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## Pilot Case Study: West Columbia, Texas

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Introduction

Transit is one of many factors that influence livability of rural areas in the United States. Some rural communities do not have public transit services of any kind, while others operate a wide variety of services. The demographic, social, and economic factors of rural communities also vary widely.

This technical memorandum provides documentation of case study findings about the nexus of livability and transit in rural America and serves as a guidebook with accompanying exercise materials of immediate benefit to transit agencies, rural communities, and policy makers. This document is the product of the Phase 1 research of the project evaluating the role of transit in livability of rural American communities. This research builds on a previous Federal Transit Administration (FTA) project, *Transit Livability Performance Measures: Rural Transit Livability Performance Measures Suitable for Use at National Level* (RTLPM Study). The FTA-sponsored study identified a set of performance measures connecting livability to transit in rural communities on a macro-scale—by county, by agency, and by state. The RTLPM Study evaluated potential measures by investigating rural transit agencies in eight case study states.

The present study is sponsored by the United States Department of Transportation University Transportation Centers Program and the Texas A&M Transportation Institute (TTI). The purpose is to investigate the nexus of transit and livability at the community level. The bulk of the study effort consists of conducting a pilot case study and then additional case studies in a variety of rural communities.

In addition to this technical memorandum, researchers will use a webinar to share study findings and guidebook materials. All survey materials and other tools used by researchers will also be available on TTI’s website at the conclusion of the study in 2016.

Three research institutions will collaborate to conduct the research:

- Texas A&M University System, TTI (lead agency).
- University of South Florida, National Center for Transit Research (NCTR).
- North Dakota State University (NDSU), Small Urban and Rural Transit Center (SURTC).

Study Organization

The study consists of two phases of effort. Phase 1 of the study involved reviewing literature, drafting an outreach strategy, selecting a pilot case study, conducting the pilot case study, documenting findings, and refining an outreach strategy for further case studies in Phase 2. Phase 1 tasks were:

- Task 1.1: Conduct literature review, select strategy and materials, and identify potential case studies.
- Task 1.2: Receive Institutional Research Board (IRB) human subject research approval.
- Task 1.3: Conduct pilot case study.
- Task 1.4: Refine outreach strategy and materials.

Phase 2 of the study seeks to conduct several more community case studies, document findings, refine the outreach strategy and materials again, and share findings and resources. Phase 2 tasks are:

- Task 2.1: Conduct additional case studies.
- Task 2.2: Create deliverable of case study findings: “The Story.”
• Task 2.3: Create deliverable of guidebook with final strategy and materials.
• Task 2.4: Create deliverable of webinar and social media.

TTI will coordinate with study partners NCTR and SURTC to conduct additional case studies in Phase 2. NCTR, NDSU, and TTI each anticipate conducting at least one case study during Phase 2. While partner agencies will be responsible for outreach, data collection, and analysis in their case studies, TTI researchers will be gauging how well the refined outreach materials/instruments work when implemented by another organization.

TTI will lead a collaborative effort to combine the findings from all case study communities in a brief, engaging deliverable describing the nexus of transit and livability in each rural community, making observations about potential implications for transit in rural America at large. In addition, the team will further refine the outreach strategy and materials so that rural transit stakeholders can use the same tools to conduct their own outreach to answer questions about transit and livability in rural America.

Researchers will write an implementation guidebook to accompany the strategy and materials and will make the guidebook available in 2016 after all case studies are complete. The target audience of the guidebook will be local/regional governments and rural transit operators. As such, the guidebook will document the study impetus, goals, process, and findings and will be written with a view for easy replication, either in whole or in pieces, by other agencies. TTI, NCTR, and NDSU will collaborate to host a one-hour webinar about the process and findings of the study. The webinar will be made available in the same online locations as all other deliverables. Researchers will encourage webinar participation by reaching out to rural transit stakeholders via social media, professional associations, and other contact lists (as available).

**Timeline**

Figure 1 highlights the study timeline.

![Figure 1. Study Timeline](image-url)
Pilot Case Study: West Columbia, Texas

TTI researchers developed a qualitative and quantitative case selection procedure to select the most suitable case for this exploratory study of rural transit livability. West Columbia was selected as the pilot case in Texas. The pilot case of West Columbia City in Texas was conducted with two goals in mind: (1) to evaluate the nexus of livability and transit in the community, and (2) to test the outreach methods and approach for additional case studies.

About West Columbia

West Columbia is an incorporated city in Brazoria County, Texas. The city is at the intersection of State Highways 35 and 36. The population was 3,905 at the 2010 decennial census. Residents of West Columbia are proud of their mark on Texas’s history—the first Congress of the Republic of Texas was convened in West Columbia on October 3, 1836. West Columbia emphasizes locally owned businesses and promotes local shopping to keep more dollars in the community.

As per U.S. Census 2010, the city of West Columbia is approximately 2.5 square miles. The population is 47 percent male and 53 percent female and has a median income of $35,093 and median age of 31.5 years. In addition, 20 percent of the population is Hispanic/Latino, 18 percent of the population is age 63+, and 22 percent of residents live/work in West Columbia. The following facts about West Columbia briefly describe the socio-demographics of the city:

- **Percent population change from 2000 to 2010**: The population declined for the noted time period was $-0.0829$. About 31 percent of the population were in households in poverty.
- **Employment status**: The 16 years of age and over population of West Columbia is 2,758 based on the 2010 U.S. Census. Of that estimate, 1,687 are in the labor force, with 94.61 percent employed. The unemployment rate is 5.39 percent, while the number of people not in the labor force is 1,071.
- **Work commute**: The average commute time to work in West Columbia is 25.7 minutes. The number of workers 16 years and older is 1,527, with 1,205 commuting to work alone in a car, truck, or van and 208 people carpooling in a car, truck, or van.
- **Industries**: The top five industries in West Columbia are (1) educational services, along with health care and social assistance; (2) construction; (3) retail trade; (4) arts, entertainment, and recreation, along with accommodation and food services; and (5) other services, except public administration.
- **Income distribution**: Based on 1,466 total households, the income distribution is:
  o Less than 15,000: 393, 27 percent.
  o 15,000–24,999: 242, 17 percent.
  o 25,000–34,999: 119, 8 percent.
  o 35,000–49,999: 159, 11 percent.
  o 50,000–74,999: 221, 15 percent.
  o 75,000–99,999: 161, 11 percent.
  o 100,000 or more: 171, 12 percent.
- **Climate type**: The climate is sub-tropical.

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2. U.S. Census Bureau
3. [http://WestColumbia.org](http://WestColumbia.org)
- **2013 city budget**: The most recent financial records for West Columbia indicated that the city budget in 2013 was $7,126,455. The city spent most of the budget on water and sewer ($1,201,847, or 33.71 percent) and public safety ($1,148,670, or 32.22 percent).

### Location of West Columbia, Texas

Figure 2 depicts the location of West Columbia in coastal central-southeast Texas. West Columbia is approximately 55 miles from downtown Houston; other nearby communities with higher-level amenities/services include Angleton, Lake Jackson, and Freeport.

![Figure 2. Vicinity of West Columbia, Texas](source: Google Maps)

- West Columbia is a concentrated network of primarily grid streets organized around a highway intersection.
- The city of West Columbia has a compact city limit.
Existing Transit Service in West Columbia

Gulf Coast Center’s (GCC’s) demand response transit, called “Connect Transit,” is available to all West Columbia residents five days a week. GCC operates flexible routes between larger communities in its service area, primarily within/between urbanized communities. Additional information on the GCC website states the following:

The Gulf Coast Center operates a transportation program known as Connect Transit. Transportation demand response services are offered to the general public at a cost of $1.00 per person per trip. Trips to the Veteran’s Hospital in Harris County are offered at a cost of $3.50 per person per trip. Connect Transit provides demand response service in Galveston and Brazoria Counties. Reservations can be scheduled up to a maximum of 5 (five) business days in advance of a requested trip. All rides are subject to availability and pickup times are scheduled up to one and one half hours ahead of appointment time for all services in Brazoria County and up to one hour ahead of appointment time in Galveston County.

4 http://gulfcoastcenter.org/services/connect-transportation/.
Connect Transit’s demand response destinations include, but are not limited to, medical facilities on Galveston Island as well as the Veteran’s Hospital in Harris County. Persons may access Connect’s demand response services for all of their local transportation needs. The origin or destination point for each trip must be in Galveston or Brazoria Counties. Connect Transit does not provide trips that begin and end within Island Transit’s service area on Galveston Island. Connect Transit does not provide trips that begin and end in Harris County.

Connect Transit begun providing ADA Paratransit Service on February 10, 2014. Under the Americans with Disabilities Act of 1990 (ADA), complementary paratransit service is for passengers who are unable to navigate or to access the fixed route bus system due to a disability. Connect Transit provides paratransit services to any individual within Galveston County or Brazoria County within ¾ mile radius of the fixed-route bus system who meets the functionally eligible paratransit requirements. Passengers who want to use the paratransit service must register with Connect Transit before being eligible for the service. ADA Paratransit trips are $2.00 per trip and the service is Monday through Friday only.

Transit in Surrounding Region

Connect Transit operates fixed route services known as Mainland Transit serving Texas City, La Marque, Dickinson, Bacliff and San Leon and Southern Brazoria County Transit serving the cities of Lake Jackson, Angleton, Freeport and Clute. One way fares are $1.00 and $.50 for seniors (over 65), students and for persons with disabilities and passengers that show their Medicare card.

Case Study Process and Summary of Data Collection

In order to accomplish the case study goal of evaluating the nexus of livability and transit in West Columbia, TTI researchers sought input from the public, transit riders, and key stakeholders. First, the research team conducted two surveys—a transit rider survey and a general public survey—followed by interviews with several key stakeholder organizations.

Survey instruments for the rider and public surveys were designed using a detailed literature review of rural transit livability. Detailed discussions with the TTI research staff, partner institutions, and rural transit agency (Connect Transit) helped in refining the instruments to make them more suitable for West Columbia residents and riders. A few open-ended questions were also included in the surveys to collect qualitative perceptions about livability and transit. A similar process was used to develop the stakeholder interview script. Data collection instruments (surveys and interview script) and the outreach process were approved by the Texas A&M University IRB in November 2014.

TTI researchers invited every household in the case community to participate in the case study by voluntarily and confidentially completing the public survey. Newspaper articles and local radio addresses were also issued by TTI researchers to increase awareness about the survey. On February 12–13, 2015, researchers walked the streets of the community and placed a survey packet (invitation/consent letter and survey) on the front door handle of each residence, as possible. The survey used an oversize postcard format with return postage paid and included a quick response (QR) code and a hyperlink to an online version of the survey. Additionally, all current and previous riders of transit (addresses obtained from transit agency) were mailed the rider and public surveys in an oversize postcard format with return postage paid, as well as a QR code and a hyperlink to an online version of the surveys. Moreover, four interviews were conducted to collect responses from stakeholders in February and March 2015. The research team was not able to identify additional relevant stakeholders.
The research team collected 118 total public survey responses, out of which 109 were complete, and 10 rider survey responses, out of which 9 were complete. Responses were split between men and women (62 percent women). The average age for the respondents was 65 years. Of the 113 responses for household size, the most common number of people living in a household was two. The most common response for household income was between $35,000 and $49,000. Some college was the most common response to educational attainment. The following section reveals the major findings from the surveys and stakeholder interviews.

Findings

Findings from Surveys
Following is a synopsis of the findings of the rider and public surveys. Appendix A contains a complete report, question by question.

What Is Livability?
When residents and riders were asked about the top six factors affecting the livability of any community in America, “available jobs” was ranked the highest.

As shown in Figure 4, more than 70 percent of respondents included “available jobs,” “affordable housing,” “overall cost of living,” and “low crime” among the top six factors affecting livability in American communities.

Figure 4. Factors Contributing to Livability
When residents and riders were asked about the top six factors affecting the livability of West Columbia, “climate” was ranked the highest. Although only 54 percent ranked climate in the top six factors, almost one-fourth of these respondents ranked climate as the most important factor.

As shown in Figure 5, more than 70 percent of respondents included “affordable housing,” “overall cost of living,” and “low crime” among the top six factors affecting livability in American communities.

Figure 5. Factors Contributing to Livability in West Columbia

Figure 6 and Figure 7 show a comparison of perceptions of livability in any community as opposed to livability in West Columbia. Differences in perceptions of residents and riders are evident in the graph.
Figure 6. Comparison of Factors Affecting Livability by Percentage of Respondents

Comparison of Number of Respondents Ranking a Factor Contributing to Livability in Top Six

<table>
<thead>
<tr>
<th>Factor</th>
<th>General Livability</th>
<th>Livability in West Columbia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural institutions</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Public transit</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>Public parks, amenities</td>
<td>22</td>
<td>37</td>
</tr>
<tr>
<td>Walkability</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Quality healthcare</td>
<td>38</td>
<td>24</td>
</tr>
<tr>
<td>Daily commute</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>Climate</td>
<td>42</td>
<td>51</td>
</tr>
<tr>
<td>Quality public schools</td>
<td>56</td>
<td>52</td>
</tr>
<tr>
<td>Affordable housing</td>
<td>62</td>
<td>74</td>
</tr>
<tr>
<td>Available jobs</td>
<td>67</td>
<td>53</td>
</tr>
<tr>
<td>Overall cost of living</td>
<td>68</td>
<td>83</td>
</tr>
<tr>
<td>Low crime</td>
<td>71</td>
<td>81</td>
</tr>
</tbody>
</table>

Figure 7. Comparison of Factors Affecting Livability by Number of Respondents
Livability themes were developed based on the survey comments. The most popular themes that respondents suggested would make West Columbia more livable were commercial development, growth, and jobs; recreation; bike and pedestrian infrastructure; and healthcare. These themes can be compared to the factors that respondents ranked for livability in West Columbia: climate, affordable housing, overall cost of living, and low crime.

**What Is the Role of Transit in a Rural Community?**

About 22 percent of respondents considered public transit as one of the top six factors affecting livability in any American community. However, only 12 percent of respondents ranked public transit in the top six factors affecting livability in West Columbia. Figure 8 shows that 49 percent of respondents were not even aware of the availability of public transit in West Columbia; thus, the perceptions of transit’s contribution to livability in West Columbia may be different if more people were aware of transit.

Respondents were asked why they thought it was important to have public transit in West Columbia. They were given seven different options and could check up to three of those options. Eighty-six percent (97 out of 113) chose the option for seniors and persons with disabilities, while 64 percent (72 out of 113) chose the option for people that cannot afford to drive and 46 percent (52 out of 113) selected the option for those who choose not to drive.

**Figure 8. Residents’ Awareness about Transit in West Columbia**

Figure 9 shows the preferences of respondents for use of city and county funds to support transit. More respondents agreed to use county funds for transit.
Figure 9. Respondents’ Preferences for Use of City or County Funds for Transit

As shown in Figure 10, 41 percent of respondents believed it was very important to continue the availability of transit service in West Columbia, while about 5 percent did not think it was important. Based on all responses, the average score of 7.56 suggests that the majority of the public believe in the importance of transit service for West Columbia.

Figure 10. Importance of Continuing Transit Service in West Columbia

Transit themes were developed based on comments given by the public. Researchers were able to compare the survey results to the transit themes and identify correlations or interesting information. For example, 49 percent did not know about transit in West Columbia; however, only three comments
indicated a need to increase publicity and awareness of transit options. Another transit theme, “necessary for captive riders,” was mentioned the maximum (one-third) number of times in the survey comments. This finding correlates with 86 percent of respondents selecting the option for seniors and persons with disabilities as one of the top three reasons for having public transit in West Columbia and 64 percent selecting the option for people who cannot afford to drive as one of the top three factors.

**What Are Residents Willing to Pay for Transit Service?**

Most respondents were willing to pay $2.00 for a Connect Transit local trip. However, $5.00 was the most frequently chosen answer for “willingness to pay” (WTP) for Connect Transit trips to destinations in Brazoria County, Connect Transit trips to Angleton, and Greyhound bus trips to Angleton or Bay City. Most respondents selected “not likely” when asked if they would ride a bus service operated by Connect Transit on a set schedule between West Columbia and Angleton. When given the scenario of an intercity bus service (i.e., Greyhound) stopping in West Columbia on its way from Bay City to Angleton and being able to connect to other bus services and routes several times each week in either city, most people were “not sure” if they or a family member would ride the service. Figure 11 shows a comparison of willingness to pay for different services using a box and whisker plot showing the range, median, mean, and outliers in each category.

![Box and Whisker Plot](image)

**Figure 11. Comparison of WTP for Different Services**

Figure 12, Figure 13, Figure 14, and Figure 15 show a comparison of willingness-to-pay behaviors for different trips. In each of the following four charts, the x- and y-axes were scaled to $10 each (two outliers were removed from analysis to show a better comparison). A line with a 45-degree slope was drawn from the origin to represent the individuals who were willing to pay the exact same amount for each service. If more data points are above the line, then people were willing to pay more for the y-axis service. If more data points are below the line, then people were willing to pay more for the x-axis service.

The Figure 12 scatterplot compares the willingness to pay for local trips and trips from West Columbia to other destinations in Brazoria County with curb-to-curb service. It was observed that people were willing to pay more for trips to other destinations in Brazoria County than for local trips.
Figure 12. Comparison of WTP for Transit: County Destinations versus Local Trips

Figure 13 shows that people were more willing to pay for trips from West Columbia to other destinations in Brazoria County with curb-to-curb service than for a regularly scheduled bus route between West Columbia and Angleton.

Figure 13. Comparison of WTP for Transit: West Columbia to Angleton versus West Columbia to County Destinations

Based on the Figure 14 scatterplot, it can be inferred that the willingness to pay for trips from West Columbia to other destinations in Brazoria County with curb-to-curb service and for trips on intercity bus from West Columbia to Angleton or Bay City was distributed fairly evenly.
Figure 14. Comparison of WTP for Intercity Bus: West Columbia to Angleton/Bay City versus West Columbia to Brazoria County Destinations

Figure 15 shows that people were willing to pay more for trips on Greyhound from West Columbia to Angleton or Bay City than for a regularly scheduled bus route between West Columbia and Angleton.

Figure 15. Comparison of WTP for Transit or Intercity Bus: West Columbia to Angleton/Bay City

What Are the Levels of Satisfaction of Residents with West Columbia?

More than 75 percent of the respondents said that they were satisfied or very satisfied with living in West Columbia. Figure 16 shows that only 8 percent of respondents were dissatisfied with living in West Columbia.
A conventional content analysis technique was used to analyze open-ended survey responses. However, directed or summative content analysis (see Table 1) may be used for additional studies. The researchers examined the responses to inductively develop the emergent themes. Overt as well as latent emphasis in text was noted for each sentence of an individual response. After the preparation of inclusive (all sentences fit a category) and mutually exclusive themes, responses were sorted, identifying similar phrases, patterns, relationships, and commonalities or disparities. Some generalizations may be established if content analysis is compared to surveys in additional cases.

Table 1. Three Approaches to Content Analysis

<table>
<thead>
<tr>
<th>Type of Content Analysis</th>
<th>Study Starts With</th>
<th>Timing of Defining Codes or Keywords</th>
<th>Source of Codes or Keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional content analysis</td>
<td>Observation</td>
<td>Codes are defined during data analysis</td>
<td>Codes are derived from data</td>
</tr>
<tr>
<td>Directed content analysis</td>
<td>Theory</td>
<td>Codes are defined before and during data analysis</td>
<td>Codes are derived from theory or relevant research findings</td>
</tr>
<tr>
<td>Summative content analysis</td>
<td>Keywords</td>
<td>Keywords are identified before and during data analysis</td>
<td>Keywords are derived from interest of researchers or review of literature</td>
</tr>
</tbody>
</table>

The survey asked the members of West Columbia’s community to answer questions about livability in general and how West Columbia could become more livable. Respondents were also asked to share opinions regarding public transit in West Columbia. Researchers created themes/tags based on the

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answers to encompass the public and rider perceptions of livability and transportation. Below are a few comments that describe the public’s overall view of livability and transportation.

“Better transit system, more stores and places of business, more affordable housing (houses not apartments) and a healthcare system.”

“The demand transit service improved somewhat when LeFleur took over, but is still pitiful. Connect Transit is very poorly managed. It should be dissolved. Metro should take over transportation in Brazoria County.”

“I am not likely to use it, but it should be provided for people who need it.”

“I believe our transit options should be advertised more. I knew about it passing around town but have never known times, price and stops. It really just needs more exposure, it has a lot of potential.”

“Proximity to shopping enhances quality of life in West Columbia. We are limited for resources in all areas. Housing is becoming inadequate for growth also. No taxi service, transit is limited also.”

“I think public transit would be an asset for our older and handicapped people as well as lower income folks. Also adds a choice to limit vehicle traffic on roadways.”

“Mass transit is an absolute necessity. If it included connections to the airports in Houston on a regular schedule I would definitely use it. Despite growing chemical plant expansion we have lost services that once thrived. Restaurants come and go. Car washes, car dealerships, and auto repair shops are now gone thus requiring trips out of town. Services for seniors are extremely limited. Home care must come from out of town to provide care. There is no nursing home here. Only one grocery store. . . . There is no taxi service should I need a trip to some location anywhere in this county. I would have to pay the taxi for mileage to get to me and for his taxi to return to home base.”

Table 2 and Table 3 show the different themes generated using the content analysis of survey comments. Researchers classified the themes based on livability and transit for ease of carrying over the themes in additional case studies. For example, if additional text response questions (specific to livability or transit) are added in the survey design, it may not be necessary to create a separate classification for new themes. Moreover, separate themes for transit and livability also make it easier for city officials and transit agencies to look for their key areas of interest. Themes and their number of occurrences were used to develop a word cloud (see Figure 17 and Figure 18) that used a log n scale (where n is the number of occurrences) to generate an image of all themes. The themes with more occurrences appear bolder in the image as opposed to the themes with fewer occurrences.
Table 2. Themes for Livability in West Columbia Generated Using Content Analysis

<table>
<thead>
<tr>
<th>Themes for Livability in West Columbia</th>
<th>Number of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Development, Growth &amp; Jobs</td>
<td>37</td>
</tr>
<tr>
<td>Recreation</td>
<td>28</td>
</tr>
<tr>
<td>Bike &amp; Pedestrian Infrastructure</td>
<td>17</td>
</tr>
<tr>
<td>Healthcare</td>
<td>10</td>
</tr>
<tr>
<td>More Housing</td>
<td>8</td>
</tr>
<tr>
<td>Beautification</td>
<td>7</td>
</tr>
<tr>
<td>Bypass for Hwy</td>
<td>7</td>
</tr>
<tr>
<td>Better Roads/Streets</td>
<td>6</td>
</tr>
<tr>
<td>Affordable Housing &amp; Living</td>
<td>6</td>
</tr>
<tr>
<td>Safety</td>
<td>6</td>
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<tr>
<td>Governance &amp; Support</td>
<td>6</td>
</tr>
<tr>
<td>Revitalize downtown</td>
<td>3</td>
</tr>
<tr>
<td>Historic Preservation</td>
<td>2</td>
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<tr>
<td>Assisted Living</td>
<td>1</td>
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<tr>
<td>Climate</td>
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</table>

Table 3. Themes for Transit in West Columbia Generated Using Content Analysis

<table>
<thead>
<tr>
<th>Themes for Transit in West Columbia</th>
<th>Number of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Necessary for Captive Riders</td>
<td>15</td>
</tr>
<tr>
<td>Supportive of Transit</td>
<td>9</td>
</tr>
<tr>
<td>Route Connections</td>
<td>7</td>
</tr>
<tr>
<td>Unsupportive of Transit</td>
<td>6</td>
</tr>
<tr>
<td>Better Management &amp; Better Service</td>
<td>5</td>
</tr>
<tr>
<td>Publicity and Awareness</td>
<td>3</td>
</tr>
</tbody>
</table>
Findings from Stakeholder Interviews

TTI researchers conducted interviews with several key stakeholder organizations for transit and livability in West Columbia. The research team attempted to use a set of standard questions to acquire comparable subject-based responses from stakeholders. This proved a challenge, as interviews tended to steer toward organization-specific responses. This was not altogether a negative result but is important to understand.

The interviewees viewed public transportation’s present contribution to livability in West Columbia as lower than what would be possible with service or customer service improvements, citing perceived low customer satisfaction and infrequent service. Most stakeholders expressed the sentiment that public transportation is a critical lifeline to the community for persons with low income, individuals age 65 or over, and those with no vehicle. Stakeholders expressed confidence that public transportation could adapt to improve community livability by increasing publicity and awareness of transit as a travel mode,
improving communication and training, and increasing service availability. Overall, stakeholder responses appear to coincide with public opinion concerning the definition of livability and the role of transit. Following is an excerpt from an interview with a health and human service non-profit organization:

“We believe that a livable community meets its people's needs, regardless of age, ability, income, and other factors. There is great quality of life for all individuals. Communities that are livable are safe from crime and other hazards. They also have a community government that works on behalf of all of its citizens. They have affordable and accessible housing and transportation options. There must be equal access to education and employment. There also needs to be accessible and inclusive community features such as parks and other recreational places as well as grocery stores and businesses.”

Researchers also inquired about options for funding the delivery of transit in West Columbia. The following related quote is from a health and human service non-profit organization:"

“When we talk about creating and improving funding and transportation options regarding availability and accessibility in West Columbia or any city in Brazoria County for that matter, I think we first must start by creating successful partnerships. And once you form those relationships, everyone, including individuals with disabilities should be at the table to look at how to increase that funding; where are the cross-over issues? What are some alternatives to what’s out there? And what are some new things on the horizon?”

The following is the sentiment of a stakeholder regarding establishing relationships of trust and mutual benefit such that transportation providers, government, and community organizations find a mutual premise on which to support continued transit services:

“It's a challenge to get cities to contribute toward cost of service. County leaders are a little more interested as they understand regional connections better. City leaders in larger communities in the region (like Angleton, Freeport, etc) used to be hesitant to help pay for transit. However, Hurricane Ike reconstruction funds helped pay to start regional fixed routes and some local fixed routes. Turns out ridership was pretty good on many routes. Cities came around to supporting transit after seeing the pilot program generate some ridership. Maybe rural communities can get this same effect in the future, by providing services that are well marketed, get ridership, and then city leadership will see more value to funding.”

Most stakeholders recognized and described the challenge of increasing awareness of existing rural transit services.
How to Select Case Study Communities in Phase 2

Case selection is one of the fundamental tasks involved in any case study research. Selection of good case studies for small sample sizes is challenging. It is intuitive for most scholars to select case studies randomly rather than purposively, but serious problems can persist when cases are randomly selected for a very small sample.⁶ Seawright and Gerring (2008) explain seven cross-case methods of case selection and analysis: typical, diverse, extreme, deviant, influential, most similar, and most different. Each method may have different uses and different levels of representativeness, but the authors claim that these methods may not be suitable for all types of research. TTI researchers carefully examined the different methods and chose the “extreme” method, which includes selecting a rare or unusual case to carry out exploratory research for finding the relationship between livability and transit. However, it is important to note that in Phase 1 of the current study, the first case community selected exhibited diverse within-case characteristics, as explained in the following sections.

**Researcher Expert Knowledge Selection Process**

TTI researchers had two objectives while developing a methodology for selecting cases for this research: (a) ensuring a representative sample, and (b) capturing a useful variation on the scope of theoretical interest. In light of the first objective, TTI researchers stratified the population (rural communities in Texas for the pilot case) by developing typologies for rural communities based on the transit market and a qualitative and quantitative process to rank the transit agencies based on suitability for a case. To accomplish the second objective of capturing the diversity in perceptions of livability, the case community exhibiting the largest number of typologies was selected. The diverse within-case characteristics of the selected community (variety in transit markets and latent characteristics) were deemed most suitable for the pilot exploratory study.

The extreme case method often acts as the first step to interrogating a subject, and hence researchers may choose to opt for a different method as more specific hypotheses come into the picture.⁶ For additional studies, TTI recommends using the classification and ranking procedure explained in the following section.

**Staged, Data-Driven Case Study Selection Process**

This section documents how TTI researchers used both quantitative and qualitative information to develop a case selection process. The first iteration of this procedure was used to select a pilot case in Texas.

Researchers used a two-stage process to select case communities among all rural communities (see Figure 19). First, researchers identified rural transit agencies with the most potential for a successful, interesting community case study. Second, researchers sought to select a case community or communities from among the many communities in the service areas of the top three or five agencies with the most favorable conditions for a case study.

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Rural communities are as diverse as rural transit agencies. As part of the case study selection process, TTI researchers developed a method of identifying and typing community characteristics potentially related to transit services—existing or potential. A community could exhibit characteristics for none, one, or many of seven typologies: gateway, concentrated industry, agricultural, university/military, edge, dense-core, and retirement.

Please note that this technical memorandum describes the general process used to select a case community, and researchers may need to refine the case study selection methodology for selecting additional case studies in other states, keeping in mind any additional variables worth including in the process.

**Stage 1: Identify Rural Transit Agencies with Most Potential for Pilot Case Study**

Researchers developed a methodology to rank rural transit agencies in terms of how favorable conditions for a community case study were likely to be in the service area. An effective community case study of livability and transit depends on both support from community leaders and the transit provider. TTI used six criteria to rank transit agencies in Texas in terms of their suitability for a case study (see Figure 20).

**Figure 20. Criteria for Suitability for Pilot Case Study**

The six criteria for shortlisting rural transit agencies in Texas are documented below. Most of the information used to shortlist agencies in Texas was obtained from a Texas Department of Transportation (TxDOT) Public Transportation Division (TxDOT PTN) study called 2013 Texas Public Transportation Inventory (2013 Inventory). TTI recommends appropriate addition, deletion, or adjustment of criteria based on data availability.
**Rider Diversity**

Rider diversity (RD) is a weighted summation based on the variety of types of ridership groups a transit agency serves. An agency providing service to several types of riders is more likely to be an interesting case study. The TxDOT PTN 2013 Inventory includes a yes/no indication for nine types of riders; the RD value for each agency is a weighted sum based on the variety of types of riders the agency serves (see Figure 21).

\[
RD Score = \sum_{i=1}^{n}(Weight \times (P_i))
\]

Where,

- \( P_i \) denotes the presence or absence of the type of rider \( i \) (\( P_i \) is 1 when rider type is present and is 0 when rider type is not present in the rider population).
- \( n \) is the number of rider types recorded in the rider survey (\( n=10 \) in data used for Texas study).

**Trip Purpose**

The trip purpose (TP) index is a summation of weighted percentages of trip purposes found in TxDOT PTN’s 2013 Inventory (see Figure 22).
The TP score formula is as follows:

$$TP\ Score = \sum_{i=1}^{n} (Weight \ast (p_i))$$

Where,

- $p_i$ is the percentage of riders with trip purpose $i$.
- $n$ is the number of trip purpose percentages used in the analysis ($n=2$ or top two trip purposes considered for the study in Texas).

**Transit Utilization**

The transit utilization (TU) index is the unlinked passenger trips per vehicle revenue mile. The TU formula is:

$$TU\ Score = \frac{Unlinked\ Passenger\ Trips}{Vehicle\ Revenue\ Miles}$$

**Transit Patronage**

The transit patronage (TPat) index is the per capita transit ridership; a higher value may indicate more rides per unit population. Transit is more likely to contribute to community livability where more trips per capita occur. The TP formula is:

$$TPat\ Score = \frac{Passenger\ Boardings}{Population\ Served}$$

**Service Variety**

Service variety (SV) is an index value based on the number of types of transit services operated by each rural transit district in Texas. TxDOT PTN’s 2013 Inventory included 10 types of service; each is given equal weight in the SV index (see Figure 23).

![Figure 23. Types of Transit Service](image)

The SV score formula is:

$$SV\ Score = \sum_{i=1}^{n} (P_i)$$

Where,

- $P_i$ denotes the presence or absence of the service type $i$ ($P_i$ is 1 when service type is present and is 0 when service type is not present in the inventory).
- $n$ is the number of service types recorded in the inventory.

**Ease of Outreach**

The ease of outreach (EO) index considers two criteria for scores: the research organization’s previous work with an agency (existing information available to augment the case study) and the agency website quality. If the research organization has an existing, working relationship with a service provider, then
Researchers are likely to find more effective ways to conduct a case study in the service area (see Figure 24).

![Figure 24. Factors Contributing to Ease of Outreach](image)

Researchers need to assign a 0 or 1 value to each agency; a 1 indicates that an existing professional relationship exists. The other criteria that TTI researchers determined may indicate favorable case study conditions are the quality and currency of the agency’s website. Researchers need to visit the website of rural transit agencies in their region or state and assign ratings of 1 = poor, 2 = good, or 3 = great to each. Currency and overall good quality of agency websites are likely to help in outreach efforts.

**Stage 2: Identify Rural Communities with Most Potential**

TTI researchers identified three rural transit agencies with the most favorable conditions for the pilot community case study in Stage 1. TTI researchers then developed Stage 2 of the case selection process to identify one specific community from among the many within the service areas of the selected agencies. Stage 2 included several steps (see Figure 25).

![Figure 25. Process to Shortlist Communities and Select Pilot Case Study](image)

**Determine Geographic Unit for Community**

The literature review in Technical Memorandum 1 documented the many ways rural is defined and used in the United States. FTA considers a community rural if it is non-urbanized; urbanized areas are concentrations of human development with populations of 50,000 or more. Urbanized area boundaries extend across city limits and county boundaries. It is possible for a legal city/town limit to cross an urbanized area, meaning a city can be both urban and rural by FTA definitions and therefore may receive transit service from one or more service providers. A census “place” is typically a city or township legal boundary and is updated annually by the Census Bureau. A census designated place (CDP) is not legally incorporated but does represent a concentration of population and thus is defined geographically by Census Bureau geographers.

Researchers determined that for this study, a community is defined as a U.S. Census Bureau place or CDP; hereafter, researchers use the term community.
**Identify Rural Communities**

A community may be either entirely rural, entirely urban, or both urbanized and non-urbanized. TTI researchers developed a methodology to identify which communities to consider rural for the study. Researchers used ArcGIS software and a simple methodology to identify urban communities to exclude from consideration. An urban community is by definition not rural. Researchers recommend using 2010 Census Urbanized Area (UZA) and 2010 Census Place (place) shapefiles for analysis; both can be obtained from the Census Bureau TIGER website.

Researchers identified three criteria to determine if a community was urban in 2010:

- Community centroid within UZA—urban.
- Community intersects UZA, centroid outside UZA, 2010 population 50,000 or more—urban.
- Community intersects UZA, centroid outside UZA, population less than 50,000, 2010 population density greater than 500 persons per square mile—urban.

Researchers applied the three criteria to the 1,748 communities in Texas in 2010 and found 1,323 to be rural for purposes of the pilot case.

**Characterize Communities Based on Transit Service Markets**

The next challenge was to select one particular community for the case study. Researchers could have selected a community at random, or by choice, or some other way. TTI chose to make some effort to find an objective way to characterize communities based on population, demographic, built environment, economy, and geographic location. The goal was to highlight the variety among communities and to select a dynamic community to study. TTI researchers identified seven aspects of a rural community potentially related to how transit service may influence livability (see Figure 26).

![Gateway communities](image1)

![Concentrated industry communities](image2)

![Agriculture communities](image3)

![University/military communities](image4)

![Edge communities](image5)

![Dense core communities](image6)

![Retirement communities](image7)

**Figure 26. Rural Community Types Related to Transit Service Markets**

The community types are not exhaustive for all aspects of community livability. Rather, researchers identified the seven types documented in this report, as they represent a link between community and transit service markets. Stated differently, if a community is identified as one type and not another, then transit may already (or could) augment livability by serving that particular market. Researchers assume most, if not all, rural communities have some level of demand for transit services for the public. The
intent of the typologies is to shed light on other latent aspects of a community where transit may influence livability.

Please also note that the definitions of typologies documented herein were developed by TTI researchers and tested on Texas communities. The research team will classify communities nationally during Phase 2 of the project and may make some adjustments to fine-tune thresholds suitable to rural communities in different states.

The seven following subsections briefly highlight community types.

**Gateway Communities**

Gateway communities are adjacent to high-amenity recreational areas and may have a transit market in employees’ and/or tourists’ access to amenities. In addition, gateway communities are more likely to provide food, lodging, and associated services to amenity visitors.

TTI researchers defined a rural gateway community as a community within 10 miles of a national park, state park, or coastal zone (forest zones were not included).

**Concentrated Industry Communities**

Concentrated industry communities have economies with strong non-agricultural industrial sectors and may have a transit market for employee shuttles for shift workers or other type services. In addition, a rural community’s industrial employers are often located in a concentrated area on the community’s fringe. TTI researchers used location quotients (LQ) to compare a community’s employment in a sector to the State of Texas employment in a sector.

- If LQ was less than 1, employment in the sector was less significant a piece of the community’s economy than expected based on the sector’s share of employment in Texas.
- If LQ was equal to 1, employment in the sector was exactly proportional to statewide numbers.
- If LQ was greater than 1, employment in the sector was more significant a piece of the community’s economy than expected based on the sector’s share of employment in Texas.

TTI researchers used U.S. Bureau of Labor Statistics (BLS) data for employment by industry super sectors by community and for Texas. BLS classifies employment into sectors using North American Industry Classification System (NAICS) code order. Not all industry super sectors represent likely concentrations of commuters and employers. Researchers defined concentrated industry communities as communities with LQ greater than 1.25 in one or more of the following economic super sectors, as they are most likely to be geographically concentrated:

- Mining, quarrying, and oil and gas extraction (NAICS 21).
- Construction (NAICS 23).
- Manufacturing (NAICS 31-33).
- Transportation and warehousing (NAICS 48-49).

Concentrated industry communities may represent an opportunity for rural transit service providers to augment community livability with employer-focused partnerships.

**Agriculture Communities**

Agriculture communities have economies with strong agricultural sectors and may have a transit market for shuttles between residential neighborhoods and concentrations of work sites, such as for seasonal or year-round farm laborers. Agricultural employers are unlikely to be concentrated geographically in the same way as manufacturing employers; however, if a large enough flow of farm laborers exists, a shuttle or route stop may be warranted and thereby may influence community livability for both the employer and employees.
Researchers again used BLS employment data for communities and Texas. Agriculture communities had LQ greater than 1.25 in NAICS 11, “agriculture, forestry, fishing and hunting.”

University/Military Communities

University or military communities contain, or are near, one or more educational or military facilities and may constitute a transit market for students, staff, and faculty living on and off site. A university could include any institute of higher education. Educational campuses are likely to be located within the city limits of a community. Military or other government facilities are more likely to be adjacent to or within several miles of a community, not within the city limits.

Researchers identified communities with a significant college/university using the following conditions:

1. Identified all communities with an institute of higher learning (college, university).
2. Required census data to show at least 500 enrollments in the college/university.

The purpose of Condition 2 was to identify communities with a college/university facility and reasonable student population. The military locations shapefile was downloaded from the National Transportation Atlas Database. Location and enrollment and location of colleges and university was extracted from the U.S. Geological Survey website.

Edge Communities

Edge communities are located at the fringe of census UZAs. Edge communities vary immensely; some may have fairly independent economies and identities, while others may identify closely with the nearby urban area. In either case, researchers wanted to identify edge communities as a type because they are the most likely rural communities to have an opportunity for service coordination with the urban transit authorities. Urban transit services vary but are more likely to include carpool rideshare matching, vanpools, park and rides, and other commuter-focused services especially relevant to edge communities. Edge communities provide residents with access to economic opportunities, services, shopping, cultural opportunities, and jobs.

Researchers used shapefiles and census data to identify edge communities using the following conditions:

1. Some portion of community shapefile boundary within 20 miles of UZA boundary.
2. At least 50 percent of community population works outside community limit.
3. At least 85 percent of commuters travel more than 20 minutes to work.

Dense Core Communities

Dense core communities possess greater-than-normal density in terms of population and/or built environment (such as intersection density). Researchers investigated many ways to try to identify dense core communities. The vision was to develop a method of reliably identifying communities with traditional main streets, grid networks, smaller residential lots, sidewalks, or other characteristics that may represent a potential for fixed or flexible/deviated rural transit services. Rural communities with poor walkability, large lots, and dispersed populations are not conducive to transit services requiring riders to access bus stops.

Researchers used shapefiles and census data to identify dense core communities using the following conditions:

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8 https://www.sciencebase.gov/catalog/item/4f4e4acee4b07f02db67fb39.
1. Community is within (not completely within) a census urban cluster:
   a. Urban clusters are population centers defined during the same process as defining UZAs. Think of them as human settlements with densities like UZAs but population totals still within rural limits.
   b. Urban clusters have populations less than 50,000 (rural) and may contain/cross one or many communities (i.e., census places or CDPs).
2. Community population density is 500 or more persons per square mile.

Please note that this technical memorandum documents the initial version of community types; researchers will apply nationally and revise type conditions during Phase 2 to find an acceptable methodology for national use. Researchers are especially interested in fine-tuning the dense core community type, as it proved the most challenging to identify to the satisfaction of the research team.

**Retirement Communities**

Retirement communities possess higher median ages and portions of households with no employed person, and so may represent communities where employment-focused services are less important to a transit market than elsewhere. Not all communities are identical; extenuating circumstances could result in high unemployment and therefore no employed person in a larger portion of households. Using multiple conditions, age and employment, limits the likelihood of misidentifying a community.

Researchers identified retirement communities using two conditions:

1. Location quotient for elderly population greater than 1.25.
2. Median age greater than 50.
3. 30 percent or more of households with no employed person.

**Sort Communities by Suitability for Case Study**

The next step is to investigate rural communities served by the shortlisted transit agencies for study during Stage 1. Researchers recommend assigning each community a score based on the number of types exhibited. A greater variety of transit markets increases the likelihood that a case study of how transit contributes to livability will both be interesting and produce greater insight into the role of transit in general. Researchers will need to use their expertise to compare a shortlist of communities exhibiting several typologies related to rural transit services. Selecting a preferred community for a case study should involve comparing population characteristics, transit services, community resources, and community and transit service provider willingness to participate to make the final selection.
Recommended Approach for Case Studies

The pilot case of West Columbia City in Texas was conducted with two goals in mind: (1) to evaluate the nexus of livability and transit in the community, and (2) to test the outreach methods and approach for additional case studies. Additional cases can be selected by classifying and ranking the rural communities and transit agencies. However, using one of Seawright and Gerring’s seven cross-case methods of selection—typical, diverse, extreme, deviant, influential, most similar, or most different—may also prove useful. In either case, the primary objective is to ensure community case studies represent a wide variety of circumstances. After classifying and ranking the rural communities, it is up to the researchers to choose a community that may be less diverse in the within-case characteristics but represents the population.

Rural communities in America differ widely in terms of their demographic, social, and economic characteristics. TTI researchers will aim to prepare a representative sample of rural communities for additional case studies in Phase 2 of the project. The main aim of additional case studies is to evaluate the contribution of transit on rural livability so that general inferences can be drawn about rural transit livability. Moreover, another objective for additional case studies is to test the conformity of inferences drawn from the data analysis of the pilot case.

TTI researchers recommend outreach efforts aimed to gain a better understanding of the following:

- How residents of the community define livability.
- How transit riders may view community livability and needs differently from community leaders or other residents.
- How community leaders and other stakeholders perceive livability and transit’s contribution toward livability.

Hence, the researchers must aim to acquire perspectives and information from three key groups:

- Community stakeholders.
- Transit riders (past or present).
- Residents.

For the pilot case study, TTI researchers developed an approach to reach out to each of these three groups using either interviews or surveys. For additional cases, TTI recommends placing notices in local newspapers and in public locations prior to beginning data collection. The purpose of the notices is to spread word about the case study and to encourage participation as researchers contact households.

The following sections summarize how TTI researchers conducted outreach in West Columbia and the recommendations put forth for additional cases. Please note that researchers sought and received approval from Texas A&M University’s Institutional Review Board to conduct the pilot case study using the outreach plan documented in the following sections.

Recommended Types of Outreach

Researchers at TTI recommend any of the following three outreach strategies (involving stakeholder interviews and public/rider surveys) to be implemented for data collection. Other outreach strategies

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via forums, workshops, and timelines can also be used based on the discretion of the agency conducting research.

**Strategy 1**
First, researchers need to field the rider survey and resident survey simultaneously. After the survey results are analyzed, researchers should seek to conduct stakeholder interviews with key organizations in each community. Researchers may wish to conduct stakeholder interviews post-survey outreach, as doing so will enable a more refined list of stakeholders.

**Strategy 2**
First, researchers should conduct stakeholder interviews to gather local information about the community, residents, and transit agency. The next step is to make changes to survey language and design, as necessary, to address unique aspects of the case study community. Then, researchers can field the rider survey and resident survey simultaneously. After the rider and resident survey results are obtained, researchers should conduct a follow-up focus group discussion with stakeholders to discuss/review information obtained from the surveys.

**Strategy 3**
First, researchers need to conduct interviews with stakeholders and residents to gather local information about the community and transit agency. The next step is to hold follow-up focus group discussions with stakeholders and residents based on the opinions expressed by the stakeholders. After the results of the focus group and interviews are analyzed, researchers need to field the rider survey after including any specific questions as need be.

**Strategy 4**
Researchers should conduct any combination of the rider survey, public survey, stakeholder interviews, focus group(s), and/or workshops.

### Stakeholder Interviews

Stakeholder interviews were conducted in West Columbia City for the pilot study and are recommended for additional studies. The primary aims of stakeholder interviews are to understand the:

- Organization’s role in the community.
- Organization’s perspective on livability in the community:
  - Key aspects of livability.
  - Key issues the community can address to improve livability.
- Organization’s thoughts on how transit service affects livability in the community.

### Population

The population for stakeholder interviews can include senior officials, as available, from the following types of organizations/departments (order does not indicate importance of stakeholder):

- Mayor.
- City manager.
- City council.
- City departments (roads, planners).
- Chamber of commerce.
- Economic development corporation.
- Public transit operator.
- County judge.
- County commissioners.
- Intercity bus operator(s).
- Large employers.
- Health and human service agencies.
• Area agency on aging.
• Council of government.
• Educational institutions (university, colleges, school district administration).
• State workforce commission.
• United Way.
• Any non-profit organization working to improve mobility of residents.
• Coalition groups for mobility.
• State department of transportation.

The size of a rural community affects the number of stakeholders that actually exist and are relevant for a case study. West Columbia was a rather small rural community (population 3,900), so researchers were able to interview the following:

• City of West Columbia:
  o Mayor (Laurie Kincannon).
• West Columbia Chamber of Commerce.
• Gulf Coast Center.
• Brazoria County Center for Independent Living.

**Invitation and Consent Process**
Researchers recommend using the following language to invite each stakeholder to participate:

**[ABC], a [XYZ Institute researcher], is leading a team investigating the contribution of transit to livability in rural communities. [X town] is chosen as a case study for the project. A survey of transit riders and members of the public will garner the perspective of residents. Researchers would like to conduct a 20- to 30-minute interview of you as a representative of your organization. Your participation is voluntary. Researchers will report findings in summary form only. Findings will not be linked to your organization or your name. If researchers are interested in using a quote from the interview in reports, your express permission will be obtained first.**

*Your organization’s experience and perspective is important. You can review the questions researchers will ask; see the list below. Thank you for your time.*

**Have a question?**
If you have any questions, please contact: [ABC], [Position of ABC], [XYZ Institute], [ABC@XYZ.com] or (XXX) XXX-XXX. For questions about your rights as a research participant, you may call the [XYZ Institute] Human Subjects Protection Program office at (XXX) XXX-XXXX or irb@XYZ.com. (XYZ IRB #20XX-XXXX, approved XX/XX/XXXX, expiration date XX/XX/XXXX)

**Interview Questions**
Researchers may use the following questions, as relevant, to interview each stakeholder:

• What types of services does your organization provide/pursue that relate to []?
• From your organization’s perspective, what are the core components of community livability?
• How does the vision and mission of your organization relate to livability?
• [If applicable] What is the role of your community in the region?
• What could change to make this community even more livable?
• How does public transit contribute to this community’s livability?
• How could/should public transit adapt to improve community livability?
• Are there circumstances in [] that make having transit especially important?
• Does your organization operate any kind of transportation service? If so, please describe.
• How does public transit affect your organization’s work?
• What are options to fund the provision of transit in []? What fare should riders pay?
Resident Survey

Researchers recommend inviting a sample of households in the case community to participate in a voluntary survey. The size of the sample will vary based on community size, survey mode, financial constraints, and potentially the preferences of local stakeholders (such as city government or transit provider). Researchers may walk the streets of the community and place a survey packet (invitation/consent letter and survey) at each residence, as possible, or alternative methods to deliver the survey can be used. The survey includes questions to help riders share their own definition of livability, transit experience, customer satisfaction, and demographic characteristics. The survey can be an oversize postcard format, preferably with return postage paid, and can include a QR code and a hyperlink to an online version of the survey. Telephone-based survey sampling is also effective; recommend using random digit dialing of both landline and mobile phones.

Additional case studies may use similar outreach and survey measures as the pilot case and make adjustments as necessary based on socio-demographic characteristics of the selected case community.

Invitation/Consent

See Appendix B.

Survey Instrument

See Appendix B.

Rider Survey

Researchers recommend inviting every previous and current bus rider in the case community to participate in the case study by voluntarily and confidentially completing a survey. In the pilot case community, GCC Connect Transit provided the research team with a mailing address for each bus rider. This was possible because transit service in West Columbia is demand responsive and as such requires riders to make advance reservation to make trips. As possible, community case studies should include sampling bus riders either via mail or through site intercept interviews, hand out paper surveys, or some other means. Ideally, the bus rider will receive and respond to both the public survey instrument and the rider specific questions. The rider survey allows a bus rider to share his/her experience with transit. The public survey ensures the rider has the opportunity to share his/her own definition of livability and demographic characteristics.

Transit providers with fixed routes are not likely to possess address data for riders. Conducting an onboard survey to sample trips in both directions, AM and PM, several days of the week, is a good practice for collecting fixed-route responses.

In addition to the surveys, TTI researchers recommend observing the provision of transit in the case community during vehicle ride-alongs. A researcher needs to ride the bus to obtain first-hand experience with transit in the community. Boarding passengers should be asked if they received a survey packet in the mail; if they did not, the researcher can provide one.

Invitation/Consent

See Appendix B.

Survey Instrument

See Appendix B.
Appendix A. West Columbia Full Survey Responses

The following link loads an interactive summary report for survey responses from residents of West Columbia:

http://tti.residentfindings.sgizmo.com/reportsview/?key=297775-4792900-7bf0596509ced43f375b7f5a7f509e17

Connect Transit bus riders took both the resident survey and rider survey. The following link loads an interactive summary report for Connect Transit rider survey responses for the questions regarding both the resident survey elements and rider survey elements:

http://tti.riderfindings.sgizmo.com/reportsview/?key=297775-4792822-8b29797aa5d96e10c8c55a1919c66698
Appendix B. Phase 2 Survey Materials

Public Survey Information/Consent Letter Template

Researchers are to adapt the following template based on the mode of their survey and their letterhead.

Dear Resident of [Community Name],

My name is [Researcher Name]. I am a researcher with [Institution Name] at [University Name]. We are conducting research about what makes a rural community a great place to live and how public transit plays a role. Our study includes surveying the public and transit riders about their experience in their community. We chose [Community Name, State] as a community to study after careful planning; your input is needed and important.

If you are age 18 or over and one of the heads of your household, please take about 7 minutes to share your opinion by completing the enclosed survey. Once you finish, you can mail it to us free of charge using the enclosed envelope. No postage needed – just needs your opinion!

Your participation is voluntary and your responses are confidential. We will combine your responses with those of other [Community Name] residents taking part in the study. If you have any questions or need assistance taking the survey, please contact me by phone at (XXX) XXX-XXXX or by email [email address]. If you have any questions about your rights as a research participant, you may call [IRB office name] at (XXX) XXX-XXXX or [email address].

Thank you for your participation in this research. Please let me know if you would like to receive a copy of the results.

Sincerely,

[Signature]
[Name]
[Institution]

Prefer to take the survey online? Great!
Go to this link: [insert hyperlink]
or use your smart phone or tablet to scan the QR code:
Rider Survey Information/Consent Letter Template

Researchers are to adapt the following template based on the mode of their survey and their letterhead.

Dear [Transit Provider] Rider,

My name is [Researcher Name]. I am a researcher with [Institution Name] at [University Name]. We are conducting research about what makes a rural community a great place to live and how public transit plays a role. Our study includes surveying the public and transit riders about their experience in their community. We chose [Community Name, State] as a community to study after careful planning; your input is needed and important. You are receiving this letter and the enclosed survey because you are both a resident of [Community Name] and have used [Transit Provider] recently or sometime in the past.

If you are age 18 or over and one of the heads of your household, please take about 11 minutes to share your opinion by completing the enclosed survey. Once you finish, you can mail it to us free of charge using the enclosed envelope. No postage needed – just needs your opinion!

Your participation is voluntary and your responses are confidential. We will combine your responses with those of other [Community Name] residents taking part in the study. If you have any questions or need assistance taking the survey, please contact me by phone at (XXX) XXX-XXXX or by email [email address]. If you have any questions about your rights as a research participant, you may call [IRB office name] at (XXX) XXX-XXXX or [email address].

Thank you for your participation in this research. Please let me know if you would like to receive a copy of the results.

Sincerely,
[Signature]
[Name]
[Institution]

Prefer to take the survey online? Great!
Go to this link: [insert hyperlink]
or use your smartphone or tablet to scan the QR code:
Resident and Rider Survey Template

Researchers are to adapt the survey template based on the mode of their survey (site intercept, online, telephone, mail, etc).

**Online, Live Template**

http://tti.livability.sgizmo.com/s3/

**Adobe PDF Template**


**Microsoft Word Template**

http://tti.tamu.edu/group/transit-mobility/files/2015/08/UTC_PHASE_2_SURVEY.docx