roads, State and US highways, and local roads owned by counties and townships. The management of these facilities varies from tribe to tribe but all have to work with the different agencies (NCHRP, 2007). The cross jurisdictional network makes it sometimes difficult for Tribes to prioritize their roadway improvements.

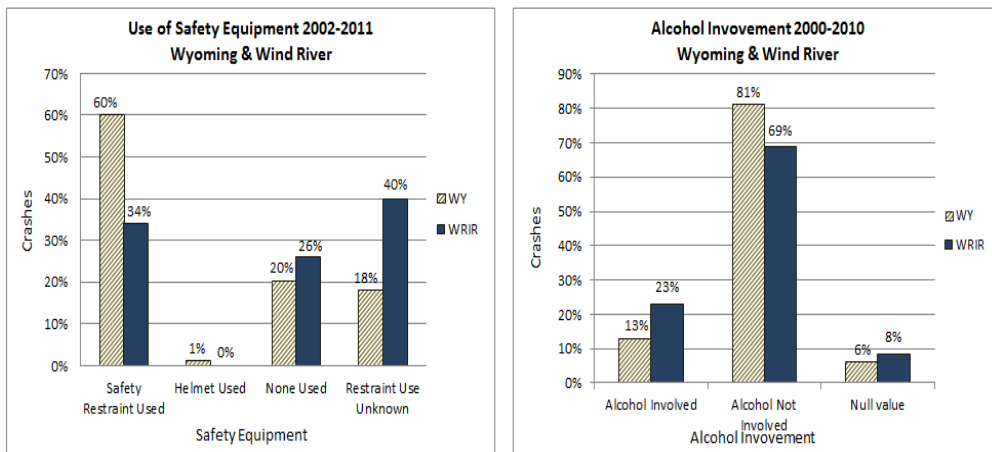
4.2 Demographics and Traffic Safety

Traffic safety is a great concern for Tribes. They have recognized the need to reduce the fatal crashes that they experience. According to the Centers for Disease Control (CDC), Injuries are the leading cause of death for American Indians and Alaskan natives up to age 44 and motor vehicle crashes are the leading cause of unintentional injury for them. The motor vehicle-related death rate is more than twice that of whites. Low seat belt use, low child safety seat use and alcohol impaired driving are

the major risk factors found among American Indians and Alaskan natives (Centers for Disease Control and Prevention, 2012). These risk factors have been identified as priority safety concerns at the National Tribal Transportation Safety Summits (Herbel & Kleiner, 2010).

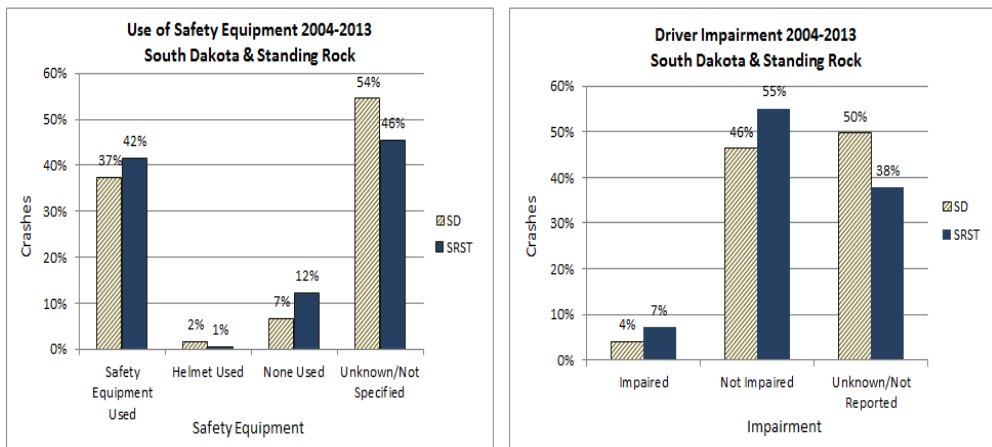
As an example of what the Tribes base their concerns on, crash data was reviewed for two reservations, Wind River Indian Reservation (WRIR) in Wyoming and Standing Rock Sioux Tribe (SRST) reservation in South Dakota (Shinstine & Ksaibati, 2013) (Shinstine & Ksaibati, 2015). On the WRIR, crash data showed that safety equipment was used in 34 percent of crashes and 26 percent of crashes no safety equipment was used. Twenty-three percent of the crashes involved alcohol. Figure 1 illustrates the comparisons of safety equipment use and alcohol involvement between the WRIR and the state of Wyoming.

Figure 1. Crash Trend Comparisons between WRIR and Wyoming.



On the SRST, the crash data showed that safety equipment was used in 42 percent of crashes and 12 percent of crashes no safety equipment was used. The driver was impaired in 7 percent of crashes on the reservation. Figure 2 illustrates the comparisons of safety equipment use and driver impairment between SRST and South Dakota.

Figure 2. Crash Trend Comparisons between SRST and South Dakota.



4.3 Geographic

Like many rural communities, reservations are typically remote and members must travel great distances to places of employment, health and social services, and shopping. Many times, there is not a center to the community but it is dispersed throughout the reservations. The rural setting of reservations is uniquely different from typical rural America. The community is often spread apart with forest and rangeland between where people live, where they work, and where they go for groceries or health care or other services.

4.4 Transportation Needs

With disconnected communities, Tribal members find it hard to get around. As in rural communities, reliance on personal vehicles is essential. On reservations, many residents do not drive or own a vehicle (Barry, n.d.). Without transportation options, this presents a major concern, especially for the elderly or disabled. The elderly and disabled do not have adequate access to needed services. Additionally, for younger Tribal members, immobility tends to create social problems. It has been documented that Indian reservations typically have a high rate of unemployment, high poverty level and lower educational achievement with the resulting social problems that follow these characteristics (Massey & Blevins, 1999).

Walking is a significant part of their culture but they lack adequate facilities for pedestrians. Rural highways are not conducive to pedestrian traffic. Vehicles are travelling at high speeds, the roadways lack adequate shoulders and refuge areas, and they are not well lit at night. However, Native Americans will use them for foot travel without concern for their personal safety.

A system of public transportation should be incorporated into a livability development and transportation plan. Of course the major challenge is to obtain the resources to sustain one. In order to sustain a public transportation system it requires planning, leadership, cooperation, training, and multiple funding sources (Stoddard, Sampson, Cahoon, Schauer, Southern, & Almeida, 2012).

5.0 Tribal Opportunities

Each tribe has its own identity with its own culture and they are committed to keeping their culture alive and pass their traditions on to the next generation. They have a strong sense of community and the elders take responsibility for the wellbeing of those communities.

Although there are many solutions for Tribal livability due to the diversity of those communities, there are many commonalities that are shared among the Tribes. To some degree, it may be easier for Tribes to define livability for their community than most other rural communities. Each Tribe already has a sense of community and its members generally share the same values. By focusing on the core needs and cultural values of each Tribe, specific livability principles can be identified for implementation.

Four types of transportation initiatives for livability in Tribal Nations are offered based on examples that have been implemented successfully. These include regional planning, rural transit system, pedestrian safety plans, and roadway safety plans.

5.1 Regional Planning

In order to integrate housing, land use, economic, transportation infrastructure, many stakeholders are involved that hold varying perspectives of priorities for the community. Regional planning becomes critical for Tribal communities because of the multi-jurisdictional issues that must be addressed when planning development.

For example, the Oglala Lakota Tribe at the Pine Ridge Reservation in South Dakota has led the way in developing a Regional Plan for Sustainable Development for the Pine Ridge Indian Reservation (HUD). With no planning office and limited resources, they have set out to collaborate with several agencies to develop such a plan. They received a grant from HUD for this effort. This plan is built on the livability principles established by the Interagency Partnership for Sustainable Communities and includes strategies for economic development, improved housing opportunities for their residents, leveraging federal policies and investments and ultimately strengthening their cultural heritage.

This effort enabled collaboration between the local partners who are all supported by a private firm who placed a full-time staff member on the reservation to be able to better understand the priorities and vision of the tribal community. Because youth involvement is important to the tribe, innovative strategies using social media were employed to attract youth involvement. This process led by the Oglala Lakota Tribe is now nationally known and other tribes are using it as a model for their communities.

5.2 Rural Transit Systems

In order to sustain the triple bottom line, transportation options need to expand to include non-motorized modes that encourage people away from driving where they need or want to go. Public and mass transportation that can be supported locally also enhances opportunities for communities allowing those who cannot or choose not to drive a personal vehicle. This would be extremely beneficial especially for the elderly and disabled.

A positive example is represented by the Menominee Indian Reservation in Wisconsin, which has partnered with the College of the Menominee Nation, local schools, veterans' services, County human services and others to provide for a rural transit system for their residents. Many of their residents do not own vehicles and the reservation is a vast rural countryside with hundreds of miles of streams and rivers that need to be protected. They established a transit system through the partnership and provide transportation to over 90 percent of their Tribal population. This system makes over 80,000 trips a year getting their people to places such as the doctor or shopping (Barry, n.d.).

5.3 Pedestrian Safety Plans

Pedestrian access is very important to many Tribal communities. Having safe and secure pedestrian facilities are an important necessity for their culture. Pedestrian walkway plans for a rural setting are not common and are rarely considered as essential but rather recreational. Developing a pedestrian access plan is the first step in identifying the needs for facilities and finding funding sources to construct such facilities.

For example, the Wind River Indian Reservation (WRIR) has developed a Pedestrian and Walkway Long Range Transportation Plan to address their need for improved and secure facilities (Gores & Steele, 2012). The WRIR covers over 2 million acres in central Wyoming and is very rural with no facilities connecting the

services, schools, residents and other community centers for pedestrians. Only rural highways tie these facilities together and Tribal members have no other way to traverse the reservation on foot except by use of these highways. Crashes involving pedestrians are occurring on the rural highway on the reservation. The Tribal community is extremely concerned for the safety of these pedestrians (Shinstine, Ksaibati, & Gross, 2015).

Assessments of current conditions, existing facilities and surveys were gathered to develop a plan that addresses the concerns of the community. The study revealed the areas that are the most hazardous to pedestrian and that minimal interconnecting pathways exist in these areas. Also, over 60 percent of children live two miles from their schools and are bussed. Overall, safety along the highways is a major concern. The plan identifies specific solutions and proposed pathway expansions and improvements. It also provides strategies that address the 5 E's (education, encouragement, enforcement, engineering, and evaluation) that are recommended by the National Safe Routes to School (Gores & Steele, 2012).

5.4 Roadway Safety Plans

American Indian Nations recognize that improving the roadway safety is critical to improving the quality of life for them. Too many young people are dying because of roadway crashes. Alcohol, the lack of safety belt use, speeding, and the poor quality of many of the roads are issues that the Native Americans share that they want to change. The Wyoming Technology Transfer/Local Technical Assistance Program (WYT²/LTAP) at the University of Wyoming has developed a methodology to identify low-cost safety improvements on Indian Reservation roads (Shinstine & Ksaibati, 2013). This methodology was successfully implemented on the WRIR and system-wide safety improvements were funded by the state and constructed by the tribal workforce.

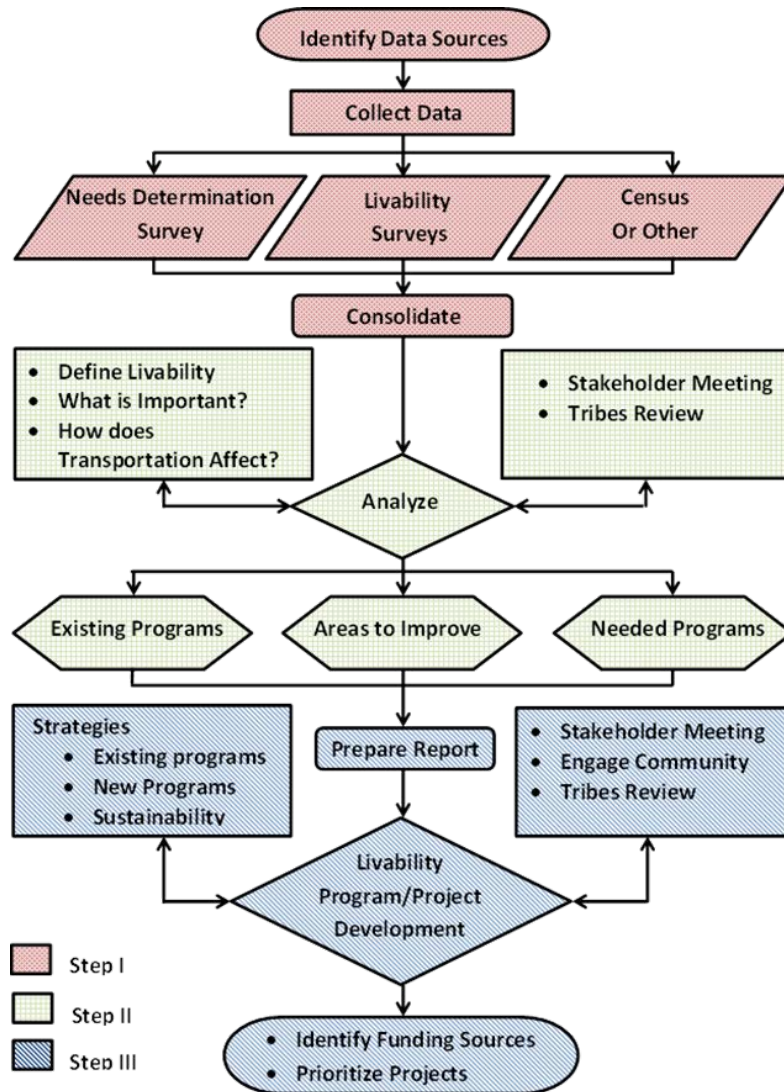
The WRIR has also developed a strategic highway safety plan that includes the many livability principles (Shinstine, Ksaibati, & Gross, 2015). They recognize the need to improve their safety culture through education and enforcement. Their strategic plan has also adopted the Pedestrian and Walkway Long Range Transportation Plan as well as the Safety Improvement Program.

The Federal government has committed to partnering with local governments and communities to implement livable community programs. Indian Tribes are eligible for this support as well. TTAPs and LTAPS are available for technical support. State agencies and other local partners are important to the success of these programs. All of these entities working together with the Tribes can bring about the needed changes to improve their quality of life, increase economic growth and preserve the natural environment that is an integral part of their culture.

6.0 Case Study – WRIR Livability Program

To better identify the livability needs a three step methodology was developed to help tribal communities to understand livability and develop their own definition and program. This methodology includes data collection, data analysis, and developing the program (Figure 3). (Pokharel, Shinstine, & Ksaibati, 2015).

Figure 3. Three Step Process to Develop Tribal Livability Program.



Source: Pokharel, Shinstine & Ksaibati, 2015.

The process is designed to include the involvement of the tribe throughout. Initial data collection can be obtained from existing census data, specific tribal reports, and the use of surveys to get direct input from the community. In consultation with the tribal leadership at WRIR, two surveys were distributed. One was a detailed survey designed for the stakeholders and the other was designed for the residents and was a simple one page questionnaire. The stakeholder surveys were conducted during a stakeholder meeting. At the meeting, detailed discussion of the needs and concerns of the reservation were discussed. The residence surveys were conducted at a safety fair that was a community-wide event on the reservation. In addition, other census data was collected for the WRIR.

The data was collected and analyzed to identify the most important aspects of livability. The primary outcome is to define what is important to the Indian reservation from a planning as well as an administrative point of view and prioritize sustainable programs that are focused on community development. A summary of

the survey findings showed that good roads and safe pathways for school children are important to the community (Table 1). Other data revealed that public transportation is needed to provide access to jobs, medical facilities and other services. Roadway safety was identified as a concern and the top issues for improving roadway safety include snow removal, speeding, alcohol, and animal control. (Pokharel, Shinstine, & Ksaibati, 2015)

Table 1. Summary of Findings on Surveys

Concept on Livability	Residents	Stakeholder
Rank Your Community	Average	Average
Elements important to make your community a good place to live	Recreational /Youth center	Housing facilities
Elements important from transportation perspective	Well Maintained Roads	Well Maintained Roads
Purpose of using public transportation	Getting to and from work	Getting to and from work
Rate safety of Roads	Average	Average
Safety for walk and bicycle to school	Below average	Below average

The report presented a definition for WRIR based on the data and findings. The key issues on the WRIR include transportation, health care, recreation and public safety. Livability is having well maintained roads with pedestrian/bicycle facilities which provide good access to jobs, health care, recreational activities, and hunting and fishing. Public safety is integral to all these characteristics of a viable, livable tribal community. Youth are a priority in advancement of community development providing programs and facilities to enrich their lives. (Pokharel, Shinstine, & Ksaibati, 2015).

The Pedestrian and Walkway Long Range Transportation Plan, the roadway safety improvement plan, and the strategic highway safety plan are all contained in the WRIR livability program. Other plans and strategies still need to be identified that are not directly related to transportation. The livability program developed for WRIR is a dynamic tool that requires regular attention to update based on changing needs.

7.0 Conclusions And Recommendations

Urban definitions of livability are difficult to apply directly to Indian Reservations. For Native Americans, livability is most strongly identified with traffic safety, pedestrian safety, and access to transportation. Tribes have long recognized the need to improve their safety culture and to expand programs that enhance their way of life. By expanding the definition of livability to accommodate the specific needs of Tribes, they can begin to implement and prioritize new initiatives.

Despite the many programs emphasizing livability, American Indian Nations still struggle with implementing livability strategies and goals. There are institutional barriers, such as lack of resources in terms of expertise and funding, and cultural barriers.

Tribal governments need to draw upon the growing support of the federal and state governments to support in their efforts to improve transportation facilities and safety. Agencies are starting to realize that support needs to allow flexibility in implementation of livability goals. Successful pilot programs, such as those identified above, provide models that can be adapted by other Tribal communities. The methodology that was implemented on the WRIR can be used by other tribes to develop their own program and create a definition that fits their particular needs and goals for their community. By implementing programs such as intercommunity transit, safe pedestrian facilities, and roadway safety improvement programs, tribes can find their way to improving the economic state of their community, realizing more job opportunities, greater access throughout their community, and safer roads and improved safety culture leading to longer prosperous lives.

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