Developing a Livability Program for Indian Reservations:
A Methodology and Case Study

Sanjay Pokharel
Graduate Research Assistant
Wyoming Technology Transfer Center
1000 E. University Avenue
Department 3295
Laramie, WY 82071
(307) 761-1218
Fax: (307) 766-6784
e-mail: spokhar1@uwyo.edu

Debbie S. Shinstine, P.E., Ph.D.
Research Engineer
Wyoming Technology Transfer Center
1000 E. University Avenue
Department 3295
Laramie, WY 82071
(307) 766-6743
Fax: (307) 766-6784
e-mail: dshinsti@uwyo.edu

Khaled Ksaibati, Ph.D., P.E.
Director, Wyoming Technology Transfer Center
1000 E. University Avenue
Department 3295
Laramie, WY 82071
(307) 766-6230
Fax: (307) 766-6784
e-mail: khaled@uwyo.edu

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Livability is a fairly new concept which is well understood for urban areas but more vaguely defined for rural areas and even is less so for Indian reservations. The need to identify livability issues on Indian reservations necessitates the demand for a methodology for tribes to develop their own livability programs by implementing livability principles and programs with sustainable strategies. A methodology has been developed to identify the important issues for tribal communities. This methodology consists of data collection, analysis and development of the program. It has been implemented on the Wind River Indian Reservation. Analysis of responses from the WINDS III survey, stakeholder surveys and resident surveys found many commonalities regarding livability. Many factors such as youth/recreational centers and public safety are important elements on Indian reservations. From a transportation perspective, well maintained roads and bicycle/pedestrian lanes and paths are significant. By incorporating all the results from the data collection, a definition has been formulated which focuses on a community having well maintained roads with safe pedestrian/bicycle facilities which benefits the people by providing quick access to services such as jobs, health care, and recreational activities by preserving the culture and sovereignty.
INTRODUCTION

Livability, a fairly new concept has evolved mainly from the advancement of transportation. Livability does not have a long history but it has gained recognition quickly in recent years. It mainly focuses on improving community quality of life with the support of sustainable goals. Livability helps empower communities with tools to address transportation, culture and quality of life issues. There is no distinct definition of livability and it varies from one community to another whether it is urban, rural or even tribal.

To improve the livability of communities the idea of transportation works as a catalyst which goes beyond the movement of vehicles to include the comfort and safety of pedestrians and bicyclists. Livability is well understood for urban areas but more vaguely defined for rural areas. It is even understood less for Indian reservations.

BACKGROUND

Different agencies have varying definitions for livability. However, the most common definitions generally include transportation, community and the quality of life. Motor vehicle accidents, congestion, and urban sprawl are increasing and contribute to other problems such as loss of productivity and economics which affects quality of life. Incorporating livability into transportation planning, programs, and projects is a step towards addressing these issues (1).

U.S. DOT Secretary Ray LaHood defines livability as, “Livability means being able to 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” (2). Ray La hood focused livability in the context of quality of life and the urban community where there is availability of different facilities such as schools, job opportunities, and shopping within the vicinity of housing. But this definition might not work for rural and tribal communities where there are challenges related to transportation infrastructure, mobility and accessibility.

Livability in transportation is about using the quality, location, and type of transportation facilities and services available to help achieve broader community goals. These goals include access to employment options, community services, affordable housing, quality schools, and safe streets.

Federal highway Administrator Victor Mendez defined livability as, “Livability is about tying the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, quality schools and safe streets. This includes addressing safety and capacity issues on all roads through better planning and design…” (3).

Other agencies had their own definitions and concepts about livability. Some agencies tried to incorporate housing as a tool for defining livability, some tried with transportation, and some with environmental aspect. They have common ground and the focus was to make the community livable and sustainable from an environmental, social and economic point of view.

The U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA) joined to form the Interagency Partnership for Sustainable Communities in June 2009. Their goal was to improve access to affordable housing, increase transportation options, and lower transportation costs while protecting the environment. They developed the following six livability principles as the foundation of their partnership (4):

- Provide more transportation choices
- Promote equitable, affordable housing
After the creation of the Partnership’s six livability principles, more organizations and local governments defined livability closely related to these principles (5). Many resources contain elements of the Partnership’s livability principles and also use similar language to explain the purpose of livability.

Transportation decisions can have major impacts on community livability (6). Improving community livability can help achieve transportation planning objectives such as reduced automobile travel, increased use of other modes, and more compact land use development. Livability is largely affected by conditions in the public realm, places where people naturally interact with each other and their community, including streets, parks, transportation terminals and other public facilities. Thus, it is affected by public policy and planning decisions. All of these variables are affected by the need of each individual community. Although most urban communities have similar needs, rural communities are far different and so there are different applications of livability.

**Urban Areas**

Most literature and programs are designed for urban areas. In order to achieve the livability goals different livability programs such as smart growth, context sensitive solution, complete streets, new urbanism, and transit oriented development emerged as tools to implement livability and develop sustainable communities. These concentrate on re-development of high density areas focusing on multi model transportation.

**Rural Areas**

Rural areas do not necessarily fit into the programs developed for urban areas. Rural communities see livability in relation to transportation as a matter of using the quality, location, and types of transportation facilities and services available to help achieve broader community goals (1). Livability in rural areas focuses on the towns, villages, working lands and natural resources that surround and connect them. In rural areas, livability may involve improving regional mobility and safety on rural highways connecting workers to jobs, and economic development. The safety aspect focuses on reducing vehicular crashes due to high-speed moving traffic, uncontrolled access from side roads, truck traffic, slower moving vehicles sharing the roadway, or adding roadway shoulders to accommodate pedestrians and bicyclists.

**Tribal lands**

Indian reservations are typically rural and share some of the same concerns as other rural communities. But they possess challenges unique to other cultures. Tribal lands have issues such as lack of transportation choices, lack of adequate transportation facilities, safe pedestrian and bicycle facilities, preservation of natural resources and environment, and preservation of their culture. Indian reservations are often spread apart with forest and rangeland between where people live and where they work, shop, receive health care, or other services. Elements such as people and culture, availability of public transit, road condition, and safety can affect livability on Indian reservations. As sovereign nations they are challenged with cross jurisdictional issues and the uniqueness of their individual cultures affect how livability should be defined.
OBJECTIVES
The objectives of this study are to identify the livability needs of rural and tribal communities and propose a methodology for tribes to develop their own livability programs which can be utilized in implementing livability principles and programs with sustainable strategies.

METHODOLOGY
To better identify the livability needs a three step methodology was developed which will help tribal communities to understand about livability and their community. The methodology shown in Figure 1 consists of the three steps:

- Step I: Data collection
- Step II: Data analysis
- Step III: Develop livability program
Figure 1: Three Step Process to Develop Tribal Livability Program
Step I: Data Collection
The first step in the proposed methodology is to determine the types of data needed to be collected in order to define livability. Needs determination surveys, census data, and livability surveys can be used in order to collect information on livability related issues.

The Wind River Indian Needs Determination Survey of 2010, known as the WINDS III, is the latest official census on the Wind River Indian Reservation (WRIR) (7). WINDS III gathered current data on population demographics of the WRIR including housing and household services, employment, unemployment, job training, income and poverty, availability of health care and reported health problems, social services, attitudes and opinions about crime and social problems, education availability attainment and future likelihood, transportation, and substance use and abuse. The survey questionnaire utilized on the WRIR contained questions that are helpful for this research study on livability. WINDS III contains questions related to transportation, roadway and safety, social and economic, and other miscellaneous issues which could be included in the livability study. Survey questions that are already included on the WINDS III helped to guide in the development of a questionnaire that is more condensed and less time consuming.

A survey questionnaire is another way of gathering information about livability. The priorities of the community will help in defining the livability of that community. The purpose of this survey is to come up with priorities for tribal members that will provide support in defining livability on their reservation in the context of transportation, quality of life, and economic development. The priorities obtained, if incorporated on the current projects, might help develop broader applications. The survey developed in this research is modeled after the survey used in the livability report of Montana (8). Most of Montana is rural and the livability concept obtained in that report is applicable in this context. Two separate livability surveys were developed for the WRIR, one for stakeholder partners and one for the residents.

Step II: Data Analysis
The next step after the collection of data is to come up with the most important aspect of livability based on that data. 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. The review of different issues of livability that are developed from the analysis of the responses obtained from surveys is important. The engagement of the tribal community on those reviews will help to constrain the study on the reservation issues. Based on the responses, feedback, and review of existing programs, areas of improvement can be determined. Programs that are functioning can be incorporated into the livability program. The next task is to develop the programs that are essential to the community based on the responses obtained.

Step III: Develop Livability Program
The participation of the community is key for the success of any program or project. While developing a livability program it is essential to incorporate the feedback and suggestions of the community so that it will reflect the real scenario of the community. After analyzing the possible programs that concentrate on the livability issues, the focus is to make it efficient and develop a strategy to carry it out. The sustainability of such programs or projects is a must so strategies should be developed to continue the existing programs and viability of new programs. In order to sustain any program or project, funding is a very important aspect. Therefore reliable funding
sources need to be identified. Depending upon the availability of funding, the tribes need to prioritize the programs and projects to have a long term plan to carry them out.

**CASE STUDY: WIND RIVER INDIAN RESERVATION**

The proposed three step methodology has been implemented on the WRIR. WRIR is an Indian reservation shared by the Eastern Shoshone and Northern Arapaho tribes of Native Americans in the central western portion of Wyoming. It is the seventh-largest Indian reservation by area in the United States, encompassing a land area of 3,473.272 sq mi (8,995.733 km²), or land and water area of 3,532.010 sq mi (9,147.864 km²), encompassing just over one-third of Fremont County and over one-fifth of Hot Springs County.

**Data Collection**

Two separate livability surveys were introduced to the stakeholder partners and the residents of WRIR. Information from the WINDS III survey was also collected.

A stakeholder meeting was conducted on WRIR organized by the Shoshone Arapahoe Department of Transportation (SADOT). In coordination with the Wyoming Technology Transfer Center (WYT²/LTAP) the process of developing a livability program for the WRIR was initiated. The stakeholders who attended the meeting included SADOT, Fremont County EMS, the Wyoming Department of Transportation (WYDOT), WYT²/LTAP, Northern Arapaho Tribal Health Service (NATH), Community Health Centers of Central Wyoming, and the tribal transportation engineering consultant. Feedback was received from the stakeholder partner agencies which are working with the reservation with their strategies on transportation infrastructures, safety, environment and quality of life is beneficial in developing a standard program.

Several agencies are working for the residents of the Indian reservations in the field of education, healthcare, transportation and social development and are helping to make their communities more livable places. WYT²/LTAP prepared a stakeholder survey questionnaire to obtain feedback and responses which contained categories such as livability, transportation, roadway and safety, social and economic, and environmental.

Next a residents survey was developed and distributed among the community during a Safety Fair organized by TRiP (Tribal Re-entry Program) and supported by the Eastern Shoshone and Northern Arapaho Tribe. It contained various questions that are related to society, roadway condition, transportation which could be more helpful on analyzing the livability status of the Wind River residents. Forty four (44) responses were collected during 4 hours of the safety fair.

The census data from the WINDS III which relates to the overall condition of the WRIR helped to obtain a wide range of information such as employment and household statistics, healthcare issues, availability of transportation facilities and conditions, availability of public transportation, condition of sidewalks and pedestrian walks, roadways and its safety.

**Data Analysis**

The Next step after data collection is analysis of information obtained from the surveys. The analysis was broken into these categories: livability, transportation, and roadway and safety.

Under the category livability, on a response to rank the community as a good place to live, 56.8 percent of residents think that WRIR is average and 42.86 percent of stakeholders ranked their community an average place to live. See Figure 2.
To the question, important elements to make the community a good place to live, stakeholder respondents provided housing facilities, public safety, transportation infrastructure, and industry and business development as most important issues. In the residents survey about 60 percent of respondents agreed that provisions for a recreational/youth center is the most significant element that will help make the WRIR a better place to live. Other important elements are public safety, well planned community, and jobs. The common element in both surveys is public safety. See Figure 3.

The stakeholder respondents identified lack of job opportunities as a big challenge. Other challenges are effective management of federal and other funding, lack of emergency services,
lack of proper planning, lack of law enforcement, and lack of transportation options. All respondents agreed on the fact that recreational opportunities are helpful in making a community good place to live.

Under the category of transportation, different questions related to transportation facilities were asked. On a response about elements important from a transportation perspective to make a community a good place to live, all respondents agreed that well maintained roads are most important whereas bicycle lane/paths as second most important. See Figure 4.

![Figure 4: Important Elements from a Transportation Perspective](image)

When asked about the most challenging aspect on WRIR, lack of job opportunities is ranked highest according to the stakeholder survey which is 71.43 percent. This can be strengthened from the resident survey also where 38.6 percent of survey respondents stated that job training is an important element in making a community good place to live.

Getting to and from work is the main purpose of using public transportation at 71.43 percent for stakeholders and 40.9 percent of residents. About 50 percent of residents think that the safety of roads on WRIR is average where as 71.43 percent of stakeholder considered safety of roads as average. According to the survey responses, 40.9 percent of residents responded that the safety to walking and bicycling is below average followed by 38.6 percent of respondents as poor and 22.7 percent as average. Similarly, 57.14 percent of stakeholders think that the safety for walking and bicycle is below average and 14.29 percent as poor.

In a response about types of safety provisions that will help in making the roads and highways on WRIR safer, stakeholder respondents prioritized educational/awareness campaigns (100 percent) as most essential followed by bike lane/paths (71.43 percent) and wide & well maintained roads (57.14 percent). In a response about rating safety of roads on WRIR, more than 70% stakeholders said average. Similarly, 50 percent of residents felt that roadway safety was average.
The current job condition was another question on the survey. The response showed that about 50 percent of the residents surveyed were employed and the rest were unemployed and looking for a job. The reasons given for unemployment include household work (homemaker, child and elderly care giver), transportation, job training, and other. See Figure 6. Out of total residents surveyed about 75 percent were female respondents of age group 30-65 (72.7 percent). Females are typically engaged in child care, care taker to elderly and disabled and other household activities. Out of 25 percent male respondents, only two-thirds were employed.

When asked if they are aware of what facilities are available to WRIR, 52.3 percent of respondents are aware of health facilities/nursing home services that are available for elderly and
disabled. Thirty-one point eight (31.8) percent were aware of public transportation, 25 percent of respondents hadn’t noticed any of such services provided to elderly or disabled. See Figure 7.

Along with distributing the survey questionnaire, an informal discussion with agencies and organizations was held at the stakeholder meeting. The purpose of this discussion was to get feedback on what are important aspects in defining livability on WRIR. Most of the agencies have highlighted different livability elements from a community perspective. The issues such as healthcare, access to jobs, job training, recreational activities, animal control, transportation facilities, road safety, public transit, and emergency services are most awaited concerns made by stakeholder during discussion. Table 1 summarizes the elements that were discussed at the meeting.
Table 1: Important Elements from Stakeholder Feedback

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Important elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fremont County- EMS</td>
<td>Health care, EMS services, Rolling clinics</td>
</tr>
<tr>
<td>Tribal Liaison</td>
<td>Computer and Technology, Access to job, Safe access, Health facilities, Funding</td>
</tr>
<tr>
<td>Community health Centre of Central Wyoming</td>
<td>Education, Job trainings, Housing, Computer and technology, Health services, coordination and collaboration among agencies</td>
</tr>
<tr>
<td>Northern Arapaho tribal Health program</td>
<td>Poor road, access, recreational and tourism, animal control, transportation facilities, public transportation, Law enforcement</td>
</tr>
<tr>
<td>WYDOT</td>
<td>Public transit, driving behavior, access to public transportation, animal control, pedestrian programs, environmental issues</td>
</tr>
<tr>
<td>SADOT</td>
<td>Social issues, health issues, ridership in public transit, behavioral issues in driving, animal control, emergency services during flood, fire etc.</td>
</tr>
</tbody>
</table>

From the analysis there are some commonalities across the different data sources. Keeping a well-maintained roadway system and public safety are of high priority found in the results of both the survey analysis. Bicycle lane/path, safety while walking and bicycling is important. Table 2 provides a summary of the major themes identified through the analysis of the surveys.

Table 2: Summary of Findings on Surveys

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

The WINDS III survey was analyzed to compare the elements that are related with livability issues on the WRIR. The issues which are predominant are employment condition, accessibility,
job trainings, transportation issues, public transportation, and road condition and safety. Table 3 shows the summary of livability elements.

### Table 3: Livability Elements from WINDS III Survey

<table>
<thead>
<tr>
<th>Survey Category</th>
<th>Livability Elements</th>
</tr>
</thead>
</table>
| Housing and Household services  | • Most individuals are homeowners,  
|                                 | • Availability of tribal housing offered by BIA and tribe itself                    |
| Employment                      | • Unemployment is a problem,  
|                                 | • Unable to find work, retired due to age, in poor health /with disability, homemaker, caregiver to elderly or children, working seasonally and student are some reasons behind not getting job,  
|                                 | • Few have received job trainings,  
|                                 | • Very few know about Wind river job corps center                                   |
| Health Issues                   | • Most of people relied on Indian health service                                     |
| Transportation Issues           | • Access is a problem  
|                                 | • Students are unable to involve in after school activities, resident people have problem on getting medical care due to "access" as a problem, transportation is reported as important element needed access to find job,  
|                                 | • More than 90 percent residents have either 1 or 2 dependable vehicle,  
|                                 | • Very few people depend on shuttle bus getting to and from work, shopping, school, recreational activities,  
|                                 | • Need of public transportation is a most                                          |
| Road Condition and safety       | • Condition of road is generally good,  
|                                 | • Snow removal, speeding ,drinking and driving, animal control are safety related issues,  
|                                 | • Aware about seatbelt use                                                         |

### Developing a Livability Program

The final step in the methodology is to develop the livability program based on the analysis. The key issues from the surveys helped to formulate a definition for the WRIR. The key issues on the WRIR include transportation, health care, recreation and public safety. From this, livability can be defined for WRIR as:

*The community having well maintained roads with pedestrian/bicycle facilities which provide good access to jobs, health care, recreational activities, and hunting and fishing. Public safety being integral to all these characteristics of a viable, livable tribal*
Youth are a priority in advancement of community development providing programs and facilities to enrich their lives.

WRIR has a strategic highway safety plan that also addresses many of the same issues. Adopted in that plan are a roadway safety improvement program and a long range pedestrian access plan. These existing programs are powerful tools in the implementation of a livability program on the WRIR.

Another key issue for residents on the WRIR is job availability. The job availability is very low on the reservation so residents must rely on outside employment off the reservation. In addition, job training is important. These concerns along with access to health care facilities warrant the need for public transportation facilities which will help residents have the opportunities to pursue better quality of life choices.

The analysis showed the importance of public transportation on the WRIR. A public transit service exists which runs from Lander to Ethete. The ridership is very low and sometimes it runs vacant. Programs to increase the ridership could be helpful. Also, it is not convenient and does not cover the entire reservation. Most people would have to walk four to five miles to get to a stop. In addition, if this service were to be expanded, the issue of how to sustain it would require further study.

The existing programs that pertain to livability on the WRIR are public transportation, job training, safety improvements, and pedestrian safe facilities. The ones that need improvement to further benefit the community are public transportation, public safety, bicycle lane/paths, more employment opportunities. The needed programs depend upon the needs of the community so this is where the tribal government has to address the most important and prevailing program based on interest and necessity.

The next step in the implementation of a livability program for WRIR is to present these findings to the Tribal leadership and receive their feedback. They can identify other activities or programs that are ongoing on the reservation that might already be addressing some of these concerns. The engagement of the community and their review on the proposed livability programs or projects is the next step after knowing the available programs that need to be sustained. The sustainability of such programs or projects is a must so strategies should be developed to continue the existing programs and viability of new programs in the present condition.

**CONCLUSIONS**

Though the concept of livability is different depending on the type of community, they all have a consistent theme of improved quality of life, transportation options, and environmental protection. Livability is composed of different elements that will vary from one community to the next.

This research developed a methodology to assist tribes in developing a livability program for their reservations. It consists of data collection, analysis and development of the program based on the analysis. The methodology has been implemented on the WRIR and a definition has been formulated.

Analysis of responses from the WINDS III survey, stakeholder surveys and resident surveys found many commonalities regarding livability. Many factors such as youth/recreational centers and public safety are important elements on WRIR. Apart from this, from a transportation perspective, well maintained roads and bicycle lane/paths are significant. Availability of job facilities is also important in making the community a better place to live but
many people are unemployed due to lack of proper job training, access and education. The safety of the highways and roads is also an important aspect as fatalities are high on reservations. Tribal communities consider safety improvement and public awareness essential to address this issue. The public transportation is also critical. Very few people have access to public transportation for getting to and from work and for medical services. In the case of elderly and disabled people, public transportation and health facilities are provided but are not adequately sufficient.

The proposed definition of livability focuses on a community having well maintained roads with safe pedestrian/bicycle facilities which benefits the people by providing quick access to services such as jobs, health care, and recreational activities and preserving the culture and sovereignty.

In order to make tribal lands more livable the elements which are important to them should be incorporated during the planning and design phase of any program related to livability. For those programs which are already in place, they should be reviewed and proper attention given so that the outcome will achieve the livability goals of the community.

**RECOMMENDATIONS**

The WRIR should adopt a livability program that includes the existing programs and projects currently in place on the reservation. The implementation of livability projects and programs must include elements such as access and mobility, youth awareness and motivation, and job opportunities and training. Coordination and collaboration is important to the success of a practical livability program. Engaging the community to let them know the different issues that are prevailing on WRIR is another step on implementation. The feedback and review help incorporate the present issues from a community perspective.

The next step beyond this is to implement this methodology on other Indian reservations across the U.S. which can be utilized in applying livability principles and programs with sustainable strategies.

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