Chapter 4: Demographic, Land Use and Travel Patterns

INTRODUCTION

This chapter will analyze the demographic makeup along the US 71B corridor as it relates to a smart bus rapid transit (BRT) service. The analysis focused on demographic cohorts that have a substantial impact on transit service and demand. Additionally, Title VI populations examined to ensure that historically marginalized populations are not disproportionately impacted by service changes.

For the purposes of this study, the focus will be on the following demographic cohorts:

- Population density - persons per square mile
- Employment density - jobs per square mile
- Poverty - people per square mile falling below the national poverty level
- Minority population - people per square mile who are non-white or of Hispanic origin
- Autoless households - households per square mile with no vehicle available
- Senior population - people per square mile who are age 65 or older
- Youth population - people per square mile who are age 18 or younger
- Persons with disabilities - people per square mile who have a disability
- Limited English Proficiency (LEP) - households per square mile with limited English

This chapter will look at major land uses throughout the corridor including major employment locations, large educational institutions, and regional medical facilities. A summary of regional travel patterns will also be presented.

Remix Transit Planning Tool

For this project, the demographic analysis included the use of Remix software. Remix allows the user to design routes and immediately understand the cost and demographic impact of a proposed change. The tool pulls Ozark Regional Transit (ORT) and Razorback Transit (RT) existing transit networks into the program so that various alternatives can be evaluated quickly. The tool uses the 2013 American Community Survey (ACS), based on a five year period from 2009 - 2013. Data is provided at the block group level. Employment densities for the United States are provided by the 2012 Longitudinal Employer-Household Dynamics survey.

1 Remix uses the Workplace Area Characteristics (WAC) file of segment JT00 (All Jobs), variable C000 (Total number of jobs) for each state and state equivalent.
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**Population Analysis**

Population is a key indicator of what types of transit services might be viable. Rapid growth is the best way to describe the area’s demographics. Table 4-1 shows the U.S. Census population counts for cities in the US 71B corridor from 1990-2010.

This area continues to be a major draw for young people and major employment with the University of Arkansas and headquarters of Walmart, J.B. Hunt, Georges and Tysons.

**Table 4-1: Historical Populations**

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonville</td>
<td>12,021</td>
<td>20,308</td>
<td>35,862</td>
<td>68.94%</td>
<td>76.59%</td>
<td>198.33%</td>
</tr>
<tr>
<td>Bella Vista</td>
<td>9,083</td>
<td>15,842</td>
<td>26,588</td>
<td>74.41%</td>
<td>67.83%</td>
<td>192.72%</td>
</tr>
<tr>
<td>Fayetteville</td>
<td>43,013</td>
<td>59,384</td>
<td>73,966</td>
<td>38.06%</td>
<td>24.56%</td>
<td>71.96%</td>
</tr>
<tr>
<td>Lowell</td>
<td>1,370</td>
<td>5,460</td>
<td>7,346</td>
<td>298.54%</td>
<td>34.54%</td>
<td>436.20%</td>
</tr>
<tr>
<td>Rodgers</td>
<td>25,674</td>
<td>39,912</td>
<td>56,331</td>
<td>55.46%</td>
<td>41.14%</td>
<td>119.41%</td>
</tr>
<tr>
<td>Springdale</td>
<td>30,481</td>
<td>47,484</td>
<td>71,083</td>
<td>55.78%</td>
<td>49.70%</td>
<td>133.20%</td>
</tr>
<tr>
<td><strong>Corridor Totals</strong></td>
<td><strong>121,642</strong></td>
<td><strong>188,390</strong></td>
<td><strong>271,176</strong></td>
<td><strong>54.87%</strong></td>
<td><strong>43.94%</strong></td>
<td><strong>122.93%</strong></td>
</tr>
</tbody>
</table>

Source: U.S. Census and American Community Survey

Table 4-2 features recent population estimates from the ACS. The data shows that since 2010, all cities in the corridor have experienced at least some population increases. Bella Vista, Springdale and Fayetteville have experienced the slowest growth. Bentonville and Lowell have the highest growth rates with Bentonville growing over 16 percent from 2010 to 2014.

**Table 4-2: Recent Population Trends**

<table>
<thead>
<tr>
<th>County</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2010-2014 Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonville</td>
<td>35,862</td>
<td>36,962</td>
<td>38,368</td>
<td>40,167</td>
<td>41,613</td>
<td>16.04%</td>
</tr>
<tr>
<td>Bella Vista</td>
<td>26,588</td>
<td>26,991</td>
<td>27,405</td>
<td>27,600</td>
<td>27,688</td>
<td>4.14%</td>
</tr>
<tr>
<td>Fayetteville</td>
<td>73,966</td>
<td>75,580</td>
<td>77,033</td>
<td>79,019</td>
<td>80,621</td>
<td>9.00%</td>
</tr>
<tr>
<td>Lowell</td>
<td>7,346</td>
<td>7,524</td>
<td>7,705</td>
<td>7,938</td>
<td>8,334</td>
<td>13.45%</td>
</tr>
<tr>
<td>Rodgers</td>
<td>56,331</td>
<td>57,780</td>
<td>59,044</td>
<td>60,092</td>
<td>61,464</td>
<td>9.11%</td>
</tr>
<tr>
<td>Springdale</td>
<td>71,083</td>
<td>72,322</td>
<td>73,620</td>
<td>75,295</td>
<td>76,565</td>
<td>7.71%</td>
</tr>
<tr>
<td><strong>Corridor Totals</strong></td>
<td><strong>271,176</strong></td>
<td><strong>277,159</strong></td>
<td><strong>283,175</strong></td>
<td><strong>290,111</strong></td>
<td><strong>296,285</strong></td>
<td><strong>9.26%</strong></td>
</tr>
</tbody>
</table>

Source: U.S. Census and American Community Survey
Population Forecast

Future forecasts for the region anticipate significant population growth. The overall region is expected to experience just over a 22 percent growth rate during the period from 2020 to 2030. During this period, the region is expected to grow from 541,697 persons to 659,113 persons, an increase of about 117,415. The largest population growth is expected in Benton County which is expected to grow from 298,572 to 372,831 by 2030, an increase of over 74,000 people. Washington County is also anticipated to see significant population increases within this timeframe (43,156 persons). Table 4-3 provides the forecasted population growth for the region out to 2030.

Table 4-3: Population Forecasts

<table>
<thead>
<tr>
<th>County</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benton</td>
<td>298,572</td>
<td>335,701</td>
<td>372,831</td>
</tr>
<tr>
<td>Washington</td>
<td>243,126</td>
<td>264,704</td>
<td>286,281</td>
</tr>
<tr>
<td>Regional Totals</td>
<td>541,697</td>
<td>600,405</td>
<td>659,113</td>
</tr>
</tbody>
</table>


Population Density

One of the most important factors in determining an appropriate transportation mode for a community is population density. Population density is often used as an indicator of the type of public transit services that are feasible within a study area. Typically an area with a density of 1,000 persons per square mile will be able to sustain some form of daily fixed route transit service. An area with a population density over 2,000 persons per square mile may be able to sustain enhanced transit service such as Bus Rapid Transit (BRT).

Figure 4-1 shows the corridor population density at the census block group level. Not surprisingly the most densely populated areas are in the core of the cities along the corridor. The corridor sustains over 3,000 people per square mile between Bentonville and Rogers and between Springdale and Fayetteville. Small pockets of population density in each city exceed 12,000 people per square mile.

**TRANSPORTATION DEPENDENT POPULATIONS**

Public transportation needs are defined in part by identifying the relative size and location of those segments within the general population that are most likely to be dependent on transit services. This includes individuals who may not have access to a personal vehicle or are unable to drive themselves due to age or income status. The results of this demographic analysis highlight geographic areas with the greatest need for transportation.
Figure 4-1: Population Density in the US 71B Corridor
Senior Adult Population

One of the socioeconomic groups covered in this analysis is the senior adult population, individuals ages 65 and older. Persons in this age group may begin to decrease their use of a personal vehicle and rely more heavily on public transit. Figure 4-2 shows the relative concentration of seniors in the region. Within a quarter of a mile of the initial proposed transit station 11 percent of the population is over age of 65.

Individuals with Disabilities

Figure 4-3 illustrates the individuals with disabilities along the US 71B corridor. The Remix planning tool uses American Community Survey to obtain data for the disabled population. Persons who have disabilities that prevent them or make it more difficult to own and operate a personal vehicle often rely on public transit for their transportation needs. Areas along the corridor with high or very high concentrations of individuals with disabilities include the area along the border of Rogers and Bentonville, northwest Springdale and certain block groups in Fayetteville. With the draft station locations approximately 10 percent of the population within a quarter mile of the transit stations has a disability.

Zero Car Households

Households without at least one personal vehicle are more likely to depend on the mobility offered by public transit. Displaying this segment of the population is important since many land uses in the region are at distances too far for non-motorized travel. Figure 4-4 displays the number of autoless households in each block group along the US 71B corridor. Areas with very high numbers of autoless households include the southeast portion of Bentonville, the northeast portion of Springdale, and the areas adjacent to the University of Arkansas in Fayetteville. Within a quarter mile of the draft station alignment, 7.3 percent of the population is in a household without an automobile.

Youth Population

The youth population is often used as an identifier of transit dependent population. Persons ages 10 to 18 either cannot drive or are just beginning to drive and often do not have a personal automobile accessible to them. For this population, public transit is often the means that offers mobility. Figure 4-5 illustrates the concentrations of youth populations along the US 71B corridor. Portions of Springdale and Rogers contain very high youth populations relative to the study area. Within a quarter mile of the draft station alignment 23 percent of the population is under age 18. This is the highest percentage of any transit dependent population along the corridor.
Figure 4-2: Senior Population per Square Mile in the US 71B Corridor
Figure 4-3: Persons with Disabilities per Square Mile in the US 71B Corridor
Figure 4-4: Zero Car Households in the US 71B Corridor
Figure 4-5: Youth Population per Square Mile in the US 71B Corridor
TITLE VI DEMOGRAPHIC ANALYSIS

The Civil Rights Act of 1964, Title VI prohibits discrimination on the basis of race, color, or national origin in programs and activities receiving federal subsidies. This includes agencies providing federally funded public transportation. The following section examines the minority and below poverty level populations along the US 71B corridor.

Minority Population

It is important to ensure that areas with an above average percentage of racial and/or ethnic minorities are not negatively impacted by any proposed alterations to existing public transportation services. Figure 4-6 illustrates the concentration of minority populations in the study area. The eastern portion of Springdale is the only area in the corridor with over 10,000 people per square mile who are minorities. Fayetteville and Rogers also have areas with higher concentration of minority populations. Minorities make up 28 percent of the population within a quarter mile of the draft transit station locations.

Below Poverty Populations

The second group included in the Title VI analysis represents those individuals who earn less than the federal poverty level. This segment of the population may find it a financial burden to own and maintain a personal vehicle, thus relying on public transit as their primary means of transportation. Figure 4-7 depicts the population per square mile of individuals living below the federal poverty level. Springdale and Rogers are the only cities with areas of over 5,000 residents per square mile living below the poverty level. Within a quarter mile of the draft transit station locations, 23 percent of the population lives below the poverty level.

Limited-English Proficiency

In addition to providing public transportation for a diversity of socioeconomic groups, it is also important to serve and disseminate information to those of different linguistic backgrounds. As shown in Figure 4-8 the highest concentrations of individuals along the US 71B corridor with limited English proficiency are in Springdale, Rogers and adjacent to the University of Arkansas in Fayetteville. Five and one half percent of the population within a quarter mile of the draft transit station locations has limited English proficiency.
Figure 4-6: Minority Population per Square Mile in the US 71B Corridor
Figure 4-7: Below Poverty Population Density in the US 71B Corridor
Figure 4-8: Population Density of Individuals with Limited English Proficiency in the US 71B Corridor
LAND USE PROFILE

Employment Density

Northwest Arkansas is home to several large local, regional and national employers. Companies like Walmart, J.B. Hunt, Tysons, George’s and the University of Arkansas create an economic and employment ripple effect in the region. As these companies grow and the regional population grows, the demand for more employment and services grows as well.

Major employment centers can create significant demand for transit service. Issues like large concentrations of lower income employees, traffic congestion at commuting times, and parking availability contribute to the demand for transit services. The US 71B corridor has a heavy concentration of employment and commercial destinations. All of these locations will be well served by a robust regional transit service such as Smart BRT.

Figure 4-9 details the employment density along the US 71B corridor. As shown, the highest amount of jobs per square mile are in Bentonville, Springdale (near George’s), and Fayetteville (near University of Arkansas). Within a quarter mile of the draft transit station locations there are almost 29,000 jobs. If that boundary is expanded to a half mile, the number of jobs adjacent to the transit stations surpasses 67,000.

Regional Trip Generators

Identifying regional trip generators serves to complement the previous demographic analysis by indicating where transit services may be most needed. Trip generators attract transit demand and include common origins and destinations. Examples include higher level educational facilities, major employers, regional medical facilities, and Veteran Affair’s Facilities. Trip generator categories and locations are briefly detailed below. Regional trip generators are shown in Figure 4-10.
Figure 4-9: Employment Density in the US 71B Corridor
Figure 4-10: Regional Trip Generators in the US 71B Corridor
**Educational Facilities**

Many individuals that comprise the school age population are unable to afford or operate their own personal vehicle. Based on the ridership levels seen at RT, there is evidence that this segment of the population is reliant upon public transportation. Additionally, many faculty and staff members are associated with educational institutions as a place of employment. Some of the major educational facilities in the region include:

- University of Arkansas
- John Brown University
- Northwest Arkansas Community College
- Ecclesia College
- Harding University Northwest Arkansas Professional Center
- Northwest Technical Institute

**Major Employers**

This section examines the top regional employers in the region (those with more than 500 employees). Providing transit services to major employment locations is advantageous to both employees, as the individual is provided with direct access to their occupation and subsequent source of income, and employer, as this entity will offer assurance that their current or potential workforce will have diverse options for accessing the destination. For the purposes of transit planning, school districts and large employers where employment is dispersed and not geographically concentrated in large numbers is excluded from this analysis. Some of the major employers on or adjacent to the US 71B corridor include:

- Walmart
- Tysons Foods
- JB Hunt Transport Services
- Mercy Health System of Northwest Arkansas
- University of Arkansas
- George’s
- Washington Regional Medical Center
- Northwest Health Systems
- US Veterans Medical Center
- Superior Industries International
- Rockline Industries

**Major Medical Facilities**

Major medical facilities, classified as regional and general hospitals, represent a significant destination for users of public transportation. Older adults and persons with
disabilities often rely more heavily upon the services offered by medical facilities than other population segments. Since this group represents a large faction of the transit dependent population, it is imperative that these facilities are made accessible through public transit services. The major regional medical facilities on or adjacent to the US 71B corridor include:

- Mercy Health System of Northwest Arkansas
- Washington Regional Medical Center
- Northwest Health Systems
- US Veterans Medical Center
- University of Arkansas Medical Services

**Veteran Affairs Medical Facilities**

The Department of Veterans Affairs (VA) oversees a network of medical centers and smaller community based services. Locating transportation to these facilities can be a major barrier for veterans who rely on services that these facilities provide. A large regional VA Hospital is located along US 71B in Fayetteville.

**Human Service Locations**

Human service organizations often serve clients that are dependent on transportation services. These organizations can help low income residents, senior adults and/or people with disabilities. Throughout Northwest Arkansas there are human service locations that provide services such as food assistance, workforce assistance, health care, training, adult daycare, and other important human and social services.

**Regional Travel Patterns**

Travel between the cities in Northwest Arkansas is common for a variety of trip purposes. Many commuters live adjacent to US 71B and commute to another city along the corridor. Students at community colleges and the University of Arkansas also travel from other communities along the corridor to access their place of education. The large VA facility in Fayetteville has a regional draw as do many of the other regional medical facilities along the corridor.

Figure 4-11 shows the intra- and intercity daily travel patterns along the US 71B corridor. As shown, the majority of trips in the region are intra-city trips, that is, the origin and destination are within the same city. However, there are a substantial number of trips

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3 Data for the regional travel pattern illustration is from the travel demand model developed by the Northwest Arkansas Regional Planning Commission.
made between cities along the corridor on a daily basis. The majority of intercity trips are made between Rogers and Bentonville (86,784 daily trips) as well as between Fayetteville and Springdale (79,624 daily trips). Other substantial intercity connections are between Rogers and Fayetteville (9,530 daily trips) and between Springdale and Bentonville (11,334 daily trips).

This aspect of regional travel patterns coupled with the demographic, land use, and public outreach demonstrates that there is a great potential for two-way commutes along the corridor. Due in part to the major concentrations of employers throughout the service area and the diverse urban area with people from all over the world (many of whom expect robust transit services) the potential for successful smart BRT service is great.

**DEMOGRAPHIC, LAND USE AND REGIONAL TRAVEL SUMMARY**

The Northwest Arkansas area is a dynamic community where transit needs to play catchup, particularly compared to its peer regions (as shown in Chapter 3 of this plan). The region is particularly young and diverse. Connectivity to Razorback Transit along with the young and diverse community provides ample potential for a two-directional commute along the US 71B corridor.

The US 71B corridor is bustling with economic activity. Four major corporations (Walmart, J.B. Hunt, Tyson’s, and George’s) are headquartered within a half mile of the road, and there are many other large employment facilities there as well. For the most part, the corridor is lined with commercial land uses with several basic goods and services and significant employment opportunities. The highway is adjacent to several major medical facilities and is home to a large regional VA hospital. Within a quarter mile of the draft transit station locations there are almost 29,000 jobs. If that is expanded to a half mile the number of jobs adjacent to the transit stations goes up to more than 67,000.
Figure 4-11: Regional Travel Patterns

TOTAL DAILY CITY TO CITY TRIPS = 208,928
(Trips where both the origin and destination is within each of the six cities)

Based on the usage of shuttle/feeder service to the BRT stations.

TOTAL DAILY INTRA-CITY TRIPS = 444,601

Not to scale.
The population of Northwest Arkansas is rapidly growing. As large companies and the University of Arkansas continue to attract talent from all over the world, demand for robust transit services is only going to increase. While the US 71B corridor is primarily a commercial artery, many residents live adjacent to the highway. Within the initial draft alignment, over 9,000 residents live within a quarter mile of a proposed transit station. Almost 35,000 residents live within a half mile of the initial station locations. Of those residents:

- 22% live below the poverty level
- 28% are minorities
- 7% have no vehicle
- 6% have limited English proficiency
- 12% are above the age of 65
- 24% are below the age of 18
- 10% have a disability

The unique makeup of the region and corridor both in terms of demographics and land use, lends itself to enhanced public transit service. The US 71B corridor can support a BRT type of service with the right mix of local support and service parameters. These aspects will be detailed in subsequent chapters of this plan.