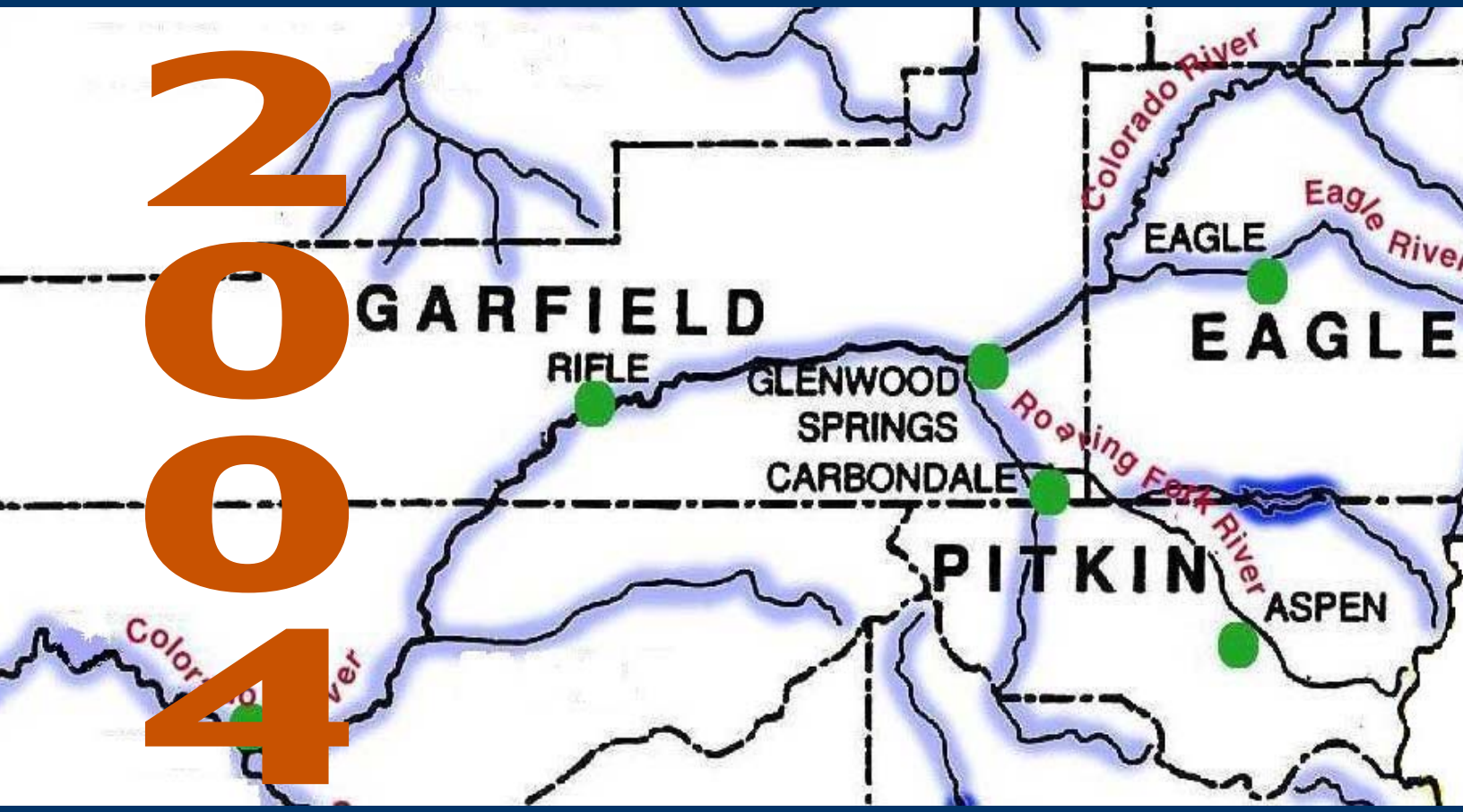
Local & Regional Travel Patterns Study

2004



Examining how, why, when, and where people travel in the Roaring Fork and Colorado River Valleys.

Prepared by: RRC Associates, Charlier Associates & Healthy Mountain Communities

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EXECUTIVE SUMMARY

The Local and Regional Travel Patterns Study is a collaborative effort between Garfield, Pitkin and Eagle Counties, city and town governments, and the Roaring Fork Transportation Authority (RFTA) to update a similar study that was conducted in 1998. The information will help gauge progress toward local and regional transportation goals and inform future investments in transportation infrastructure.

The 2004 update uses survey and 2000 Census data to describe the why, where, how, and when people move about in the Roaring Fork and Colorado River Valleys. The 2004 study also includes more information regarding truck usage, housing location preferences, interest in local circulator services, and selected other topics.

Study Area
The 1998 study covered the region from Parachute to Aspen. The 2004 study incorporates this same area, plus Eagle and Gypsum in Eagle County. When information is compared between the 2004 and 1998 results in this report, Eagle and Gypsum have been excluded for geographic consistency.

Methodology
As in the 1998 study, the primary data sources for this report were two surveys conducted during March and April, 2004 - an employee survey and an employer survey. The project team distributed 4,000 employee surveys throughout the study area through employers via a website survey, a mailback survey or a combination of both. A total of 1,027 employee surveys were completed, for a response rate of 26 percent. By comparison, in 1998 about 3,000 paper surveys were distributed and 500 returned - a 17% response rate. The employer survey was delivered to 367 employers (up from 200 in 1998), and generated 123 responses - a 36% response rate.

Summary of Findings
As we learned in the *1998 Local and Regional Travel Patterns Study*, the communities of the Roaring Fork and Colorado River Valleys continue to make up a dynamic region with travel patterns unique in the intermountain west.

- The live/work patterns of the region continue the trend of workers largely living in communities different from their place of employment. Only 41 percent of residents of the Roaring Fork Valley's cities, towns and Census-designated "places" worked in their hometown in 2000, down from 48 percent in 1990. An additional 31 percent worked in other communities in the same county, and 27 percent worked in a different county. Among all workers residing in the Roaring Fork region (including residents of unincorporated areas), 26 percent commuted across county lines in 2000, up slightly from 23 percent in 1990. The average commute distance as measured in the 2004 survey was 15.7 miles, down slightly from 16.8 miles in 1998.

- The workforce bears a significant cost of commuting, an estimated $6,700 annually in vehicle-related expenses for a typical household, but the cost of housing in the region makes living in the communities with the most jobs prohibitive. Forty-four percent of workers surveyed in the Roaring Fork Valley would move closer to work if they could afford to, while 11 percent say they are looking for work closer to home.

- A relatively high share of Roaring Fork workers commute by bus (7 percent, per 2000 Census), significantly higher than in many urban areas such as Portland (6 percent) and Denver (5 percent). Additionally, riders generally believe the service is of a high quality except for when it comes to bus shelters and frequency. Transit usage is even higher in the upper valley where bus service is more frequent.

- An even higher percentage carpools or vanpools to work (20 percent). Only 64 percent drive alone, a lower share than in many metro areas (Denver – 79 percent, Portland – 77 percent) and mountain communities (Summit County – 70 percent, Routt County – 73 percent).

- Many workers express an interest in more local circulator bus service, and a surprising number of non-bus riders (35%) said they would use local bus service to commute to work.

- Housing assistance is widespread in the Aspen/Pitkin area (43% of respondents living in the upper valley reported receiving assistance), but is much less common downvalley.

- Population, job and traffic projections for the future create significant challenges including:
    - Almost of doubling of the regional population and subsequent growth in traffic;
    - Job growth continuing to outrun population growth and housing development in Pitkin County, which will increase commuting upvalley; and
    - Expansion of local area commuting in the mid valley (Basalt, El Jebel, Carbondale) and Garfield County in general (which will also see the most increase in population).

Final Thoughts

Overall, the unique travel patterns of the Roaring Fork and Colorado River Valleys (specifically, high levels of transit ridership and carpooling), which were originally documented in the 1998 study, have remained in this 2004 study. Transit and carpooling percentages could increase further if the region's local governments, in conjunction with the Roaring Fork Transportation Authority, choose to increase the area and frequency of bus service, coordinate carpooling, and encourage transit oriented, pedestrian-friendly development patterns. These investments would build on current efforts to create a more balanced transportation system and offer people increasing choices about how to spend their time and their transportation money and how to get where they need to go. Such an approach could mitigate some of the impacts of the significant increase in population and jobs projected for the region over the next twenty years.

Additional summary findings and conclusions are contained in Section 4.7 and the Conclusions section of this report.

CHAPTER 1 – Introduction & Methodology

Section 1 - Introduction

This Local and Regional Travel Patterns Study is a collaborative effort between Garfield, Pitkin and Eagle Counties, city and town governments, and the Roaring Fork Transportation Authority (RFTA) to update a similar study that was conducted in 1998. Given the ongoing growth and change that has occurred in the region since the previous study was completed, the primary purpose of the 2004 update is to understand any shifts in employer, employee and household travel mode behavior and opinions since 1998. This information will help gauge progress toward local and regional transportation goals and inform future investments in transportation infrastructure.

The 2004 update uses survey and 2000 Census data to describe the why, where, how, and when people move about in the Roaring Fork and Colorado River Valleys. Like the 1998 study, this report seeks to clarify relationships between travel behaviors and the geographic, economic, and demographic characteristics of employees and households in the area; analyze opportunities for travel mode shifts and traffic reduction; and provide forecasts of population and job growth and associated changes in person-trips/vehicular traffic. The 2004 study also includes more information regarding truck usage, housing location preferences, interest in local circulator services, and selected other topics.

Additional tabular data is presented in the Appendices to this report and is available online at the Healthy Mountain Communities website (www.hmccolorado.org).

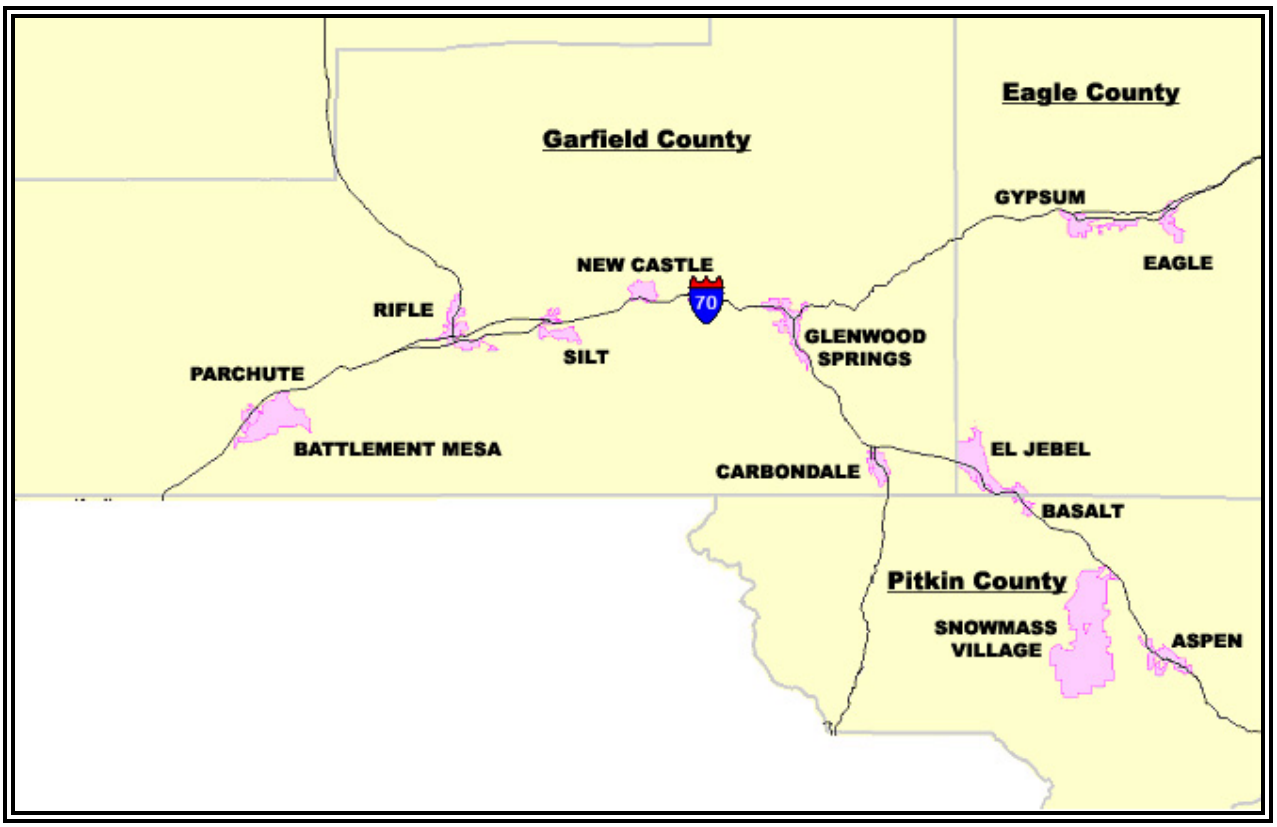
This report largely follows the same general format as the 1998 study. Chapter 1 provides introductory background information; Chapter 2 discusses current travel patterns and relationships; Chapter 3 discusses mode shift opportunities and factors influencing the use of alternate transportation modes; and Chapter 4 discusses future mobility in the region.

This study focuses on commuter travel, as well as ancillary trips made by employees during their workday. Other types of trips, including trips not associated with or ancillary to work, trips by residents who are not employed (either at all or in the region), and trips by visitors to the region, are not included.

Section 2 - Study Area

The 1998 study covered the region from Parachute to Aspen, i.e. the Lower Colorado and Roaring Fork valleys (including the Roaring Fork Valley portion of Eagle County – El Jebel and Basalt). The 2004 study incorporates this same area, plus Eagle and Gypsum in Eagle County. When information is compared between the 2004 and 1998 results in this report, Eagle and Gypsum have been excluded for geographic consistency.

Figure 1.2.1 Map of Study Area



Section 3 - Methodology

As in the 1998 study, the primary data sources for this report were two surveys conducted during March and April, 2004 - an employee survey and an employer survey.

Employee Survey

The project team distributed 4,000 employee surveys throughout the study area through employers via a website survey, a mailback survey or a combination of both. Employer lists were acquired from confidential Colorado Department of Revenue ES202 employer address files, a database that includes all employers that are subject to the state's unemployment insurance system. (Some workers are exempt from the system and were not in the sampling

frame, most notably self-employed sole proprietors.) A total of 1,027 surveys were completed, for a response rate of 26 percent. By comparison, in 1998 about 3,000 paper surveys were distributed and 500 returned - a 17% response rate.

The high response volume in 2004 was due to an increased sample size, the use of both web and mailback survey techniques, extensive personal outreach to the employers in the area, a publicity effort to encourage response to the survey, and incentives to respond, including a drawing for ten (10) fifty-dollar ($50) grocery certificates awarded to randomly selected survey respondents, and an incentive of free bike lights (courtesy of RFTA) to the first fifty respondents. Similar to the 1998 study, a Spanish version of the survey was also made available, resulting in 39 responses. Selected smaller communities (e.g., El Jebel, New Castle, Parachute, Silt, etc.) were intentionally somewhat oversampled this year with the goal of generating statistically usable results at the individual community level.

The raw survey data have been "weighted" slightly on the basis of place of residence of labor force participants and housing tenure (own/rent) by place of residence, in order to match 2000 Census results as closely as possible. The amount of adjustment required was slight, an indication that the survey effort generally achieved the objective of reaching a random sample of local workers. Tables 1.3.1 and 1.3.2 illustrate the pre- and post-weighting survey results for place of residence (1.3.1) and housing tenure (1.3.2), as well as the 2000 Census results for these items. As shown, the distribution of weighted responses is quite close to the underlying population distribution, meaning that the survey results are representative of the population on the basis of place of residence, housing tenure, and (relatedly) many other demographic characteristics. The data contained in this report is based on the "weighted" survey results.

Table 1.3.1 - Weighting of 2004 Employee Survey Results by Place of Residence; Comparisons to 2000 Census Data

DO YOU LIVE IN/ NEAREST TO:	Raw 2004 Survey Data	Weighted 2004 Survey Data	2000 Census Labor Force
Aspen	12.7%	14.0%	13.8%
Snowmass Village	5.2%	5.8%	5.8%
Basalt/El Jebel	16.4%	13.3%	13.2%
Carbondale/Glenwood	24.9%	27.1%	27.2%
New Castle/Silt	11.4%	9.9%	10.0%
Rifle	9.1%	12.4%	12.2%
Parachute	8.6%	5.0%	5.0%
Eagle/Gypsum	11.6%	12.6%	12.6%
Total	100.0%	100.0%	100.0%

Table 1.3.2 - Weighting of 2004 Employee Survey Results by Housing Tenure;

Comparisons to 2000 Census Data

WHICH BEST DESCRIBES YOUR HOUSING SITUATION

	Raw 2004 Survey Data	Weighted 2004 Survey Data	2000 Census Housing Tenure
Own	71.6%	66.2%	65.3%
Rent	25.1%	30.2%	34.7%
Caretake	1.4%	1.4%	n/a
Currently seeking housing	0.6%	0.9%	n/a
Other	1.2%	1.3%	n/a
Total	100.0%	100.0%	100.0%

Employer Survey

The employer survey was delivered to 367 employers (up from 200 in 1998), and generated 123 responses -- a 36% response rate. This high rate was achieved in part through extensive communication and follow-up with employers. The 30 largest employers in the region were included in the sampling frame (due to their disproportionate share of employment), along with a random sample of employers of other sizes. Additionally, businesses in smaller communities were intentionally somewhat oversampled to ensure sufficient local return rates from employers and employees in those communities. Table 1.3.3 below illustrates that the employer survey response was more heavily weighted towards larger employers (as planned), although employers of all sizes responded and just over half of total responses were from small employers (under 10 employees).

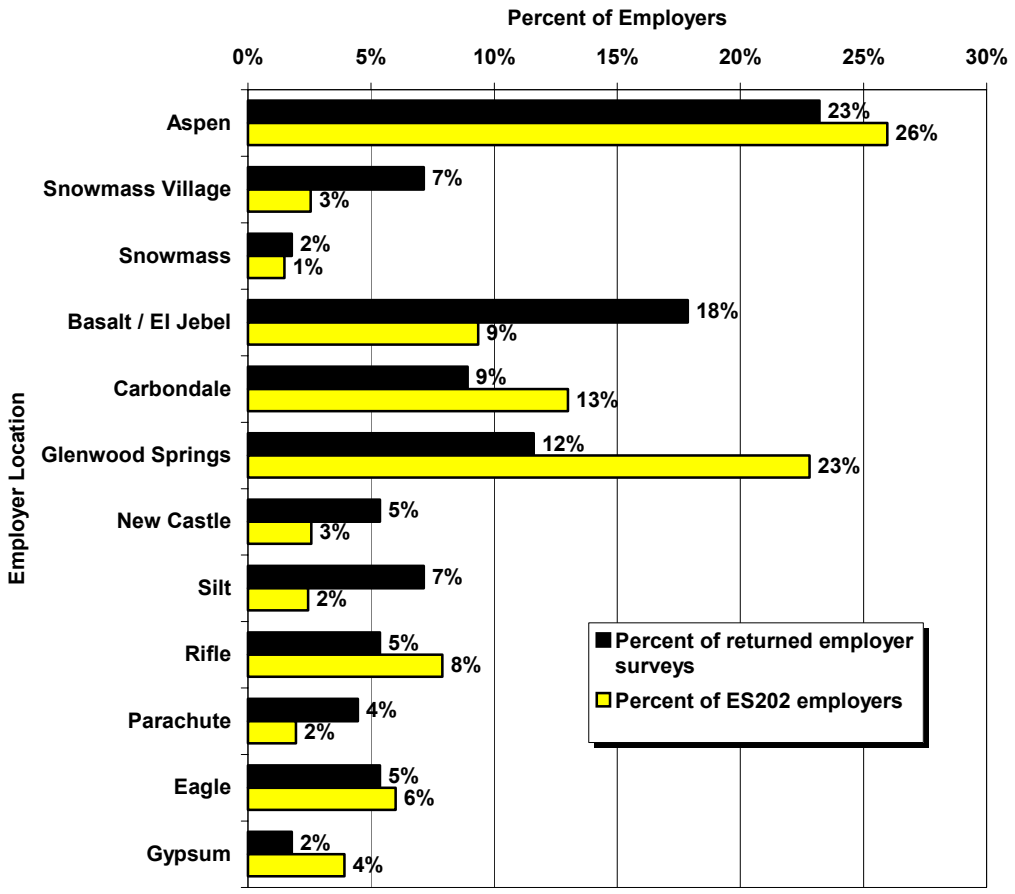
Table 1.3.3 - Size Distribution of Employers: 2004 Employer Survey Response vs. Overall ES202 Employer Size Distribution

Employees	2004 Employer Survey Response	Percent of ES202 Employers in Region*
1 - 9	53%	76%
10 - 24	19%	16%
25 - 49	4%	6%
50 - 99	2%	2%
100 - 199	8%	1%
200+	14%	1%
TOTAL	100%	100%

*ES202 employer size distribution from second quarter 2003 ES202 employer address files for the study region.

The geographic distribution of employer responses is shown in Figure 1.3.4, as compared with the employer distribution throughout the region reported through ES202 data. This figure shows that the larger employment centers (particularly Glenwood Springs) are somewhat underrepresented as a percentage of responses compared to actual employer distribution in these areas. However, the smaller employment communities of Basalt/El Jebel, New Castle, Silt, and Parachute yielded a slightly higher percentage of employer responses than actual distribution of employers in the region. This reflects the intentional over-sampling of businesses in smaller communities to ensure sufficient return rates, as noted above.

Figure 1.3.4 – Distribution of employers in study area:
2004 employer survey responses compared to ES202 employer distribution



Source: ES202 data from Colorado Department of Labor and Employment – Labor Market Information; RRC Associates.

CHAPTER 2 – Current Travel Patterns and Relationships

This chapter describes the travel behavior of commuters and residents in the study area. Current travel characteristics are presented based primarily on the employee survey and U.S. Census data.

Sections and topics covered include:

- Section 1 - Live / Work Patterns
- Section 2 - Cost of Commuting
- Section 3 - Employment Patterns
- Section 4 - Vehicle Ownership
- Section 5 - Mode Choice - Commute Trips
- Section 6 - Telecommuting
- Section 7 - Other Trips During the Workday
- Section 8 - Housing Choices and Preferences

Much of the data in this section is summarized by place of residence of the respondents. However, both place of residence and place of work relationships were captured in the survey database. Those readers interested in exploring the travel patterns based on where people work, as well as numerous other demographic and travel characteristics, can find that data in the companion Appendices available on Healthy Mountain Communities' website (www.hmccolorado.org).

Section 1 - Live / Work Patterns

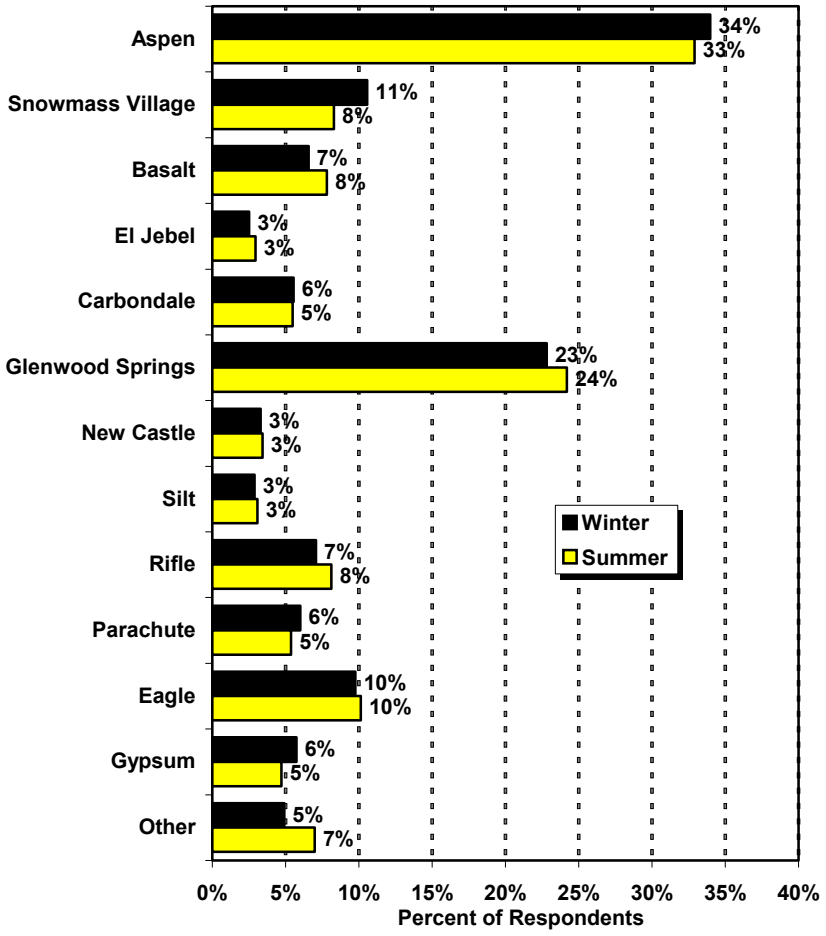
This section of the report examines out-commuting and in-commuting patterns for workers in each community in the study area.

Where Respondents Work: Figure 2.1.1 compares where respondents work in winter to where they work in summer, based on 2004 employee survey results. This shows relatively balanced employment throughout the region between both seasons, implying relatively similar commuting patterns between both seasons. Snowmass Village shows the largest winter-to-summer seasonal shift, from 11 percent of respondents being employed in the town in the

winter to 8 percent in the summer. By contrast, respondents are more likely to be employed in "other" areas in the summer (7 percent) than in the winter (5 percent). (Note: Responses sum to greater than 100 percent, to accommodate responses from persons who work in multiple locations and/or hold multiple jobs.)

Also of note in this data is the relative size of various employment centers. As shown below, Aspen is the single largest employment center (33 - 34 percent of respondents working there in winter and summer respectively), with Glenwood Springs a strong second (23 – 24 percent).

Figure 2.1.1 – Where Respondents Work: Winter vs. Summer (2004 Survey Response)



Note: Responses sum to greater than 100 percent, to accommodate responses for persons who work in multiple locations or outside.

Further confirmation of these patterns comes from ES202 data. As illustrated in Table 2.1.2 below, the ES202 data also shows Aspen and Glenwood Springs to be the two largest employment centers in the region. The ES202 data also shows comparatively stable distributions of employment between winter (represented by April 2003) and summer

(represented by June 2003), with some season fluctuations in some communities (e.g. Snowmass Village has a lower share of employment in winter than summer in both the ES202 and survey data).

While the ES202 data exhibits the same macro patterns as the survey data, there are some differences between the two datasets that prevent a pure "apples-to-apples" comparison, thus necessitating caution. Specifically, the two largest differences are as follows:

- The ES202 data reports jobs (summing to 100 percent), while the survey data reports workers, who (due to multiple jobholding and variable work locations) sometimes work in more than one community, causing place of work distributions to sum to greater than 100 percent.
- The ES202 data reports selected large employers with multiple operating locations (e.g. school districts) at only the headquarters location, thus overstating employment at the headquarters location. The survey data does not have this shortcoming.

Table 2.1.2 – Where Residents Work: Winter vs. Summer, 2004 Survey Response vs. 2003 ES202 Jobs (Eagle and Gypsum Included)

	2004 Employee Survey - Winter Employment	2004 Employee Survey - Summer Employment	April 2003 ES202 Jobs	June 2003 ES202 Jobs
Aspen	34%	33%	27%	27%
Snowmass Village	11%	8%	6%	4%
Basalt	7%	8%	7%	8%
El Jebel	3%	3%	1%	1%
Carbondale	6%	5%	8%	10%
Glenwood Springs	23%	24%	27%	28%
New Castle	3%	3%	2%	2%
Silt	3%	3%	1%	1%
Rifle	7%	8%	8%	9%
Parachute	6%	5%	3%	3%
Eagle	10%	10%	7%	6%
Gypsum	6%	5%	3%	3%
Other	5%	7%	n/a	n/a
TOTAL	122%	123%	100%	100%

Note: 2004 employee survey data sums to greater than 100 percent, to accommodate responses for persons who work in multiple locations or outside.
Note: 1998 survey data is not shown due to different study area (Eagle/Gypsum excluded) and accidental omission of Snowmass Village as a work destination (many respondents selected Aspen instead).

Finally, it is also of interest to note changes in employment location over time. Table 2.1.3 below illustrates the geographic distribution of ES202 employees in the Roaring Fork/Lower Colorado region in April 2003 vs. December 1996 (Eagle/Gypsum excluded). Although some caution is needed since the months compared differ (December is traditionally a somewhat stronger month for winter employment than April), in general the data illustrate a shift in the geographic employment center of gravity downvalley, with a lower share of winter jobs in

Aspen/Snowmass Village (37 percent in April 2003 vs. 46 percent in December 1996), and a higher share in Basalt through Parachute (63 percent in April 2003 vs. 54 percent in December 1996). Aspen and Glenwood Springs now represent twin employment centers and employment in other places (Basalt, Carbondale and Rifle) appears to be growing. This speaks to the growing importance of commuting patterns in the mid- and lower-valley regions.

Table 2.1.3 – Location of ES202 Jobs in the Roaring Fork/Lower Colorado Valley: April 2003 vs. December 1996 (Eagle and Gypsum Excluded)

	April 2003 ES202 Jobs	December 1996 ES202 jobs
Aspen	30%	36%
Snowmass Village	7%	10%
Basalt	7%	6%
El Jebel	1%	1%
Carbondale	9%	8%
Glenwood Springs	30%	26%
New Castle	2%	1%
Silt	1%	1%
Rifle	9%	7%
Parachute	3%	2%
Other / undetermined	n/a	3%
TOTAL	100%	100%

Out-commuting: Out-commuting is defined here as the share of ***residents*** of a community that commute to another community for work. Based on the 2004 employee survey results, of those living in an incorporated city/town, about 41 percent of employed residents work in the town in which they live, very similar to the 39 percent recorded in 1998 (a statistically insignificant difference).

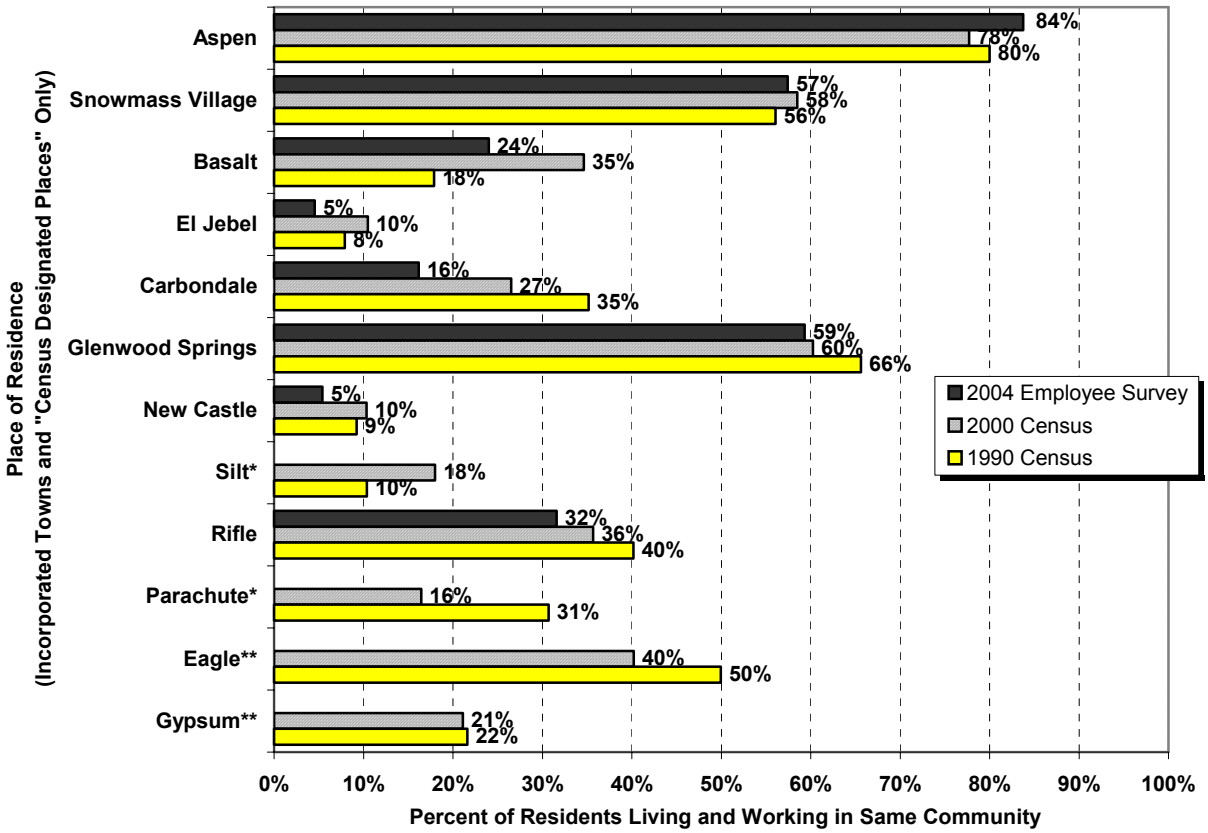
Figure 2.1.4 compares the percentage of residents that live and work in the same community as reported from the 2004 employee survey and the 2000 and 1990 US Censuses[1]. This figure shows that, in communities for which at least 40 randomly sampled survey responses were received, the 2004 employee survey and the 2000 US Census report a similar percentage of employed residents that work in the town in which they live for each community in the study area.

Among residents living in cities/towns, the percentage of employed residents who live and work in the same town is highest in Aspen (84 percent), Glenwood Springs (59 percent) and Snowmass Village (57 percent), and lowest in Parachute (16 percent), El Jebel (5 – 10 percent)

[1] The 2000 Census more accurately represents the live-work patterns of the area population than the 1998 survey because of its larger sample (1 in 6 sampling on the "long form" survey which includes place of work) and high response rate. Further, the 1998 survey returned lower-than-desired responses from many of the smaller communities for local area comparisons. For these reasons, this section compares 2004 survey results to that from the 2000 US Census and, for some communities, relies on the 2000 US Census to explain resident commute patterns.

and New Castle (5 – 10 percent). (Data based on 2004 survey, or 2004 survey and 2000 Census range.) Aspen shows a slightly higher percentage of residents working in the community in 2004 than in 2000, while Basalt and Carbondale show a lower percentage of residents being employed in the towns in 2004 than in 2000. However, given the small sample sizes at the individual town levels, these fluctuations may be overstated and should be interpreted with caution.

Figure 2.1.4 – Percent of residents that work in the same community in which they live: 2004 survey, 2000 Census, and 1990 Census. (Persons living in incorporated towns/cities or "Census Designated Places" only)



Source: Bureau of Transportation Statistics; 2000 US Census; RRC Associates, Inc.
*Incorporated Silt and Parachute responses to 2004 survey are fewer than 40.
**2004 data for Eagle & Gypsum not available, since survey did not include all of Eagle County (employees in Eagle River Valley upvalley of Eagle were not surveyed.)

A stronger indicator of out-commuting trends in the region is found by comparing 1990 and 2000 US Census resident worker patterns (Figure 2.1.4 as well). Changes over the past decade show that the percentage of locally employed residents increased in Basalt and Silt, indicating improved employment opportunities for residents, increased housing options for employees, or a combination of both in these communities. More moderate increases occurred in Snowmass Village, El Jebel and New Castle. By contrast, Parachute, Carbondale and Eagle experienced significant decreases in the percentage of locally employed residents, indicating either residential

growth exceeded job growth in these areas (and hence these areas are housing more of the regional workforce), and/or local employees have been increasingly displaced to other communities in the area. Moderate declines in locally employed residents also occurred in Aspen, Glenwood Springs and Rifle over the 1990 – 2000 period.

Additional detailed data regarding the location of work by place of residence, including breakouts for unincorporated areas, is contained in Table 2.1.5 below, for reference, based on 2000 and 1990 Census data. As shown, the share of Pitkin County residents employed within Pitkin County held steady at 92 percent in 1990 and 93 percent in 2000 (Basalt portion of Pitkin County excluded), illustrating the abundance of job opportunities for local residents there. The share of El Jebel/Basalt area residents employed in Eagle County rose to 35 percent in 2000 from 27 percent in 1990, implying expanding local job opportunities over the period, but a continued outflow of most workers. The share of Garfield County residents employed in Garfield County dropped from 79 percent in 1990 to 74 percent in 2000, indicating that an increasing share of County residents commuted other counties to work over the period.

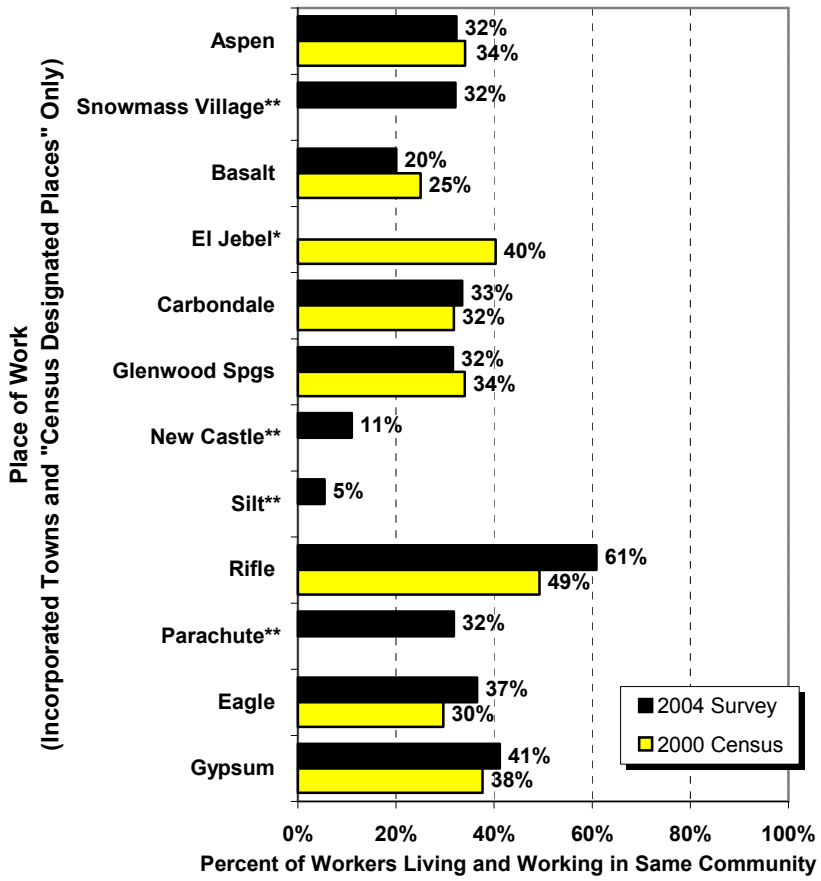
Table 2.1.5 – Place of Work: by Community of Residence, 2000 Census vs. 1990 Census (Roaring Fork / Lower Colorado)

	2000 CENSUS					1990 CENSUS				
Place of Residence	Total Resident Workers	% Work in Place of Residence	% Work in Cnty of Residence (outside pl. of res.)	% Work outside Cnty of Residence	Total	Total Resident Workers	% Work in Place of Residence	% Work in Cnty of Residence (outside pl. of res.)	% Work outside Cnty of Residence	Total
PITKIN COUNTY (excl. Basalt)										
Aspen city	3,860	78%	21%	2%	100%	3,466	80%	17%	3%	100%
Snowmass Village town	1,159	58%	39%	2%	100%	897	56%	42%	2%	100%
Unincorp. Pitkin Co.	3,975	n/a	86%	14%	100%	3,723	n/a	85%	15%	100%
Pitkin Co. (excl. Pitkin part of Basalt)	8,994	41%	52%	7%	100%	8,086	41%	51%	8%	100%
EAGLE COUNTY (incl. Pitkin portion of Basalt)										
Basalt town (all)	1,672	35%	13%	53%	100%	688	18%	16%	66%	100%
El Jebel Census Designated Place	2,510	10%	18%	72%	100%	1,468	8%	13%	79%	100%
Unincorp. Basalt Census Division, Eagle Co.	682	n/a	30%	70%	100%	448	n/a	38%	62%	100%
Basalt/El Jebel part of Eagle Co. (incl. Pitkin part of Basalt)	4,864	17%	18%	65%	100%	2,604	9%	18%	73%	100%
GARFIELD COUNTY										
Carbondale town	2,749	27%	18%	55%	100%	1,672	35%	19%	46%	100%
Glenwood Springs city	4,326	60%	17%	22%	100%	3,561	66%	16%	18%	100%
Unincorp. Glenwood Springs Census Division, Garfield Co.	4,195	n/a	67%	33%	100%	2,992	n/a	73%	27%	100%
New Castle town	1,140	10%	64%	26%	100%	369	9%	76%	15%	100%
Silt town	861	18%	60%	22%	100%	482	10%	73%	17%	100%
Unincorp. New Castle Census Division, Garfield Co.	2,170	n/a	79%	21%	100%	1,547	n/a	86%	14%	100%
Rifle city	3,500	36%	52%	13%	100%	2,225	40%	46%	14%	100%
Unincorp. Rifle Census Division, Garfield Co.	1,575	n/a	82%	18%	100%	1,040	n/a	86%	14%	100%
Battlement Mesa Census Designated Place	1,206	16%	67%	16%	100%	395	2%	84%	14%	100%
Parachute town	462	16%	70%	13%	100%	303	31%	60%	9%	100%
Unincorp. Grand Valley Census Division, Garfield Co.	356	n/a	82%	18%	100%	170	n/a	89%	11%	100%
Garfield Co. total	22,540	23%	51%	26%	100%	14,756	27%	51%	21%	100%
Total – places & CDP's	23,445	41%	31%	27%	100%	15,526	48%	28%	24%	100%
Total – unincorporated non-places	12,953	n/a	75%	25%	100%	9,920	n/a	80%	20%	100%
GRAND TOTAL	36,398	27%	47%	26%	100%	25,446	30%	48%	23%	100%

Source: 2000 and 1990 US Census.

In-commuting: In-commuting is defined here as the share of ***employees*** of a community that commute into that community for work (i.e. non-local workers). Based on 2004 survey results, only 32 percent of total workers in the region live in the same town in which they work (i.e., local workers). Conversely, 68 percent of workers in the region are employed in a community different from their place of residence.

Figure 2.1.6 – Percent of employees that live in the same community in which they work (Persons working in incorporated towns and CDPs only)



Source: Bureau of Transportation Statistics; 2000 US Census; 2004 Employee Survey; RRC Associates, Inc.
*El Jebel sample size below 40 responses.
**Census information for communities with fewer than 2,500 persons in the year 2000 is unavailable. Survey responses for Silt and New Castle were fewer than 40 - interpret with caution.

Figure 2.1.6 (above) shows the percentage of employees in each of the study area communities who live within the same community. Comparing this to the percentage of locally employed residents can help characterize areas as either employment centers or employee housing centers for the region. For example, despite close to 80 percent of Aspen residents working in

the community, this comprises only 34 percent of Aspen's workforce. In other words, 66 percent of Aspen's workforce commutes into Aspen for work, indicating that Aspen serves as an employment center in the area. On the other hand, only 10 percent of El Jebel residents work in that community, but this comprises 40 percent of El Jebel's workforce, indicating El Jebel plays a stronger role in housing the region's workforce than in supplying jobs.

Results show that Rifle, El Jebel and Gypsum import the lowest percentage of their workforce and Aspen, Glenwood Springs, Eagle, Basalt and Carbondale import the largest percentage of their workforce. New Castle and Silt also import a low share of their workforces and serve primarily as employee housing centers, although the sample size for these communities was fewer than 40 so results should be interpreted with caution.

There is little change in in-commuting when comparing 2004 survey results to the 2000 US Census, with the possible exception of Rifle. Rifle has added a Wal-Mart Supercenter and several jobs in the energy industry since 2000, creating more jobs for the local workforce. However, despite a higher percentage of Rifle employees living in the town in 2004 (61 percent) than in 2000 (49 percent), the percentage of Rifle residents that are employed in Rifle remained about the same during this period (32 – 36 percent). This probably indicates that, while both the number of households and the number of jobs in Rifle increased, the growth in households exceeded job growth. Consequently, the percentage of out-commuting Rifle residents remained about the same as in 2000 (between 64 and 68 percent), whereas in-commuting basis may have declined on a percentage, but has most likely shown little change on a numerical basis since 2000.

Figure 2.1.7 provides more detail on where workers employed in each community live, as determined by the survey results and the 2000 US Census.[2] Some general patterns are apparent, including:

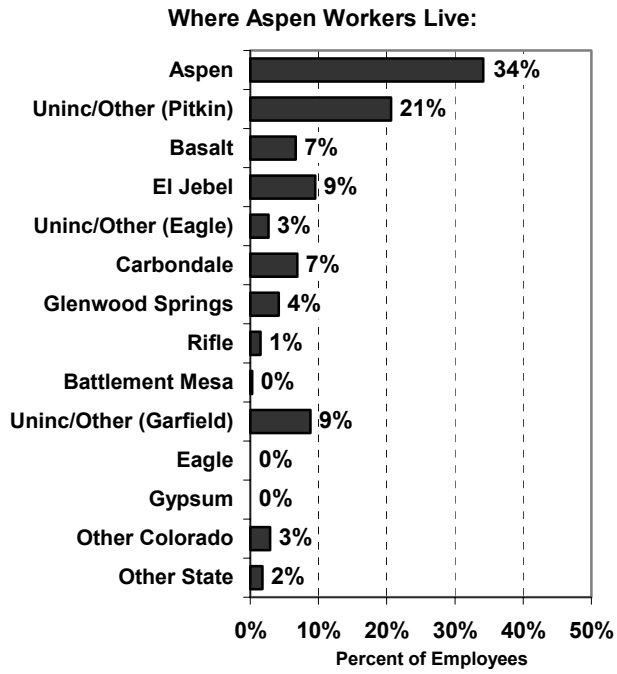
- A large percentage of workers in most communities live in unincorporated Garfield, Pitkin or Eagle Counties, ranging from 40 percent of Glenwood Springs workers to 32 percent of Snowmass Village workers.

- The largest percentages of commuting workers generally travel in the direction of Glenwood Springs to Aspen and in the direction of Parachute to Glenwood Springs. In other words, El Jebel and Carbondale are among the primary communities of residence for in-commuting workers to Aspen, Snowmass Village and Basalt. Similarly, in the Parachute to Glenwood Springs corridor, in-commuting workers are most likely to live west of their community of employment.

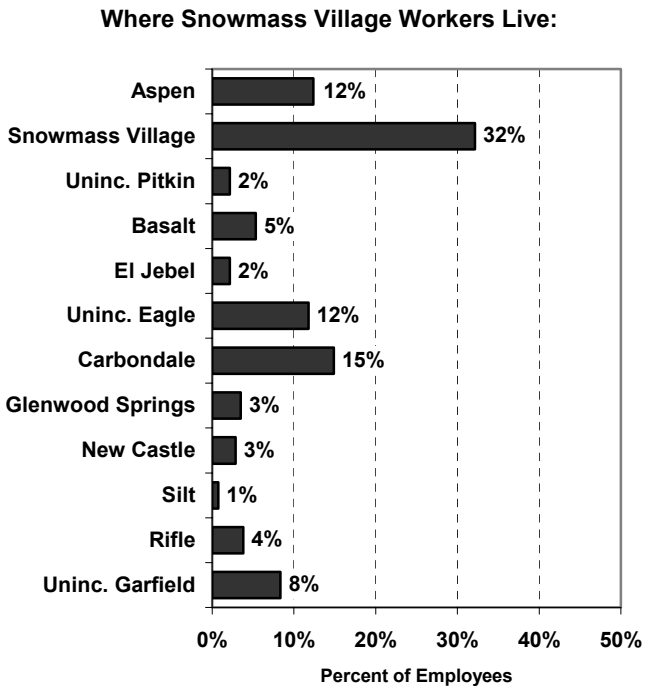
[2] Note that New Castle, Silt, Parachute and Snowmass Village are not included in the data reported by the Census, given that these communities had fewer than 2,500 persons as of the 2000 Census. Therefore, in this report, place of work data reported for these communities is based on the 2004 survey results. In general, Census data is used in lieu of the 2004 survey data because the Census results are based on a much larger sample of respondents (roughly 1 in 6 households), and are thus anticipated to be more precise, particularly at the individual community level (where 2004 survey samples are often modest).

- Evaluating responses from Eagle and Gypsum workers, approximately 7 percent of workers in Eagle and 14 percent of workers in Gypsum live in Garfield or Pitkin Counties, an indicator that commuting patterns are beginning to develop up Glenwood Canyon to the Eagle River Valley (in addition to the longstanding commuting patterns up the Roaring Fork Valley).

Figure 2.1.7 - Where employees live - by place of work

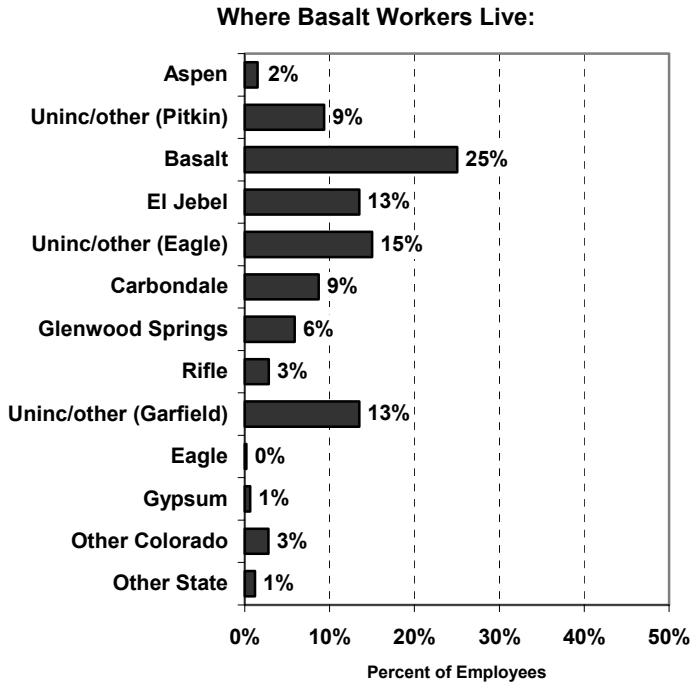


Source: Bureau of Transportation Statistics; 2000 US Census; RRC Associates, Inc.

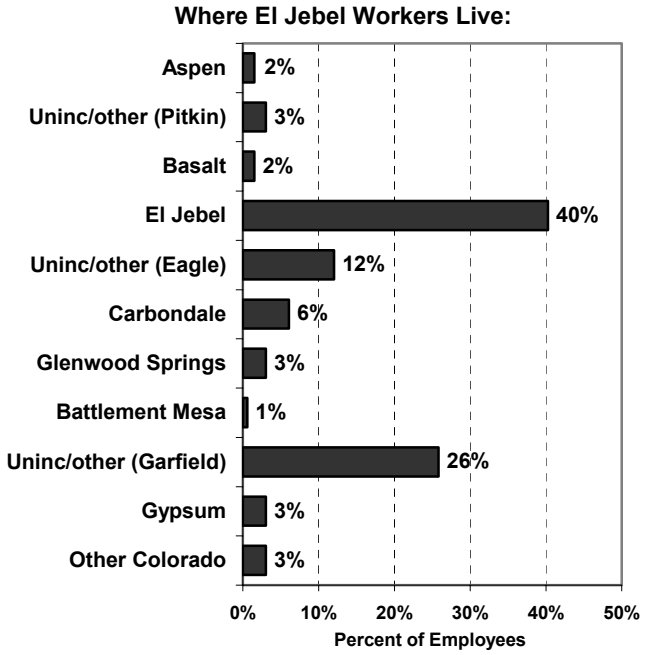


Source: 2004 Employee Survey; RRC Associates, Inc.

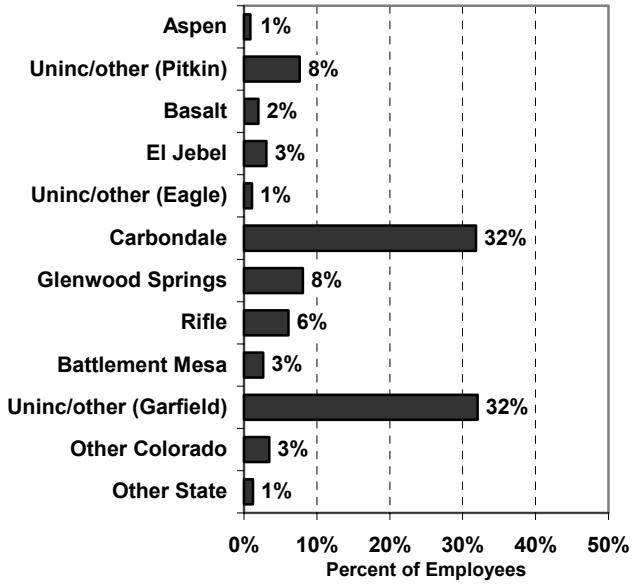
Figure 2.1.7 continued



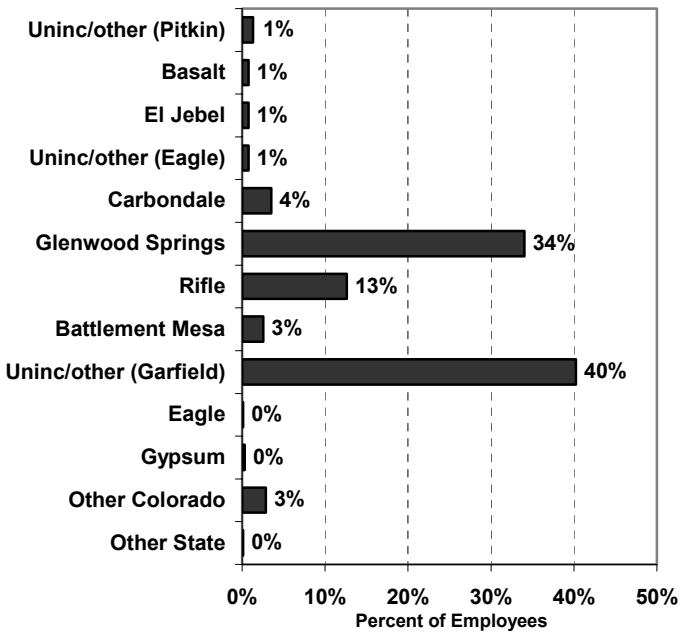
Source: Bureau of Transportation Statistics; 2000 US Census; RRC Associates, Inc.



Source: Bureau of Transportation Statistics; 2000 US Census; RRC Associates. Inc.

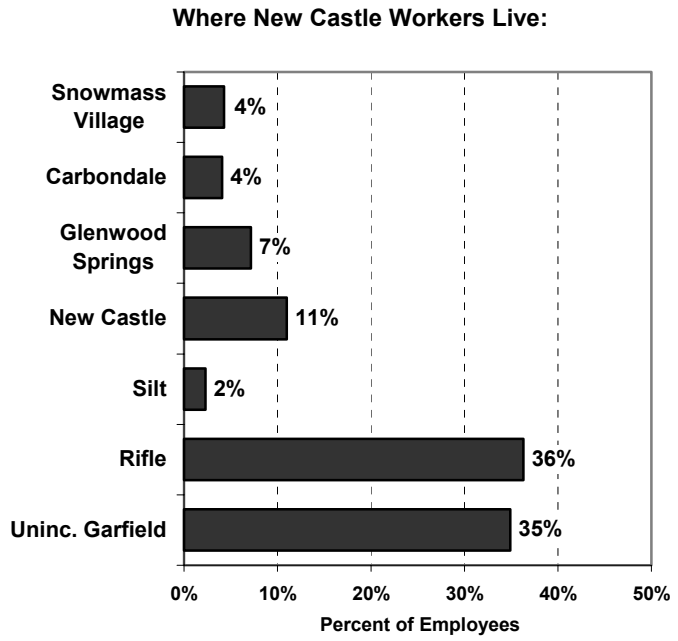


Source: Bureau of Transportation Statistics; 2000 US Census; RRC Associates. Inc.

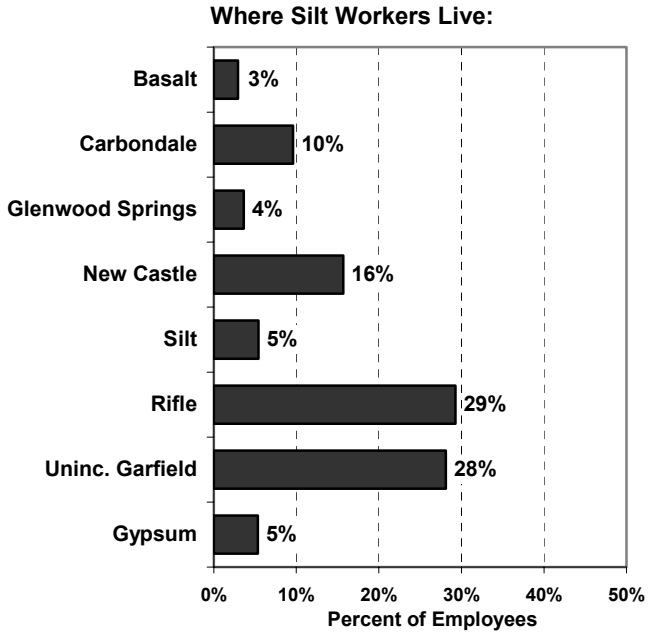


Source: Bureau of Transportation Statistics; 2000 US Census; RRC Associates. Inc.

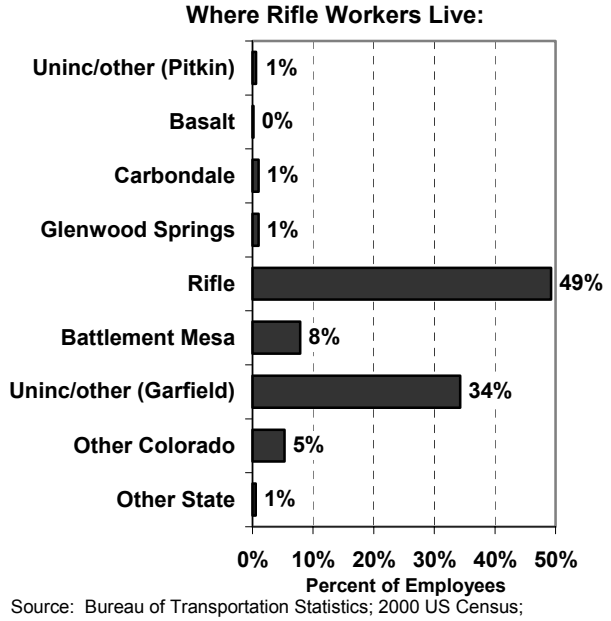
Figure 2.1.7 continued



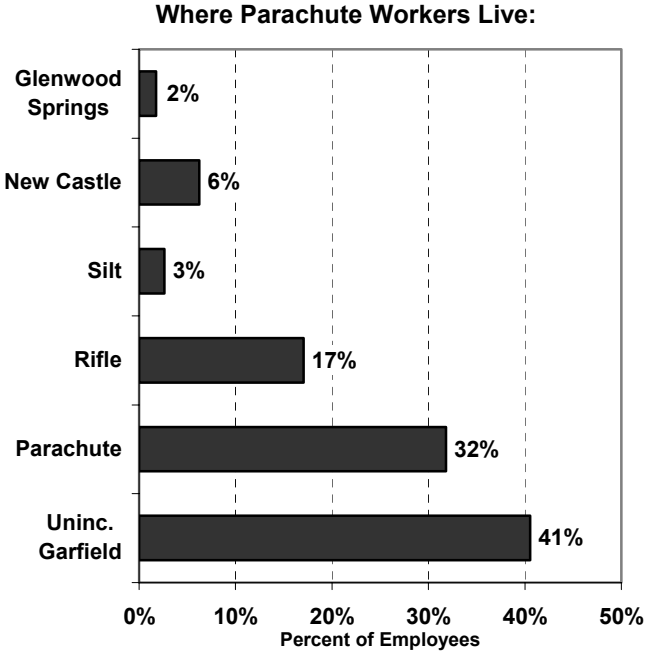
Source: 2004 Employee Survey; RRC Associates, Inc.
*Sample size less than 40; interpret with caution.



Source: 2004 Employee Survey; RRC Associates, Inc.
*Sample size less than 40; interpret with caution.

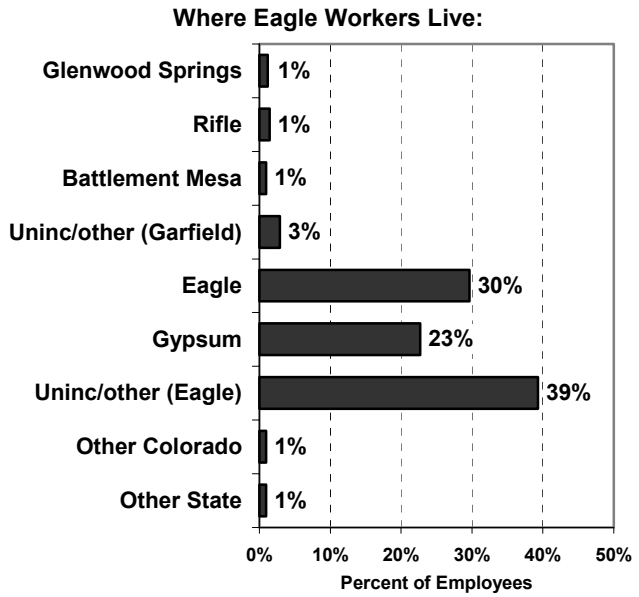


Source: Bureau of Transportation Statistics; 2000 US Census; RRC Associates, Inc.

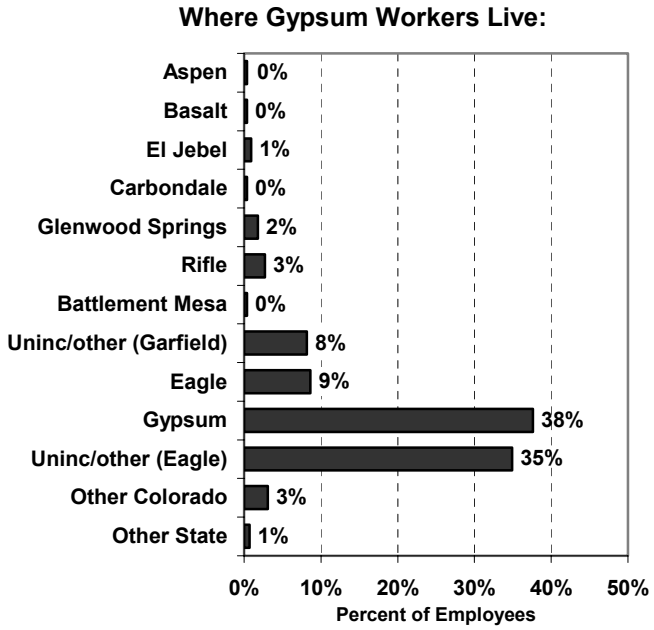


Source: 2004 Employee Survey; RRC Associates, Inc.

Figure 2.1.7 continued



Source: Bureau of Transportation Statistics; 2000 US Census; RRC Associates, Inc.



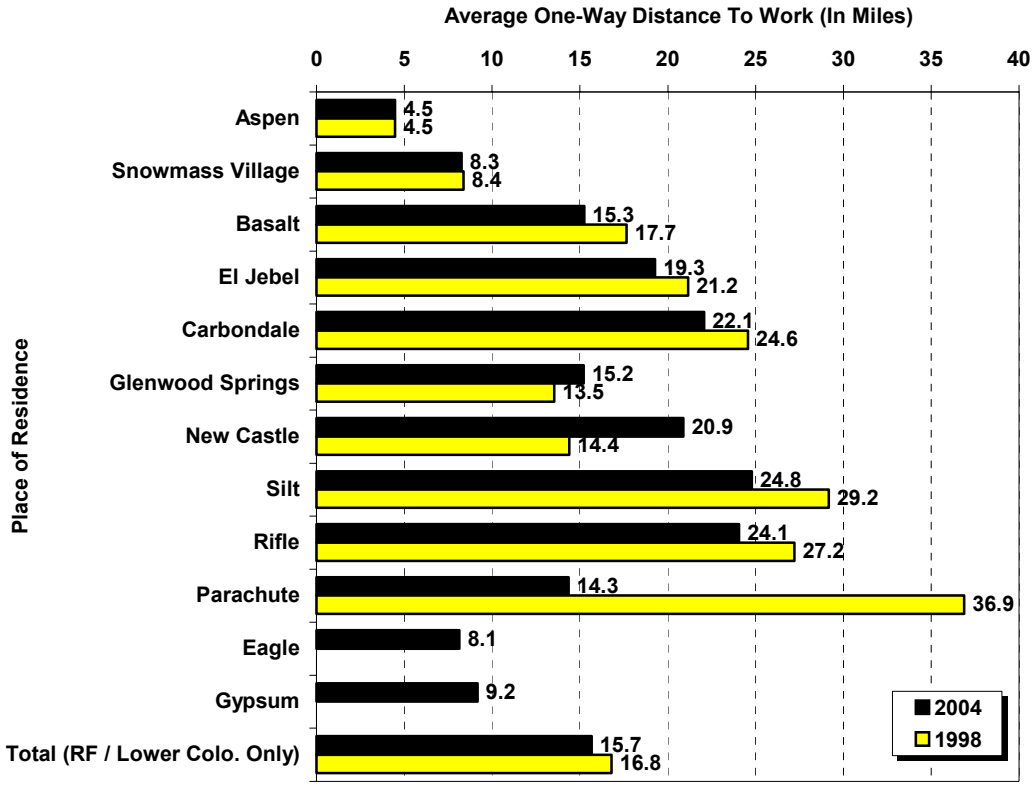
Source: Bureau of Transportation Statistics; 2000 US Census; RRC Associates, Inc.

Section 2 - Cost of Commuting

The amount of commuting occurring in the study area has an impact on the cost of living for families and households. Figure 2.2.1 shows how far people are traveling to get to work by place of residence. Overall, average commute distance among residents of the Roaring Fork and Lower Colorado valleys decreased from 16.8 miles in 1998 to 15.7 miles in 2004. Commute distances have decreased slightly since the 1998 survey in most communities, with the exception of residents living in New Castle and Glenwood Springs.

Using a cost of auto travel of 58¢ per mile[3] and taking into account average occupancies (about 1.3 people per car), drive commutes are costing the average Roaring Fork/Lower Colorado household (2.0 jobholders) about $6,700 annually - about 11% of household income (median $60,000). (Note that this is the cost of commuting only. The total cost of travel is typically at least twice this much, when a dollar value is assigned to the time spent commuting and other costs associated with commuting are factored in, e.g. increased childcare costs.).

Figure 2.2.1 – Average one-way distance to work (in miles): by place of residence

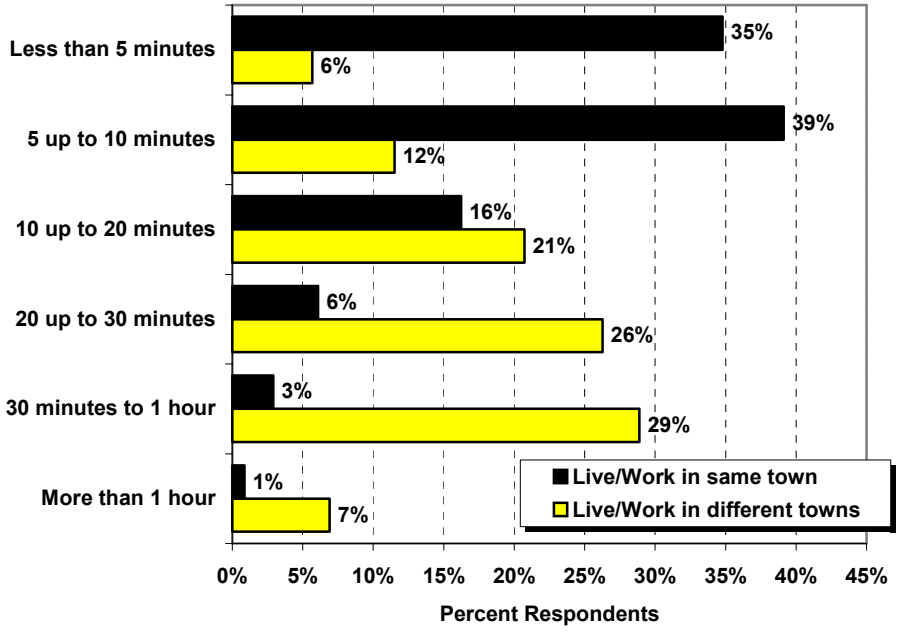


Note: Commuting distances reported in "blocks" were translated into miles, assuming 10 blocks per mile.

[3] Average annual operating cost per mile of a 2004 Ford F-150 Regular Cab 4x4 over a five year period, including cost of financing, registration, depreciation, extended warranty, fuel, insurance, maintenance, and repair, and assuming 15,000 miles driven per year, per AAA estimates (www.aaa.com). Actual costs of vehicle ownership will vary depending the specific vehicle(s), commute patterns and other household circumstances.

In addition to the monetary costs to employees, commuting also costs employees in time, as was explored in a new survey question this year. Figure 2.2.2 below shows that the majority of employees that live and work in the same town spend less than 10 minutes commuting to work (74 percent). However, employees that live and work in different communities require much longer times, with 26 percent taking 20 to 30 minutes, 29 Workers living in Aspen, Snowmass Village, Gypsum and Eagle reported the shortest commute times, which is not surprising considering they also traveled the shortest distances, on average. The largest percentage of residents that travel at least 30 minutes to work live in Carbondale (49%), El Jebel (41%) and Rifle (40%).

Figure 2.2.2 - "How long did it take you to commute to your primary job on your most recent work day?"

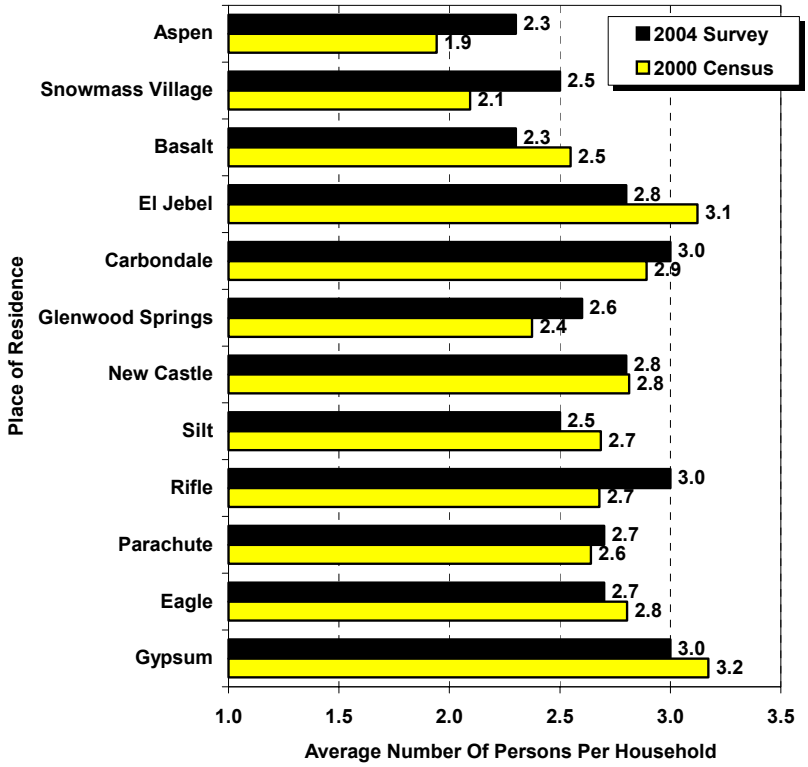


Section 3 - Employment Patterns

Household Size: The average household size for the study region reported in the 2000 Census is lower (2.5 persons per household) than the household size reported in the 2004 survey (2.7 persons per household). This is primarily because the Census surveyed all households, whereas the 2004 survey only included households with employed residents. Thus, the 2004 survey does not include retired or otherwise unemployed households and households employed outside of the Aspen-Parachute-Eagle region. Locally employed households are more likely to be families and larger households than are retiree households.

Figure 2.3.1 shows the variation in average household size by community. This shows that Aspen and Snowmass Village have the smallest households, on average, while the more family-oriented communities of El Jebel, Gypsum and Carbondale have the largest households in the region.

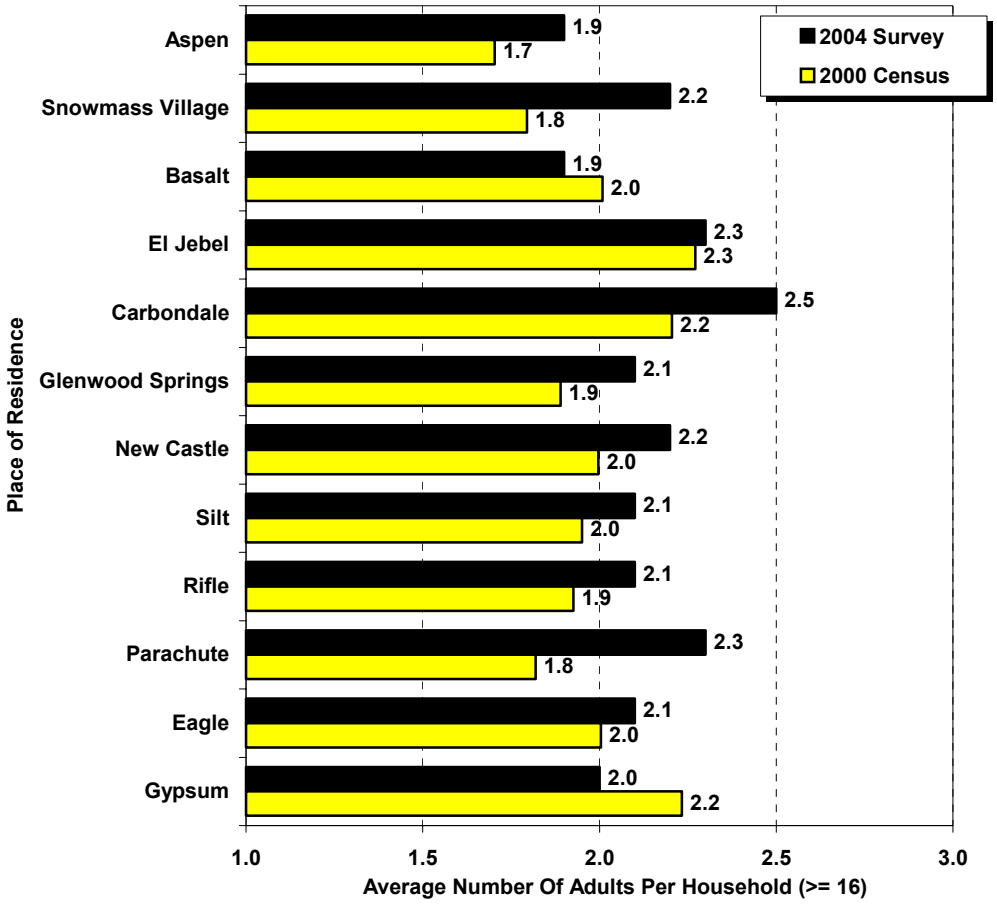
Figure 2.3.1 – Average number of persons per household by place of residence: 2004 Survey vs. 2000 Census



Adults Per Household: Figure 2.3.2 compares the number of adults age 16 and over in each household as reported by the 2004 survey and the 2000 US Census. For the study region as a whole, there are 2.0 adults per household as reported by the Census and 2.2 as reported by the survey. The 1998 study showed a similar 2.1 adults per household, on average.

With the exception of a few communities (Basalt and Gypsum), the 2004 survey indicates a higher average number of adults per household than the 2000 Census. This is not surprising given the differences in survey distribution discussed above (i.e. the 2004 survey reached households with employed worker(s), while the Census also included nonworking households, e.g. retirees). Typically, a number above 2.0 indicates either a high number of related or unrelated people living together, or older children living at home.

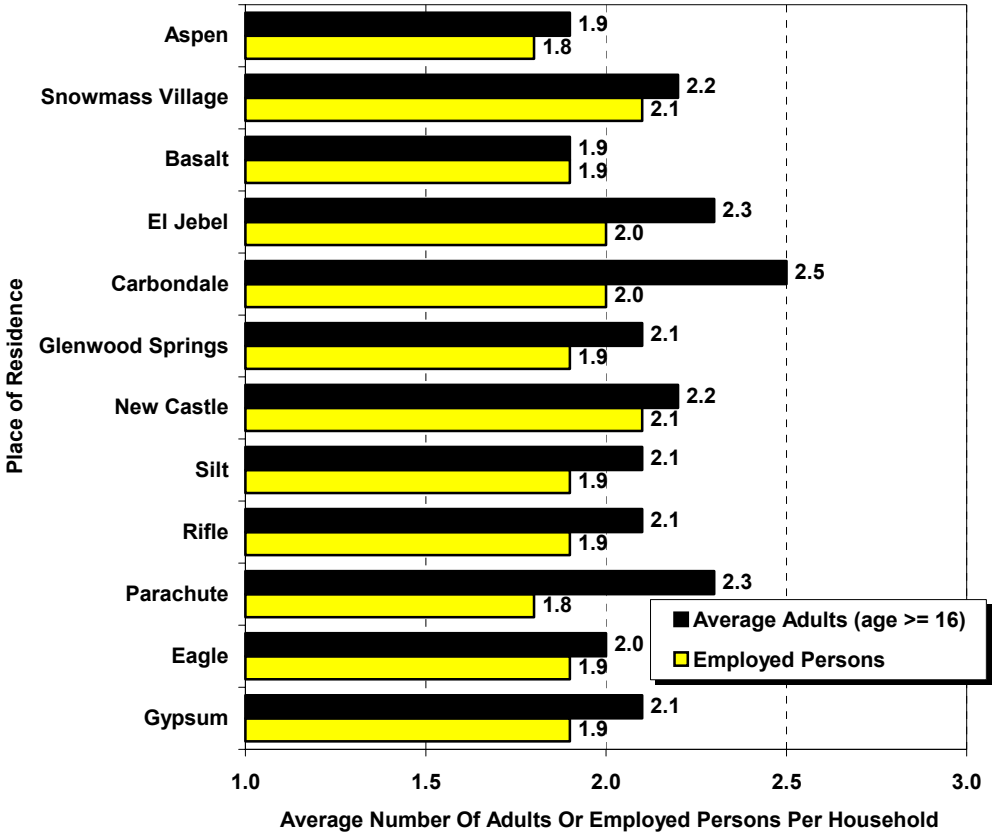
Figure 2.3.2 – Average number of persons aged 16 or older in household, by place of residence: 2004 survey vs. 2000 Census



Employees Per Household: One advantage to the 2004 survey is that it permits comparison between the number of adults and the number of employees per household. Figure 2.3.3 shows that most, but not all, adults are employed. New Castle (2.1) and El Jebel and Carbondale (2.0 each) have the largest average number of employees per household, while Aspen and Parachute have the lowest (1.8 each). Employment levels are important because they influence the amount of traffic produced by households.

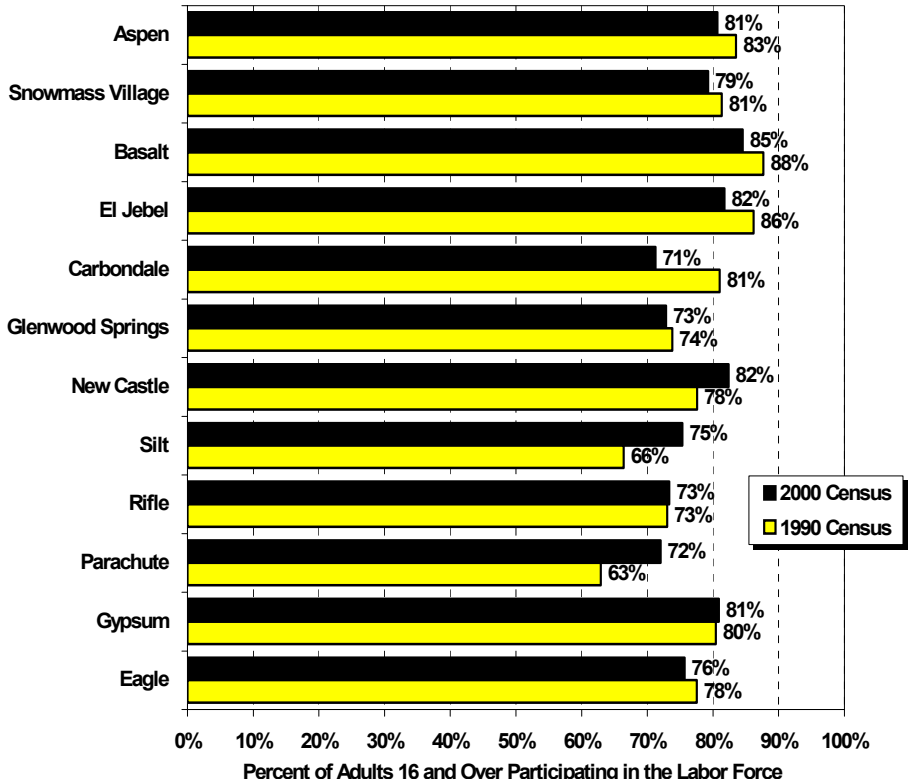
Trends since 1998 show little change in the number of employed persons per household, averaging 2.0 in the study region, compared to 1.9 in 2004. The data indicate some differences by community, but these are likely due to sampling variations rather than actual changes in the demographics of employed households.

Figure 2.3.3 – Average number of adults (Age 16 and over) compared to average employed persons per household: 2004 Survey



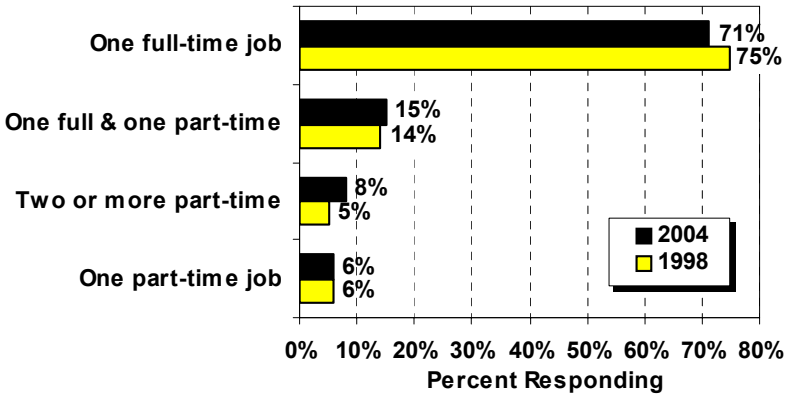
Labor Force Participation: The percentage of adults who hold jobs or (if unemployed) are actively looking for work is the "labor force participation rate" (LFP rate), which ranged from about 71 percent (Carbondale residents) to 85 percent (Basalt residents) in March 2000, as shown in Figure 2.3.4. Aspen and Snowmass Village fall in about the middle, at 81 percent and 79 percent participation, respectively. Communities with lower LFP rates may reflect some combination of a higher percentage of families, with "homemakers" staying home with children, and/or a higher percentage of retired family members.

Figure 2.3.4 – Labor force participation: 1990 and 2000 US Census



Trends since 1990 indicate that labor force participation has been increasing in New Castle and more westerly (downvalley) communities; decreasing in Carbondale and more eastern (upvalley) communities; and remaining about the same in Glenwood Springs, Rifle and Gypsum.[4]

Figure 2.3.5 – Number of jobs held: 1998 and 2004 employee surveys



Jobs Per Employee:
The conventional wisdom on this s
multiple jobs (Figure 2.3.5). Survey
slightly since 1998, as about 23 per
job or multiple part time jobs in 20
in 1998.

Seasonality of employment can be

[4] Note that LFP rates are reported here using Census data rather than employee survey data, since the employee survey did not reach persons in non-working households (e.g. retirees and unemployed households). Persons in such households need to be counted in the "base" to validly calculate the LFP.

during each season. Table 2.3.6 shows that respondents in the study region hold, on average, about 1.17 jobs in the winter, compared to 1.08 jobs in the summer and 1.09 jobs in the off-seasons (spring and fall). This varies by community, whereby:

- The average number of winter jobs held is highest among residents of Aspen (1.34), Snowmass Village (1.35) and Eagle (1.35), and lowest among residents of Parachute (1.06) and Rifle (1.10).

- The average number of summer jobs held is highest in Snowmass Village (1.25), Aspen (1.20) and Gypsum (1.20), and lowest in Parachute (0.98), Eagle (1.06) and Rifle (1.07).

- New Castle, Rifle, Glenwood Springs and Parachute show the most consistent employment year-round in terms of number of jobs held by residents, with a similar number of jobs held throughout the year.

Table 2.3.6 Average number of jobs held by place of residence.

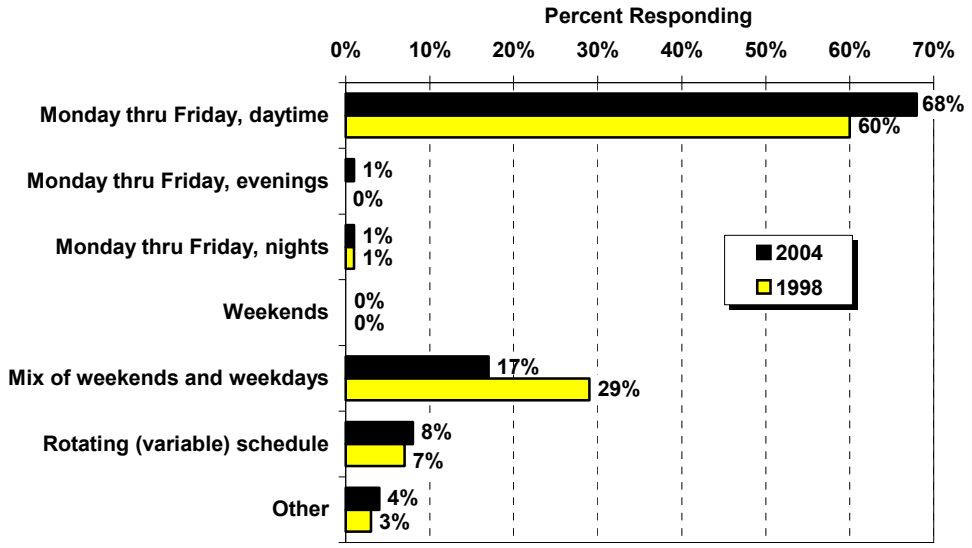
*Where Respondents Live**	*Summer*	*Ski Season*	*Spring*	*Fall*
Aspen	1.20	1.34	1.21	1.16
Snowmass Village	1.25	1.35	1.09	1.15
Basalt	1.14	1.15	1.07	1.05
El Jebel	1.15	1.32	1.28	1.28
Carbondale	1.12	1.15	1.11	1.12
Glenwood Springs	1.14	1.20	1.20	1.21
New Castle	1.16	1.17	1.20	1.19
Silt	1.14	1.17	1.12	1.12
Rifle	1.07	1.10	1.13	1.13
Parachute	0.98	1.06	1.08	1.07
Gypsum	1.20	1.29	1.26	1.26
Eagle	1.06	1.35	1.22	1.26
TOTAL	1.08	1.17	1.09	1.09

*Respondents that live "in or nearest to" each community.

In general, these figures are consistent with those seen in other mountain resort areas, including Summit County and other communities in Eagle County, with a high level of multiple jobholding observed in resort communities especially.

Work Schedule: The work schedules of workers in the region may be moving to a more traditional schedule. Figure 2.3.7, below, shows that about 68 percent of respondents reported working a Monday-Friday schedule in 2004 compared to 60 percent in 1998. Correspondingly, the percentage of workers working a weekday-weekend schedule dropped to 17 percent from 29 percent in 1998. Consequently, commuter traffic follows a pattern similar to urbanized areas.

Figure 2.3.7 – Work Schedule: 2004 vs. 1998 Employee Surveys



Commute schedules for workers are about the same in 2004 as reported in 1998, with the majority arriving at work between 7 and 9 AM (71 percent) and the majority leaving work between 4 and 6 PM (62 percent). Worker leave times are distributed over a slightly wider range of hours than arrival times.

Table 2.3.8 What Time Do You Typically Arrive At And Depart From Work? 2004 and 1998 Surveys Compared

ARRIVE	2004	1998
12:00 - 4:59 AM	1%	1%
5:00 - 6:59 AM	11%	10%
7:00 - 8:59 AM	71%	73%
9:00 - 10:29 AM	10%	9%
10:30 - 11:59 AM	2%	1%
12:00 - 3:59 PM	3%	3%
4:00 - 11:59 PM	3%	2%

DEPART	2004	1998
12:00 - 11:59 AM	3%	2%
12:00 - 3:59 PM	13%	13%
4:00 - 5:59 PM	62%	65%
6:00 - 7:59 PM	17%	15%
8:00 - 11:59 PM	5%	5%

Section 4 - Vehicle Ownership

Ownership of Commute Vehicles: A large majority of respondents in the Roaring Fork/Lower Colorado Valley usually have a motor vehicle available to them for commuting to work (85 percent), which is unchanged from 1998. About 92 percent of the vehicles are owned by the respondent or the respondent's household, with 6 percent owned by their employer (plus 2 percent "other").

Number of Vehicles Owned: The 2004 survey did not ask how many vehicles each household had. Therefore, 1990 and 2000 US Census information is compared for this information. Table 2.4.1 shows:

- About 4.4 percent of households in the Roaring Fork / Lower Colorado valleys (Aspen to Parachute) have no vehicles available to their household, compared to a lower 3.1 percent in Eagle and Gypsum. This varies by tenure, as only about 1.9 – 1.8 percent of owners do not have a vehicle, compared to 9.0 percent of renters in the Roaring Fork/Lower Colorado corridor and 6.1 percent of renters in Eagle and Gypsum Counties. The percentage of renters without a vehicle has increased slightly (about 1 percentage point) in both areas since 1990.

- The average number of vehicles available per household shows only slight changes since 1990, with an average of about 2.0 vehicles per household in the Roaring Fork/Lower Colorado area and 2.2 vehicles per household in Eagle/Gypsum.

- Of interest is that about 10 percent of households headed by Hispanic/Latino persons did not have a vehicle in 2000, which increased from 6 percent in 1990. In comparison, only 4 percent of households with a "white alone" householder (as defined by the 2000 US Census) do not have a vehicle, which is about the same as in 1990.

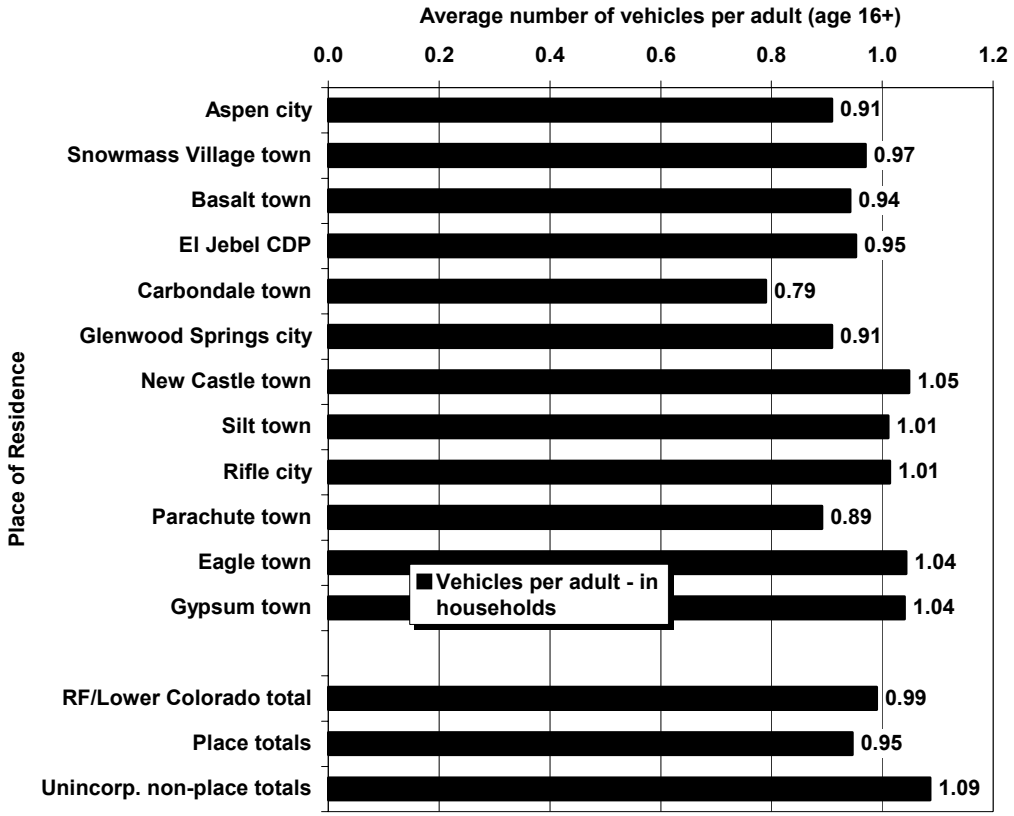
Table 2.4.1 Number Of Vehicles Per Household: 1990 and 2000 US Census

		Roaring Fork/ Lower Colorado (Aspen to Parachute)		Eagle and Gypsum	
		2000	***1990***	***2000***	***1990***
% of Households With NO Vehicles Available	Total	4.4%	4.6%	3.1%	3.4%
	Owner	1.9%	2.0%	1.8%	2.5%
	Renter	9.0%	8.0%	6.1%	5.0%
Average Number Of Vehicles Per Household (incl. HH's with no veh.)	Total	1.95	2.00	2.22	2.08
	Owner	2.16	2.26	2.44	2.27
	Renter	1.57	1.65	1.70	1.76

Households own about 1 vehicle per driving-age adult (age 16 or over), on average, based on 2000 Census data. Households in most communities in the region own an average of 0.9 to

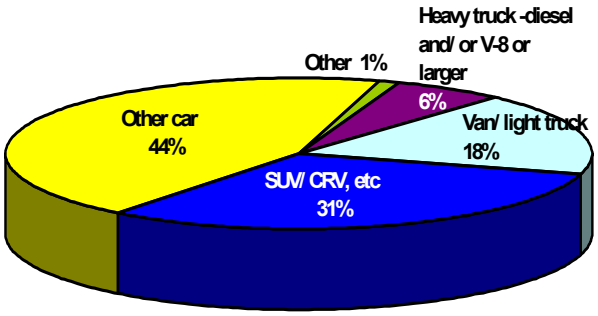
1.05 vehicles per adult, as illustrated in Figure 2.4.2 below. Carbondale has the lowest ratio (0.79 cars per adult), while the unincorporated area of the Roaring Fork/Lower Colorado region has the highest ratio (1.09 cars per adult). The high ratio in the unincorporated areas is probably a reflection of higher affluence and greater need (location less proximate to work centers and to transit service).

Figure 2.4.2 Average Number Of Vehicles Per Adult (Age 16+) By Community: 2000 US Census (persons living in households only)



Type of Vehicle Owned: In a new question asked this year, of the vehicles available to commuters, 55 percent are classified as SUV's/CRV's or larger (light trucks/vans or heavy trucks/diesels) and 44 percent are classified as a type of passenger car.

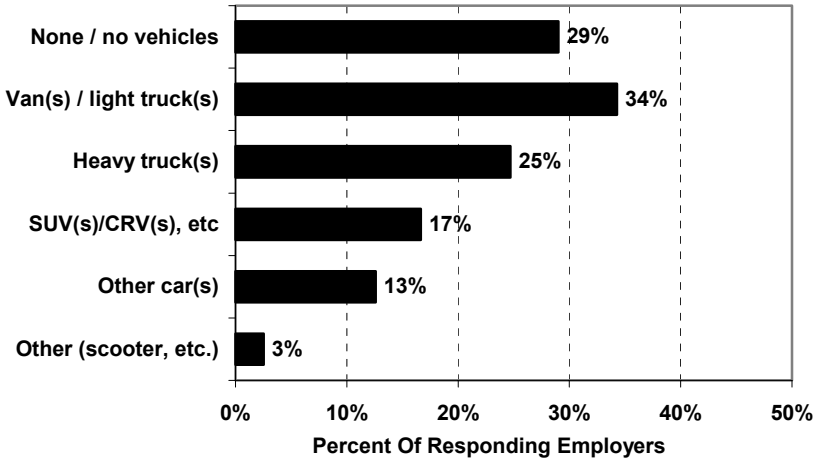
Figure 2.4.3 Type of Commute Vehicle Usually Available (Employee Survey)



Separately, in the employer survey, employers were asked to report the type and number of vehicles that they operate in the area as part of their business. About 71 percent of responding employers reported that they own company vehicles that are needed for their day-to-day business operations, including 34 percent who

own vans/light trucks, 25 percent who own heavy trucks (diesel/V-8 or larger), 17 percent who own SUVs/CRVs, and 16 percent who own other vehicles.

Figure 2.4.4 What Type Of Vehicles Does Your Company Own For Day-To-Day Operations? (Employer survey)



Section 5 - Mode Choice: Commute Trips

One of the most important parameters used to describe how people travel is "mode choice" – the mode by which people make trips. The 2004 employee survey probed how respondents travel to work, both in general and on their most recent workday. The survey used the following mode choice list:

- drive alone;
- carpool (2-4 people);
- vanpool (5+ people);
- bus;
- bicycle;
- walk;
- hitchhike;
- bike and take the bus; and,
- drive to park & ride and take the bus.

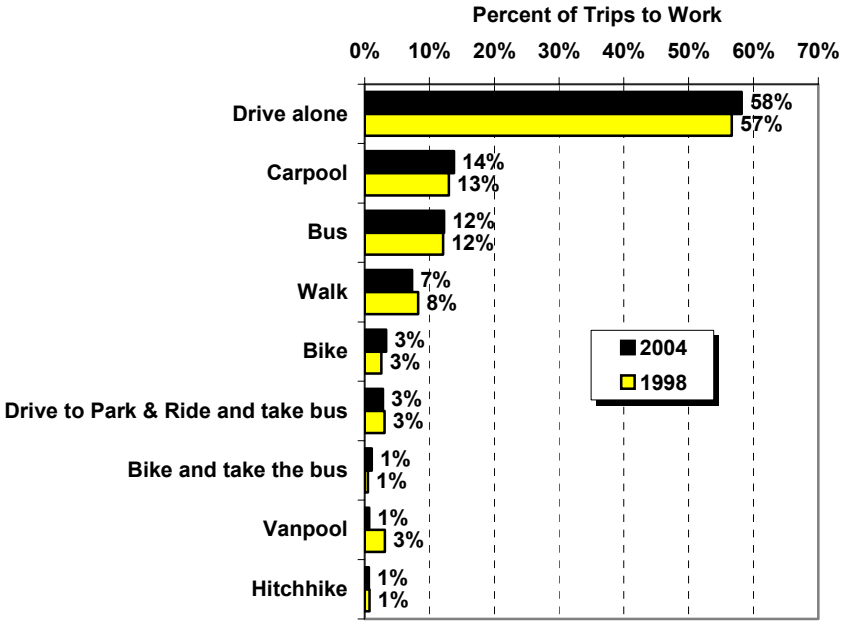
This section of the report explores the mode choices made by commuters in the region and the factors that contribute to these decisions, including such factors as:

- stops made on the way to/from work;
- proximity to transit service;
- transit pass ownership;
- parking options;
- community walking environment;
- family (children) responsibilities; and
- household income, housing tenure, and primary language spoken (Spanish).

Responses to these questions are evaluated in this section with an eye toward their effect on respondents' mode choice.

Usual Commute Mode (Winter): Respondents were asked how many days per week they "typically" use each mode to get to work, resulting in a measure of "usual" or "typical" mode share. Then, in a later question, they were asked how they got to work (and home again) on their most recent workday. This approach utilizes survey research techniques to develop the most accurate estimate of actual behavior. Allowing people to state how they "typically" travel provides an opportunity to resolve any innate human desire to reflect "good" or "right" behavior. Then asking them how they got to work on the most recent workday leaves them freer to report actual behavior. Figure 2.5.1 and 2.5.2 show how people answered these respective questions. Figure 2.5.2 is a more accurate measure of actual daily commute travel behavior.

Figure 2.5.1 Mode Share for Typical Commute: 1998 and 2004 Employee Surveys



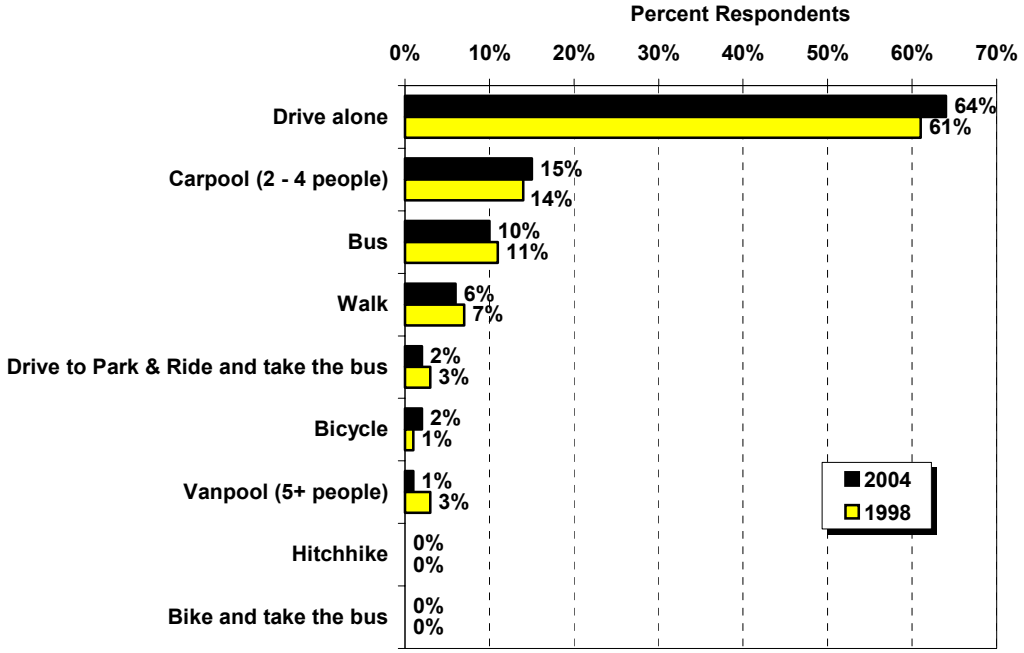
Note: Data derived from following question: "How many days a week do you typically use each of the following modes to get to work?"

The percentage of travel by mode is typically described with the phrase, "mode share." Figure 2.5.1 compares the "usual" commute mode shares in 1998 and 2004, as calculated from "typical" days of use of each mode over the week. Commute mode share shows little change during this period, with 58 percent driving alone, 14 percent carpooling and 12 percent taking the bus in 2004.

It is important to recognize that this is winter travel behavior. Summertime responses would probably show higher walk and bike percentages. Without the Ski Company employees, the bus mode share would probably be lower. Summer drive-alone mode share would most likely be somewhat lower than in winter.

Figure 2.5.2 shows how respondents traveled to work on their most recent workday, a more accurate measure of actual daily commute travel behavior. Relative to 1998, a slightly higher percentage reported driving alone (64 percent in 2004 vs. 61 percent in 1998) and a slightly lower percentage used a vanpool (1 percent in 2004 vs. 3 percent in 1998), although the differences are generally within the margin of sampling error, suggesting that any changes which may have occurred have been slight. The percentage of respondents that ride the bus, walk, or bike was largely unchanged.

Figure 2.5.2 Means Of Travel To Work On Most Recent Work Day: 2004 vs. 1998 Employee Surveys



Similar mode share data is available from the 2000 and 1990 Census. The Census asked workers how they "usually" got to work in the previous week. In the event that more than one method was used during the trip, respondents were instructed to select the mode used for most of the distance. As shown in Table 2.5.3 below, over the 1990 – 2000 period for the Roaring Fork/Lower Colorado region as a whole, the share of persons commuting by transit increased from 3.8 percent to 6.4 percent, while the absolute number of transit users jumped 143 percent (from 955 commuters to 2,324 commuters). Carpool mode share also increased slightly (rising to 18.3 percent from 17.1 percent), while declines were noted for walking (from 8.4 percent to 6.7 percent) and driving alone (from 62.2 percent to 60.1 percent). Overall, most of these trends reflect positively on the region's past efforts to encourage the use of alternate transportation modes, including the increases in transit usage and carpooling and the decline in the proportion of

single-occupant vehicles. Exceptions to this pattern were a decline in the share of trips by foot and bike, perhaps in part a function of increased commute distances over the 1990 – 2000 period that make such modes impractical for many residents.

Direct comparison of the 2004 employee survey with the 2000 Census shows a similar share of commuting by single occupant vehicles (both 64 percent, excluding persons working at home). The 2004 survey also yielded similar results to the Census with regards to the proportion commuting by foot (6 – 7 percent, Survey and Census respectively) and bike (2 – 1 percent). The 2004 survey and Census differ somewhat with respect to carpooling (16 percent in 2004 survey, 20 percent in Census) and transit (12 percent and 7 percent respectively). Overall, the largely similar results between the two surveys tend to reinforce one another and provide confidence in the results. Where differences have occurred, that may in part be a function of slightly different question designs (2004 survey: commute mode yesterday; 2000 Census: usual commute mode last week) and slightly different sampling frames (2004 survey: self-employed sole proprietors excluded; 2000 Census: self-employed sole proprietors included), in addition to actual changes in travel patterns. Most notably, the Grand Hogback bus service has been introduced in the Lower Colorado corridor since the 2000 Census, and that has likely increased transit usage among workers in that region.

Table 2.5.3 "Usual" Means of Transportation to Work: Comparison by Place of Residence, 2000 vs. 1990 (U.S. Census)

	Live in Roaring Fork / Lower Colorado Valley (Overall)				Live in Pitkin County			
	# Workers 2000	# Workers 1990	% Workers 2000	% Workers 1990	# Workers 2000	# Workers 1990	% Workers 2000	% Workers 1990
Drove alone	21,865	15,826	60.1%	62.2%	4,819	4,585	51.0%	56.1%
Carpooled	6,649	4,356	18.3%	17.1%	1,072	839	11.4%	10.3%
Public transportation	2,324	955	6.4%	3.8%	1,003	515	10.6%	6.3%
Bicycle	369	324	1.0%	1.3%	276	198	2.9%	2.4%
Walked	2,448	2,133	6.7%	8.4%	1,214	1,197	12.9%	14.6%
Other means	298	251	0.8%	1.0%	99	96	1.0%	1.2%
Worked at home	2,445	1,601	6.7%	6.3%	960	749	10.2%	9.2%
Total	36,398	25,446	100.0%	100.0%	9,443	8,179	100.0%	100.0%

	Live in Basalt / El Jebel (Eagle County)				Live in Garfield County			
	# Workers 2000	# Workers 1990	% Workers 2000	% Workers 1990	# Workers 2000	# Workers 1990	% Workers 2000	% Workers 1990
Drove alone	2,442	1,368	55.3%	54.5%	14,604	9,873	64.8%	66.9%
Carpooled	886	648	20.1%	25.8%	4,691	2,869	20.8%	19.4%
Public transportation	641	259	14.5%	10.3%	680	181	3.0%	1.2%
Bicycle	14	2	0.3%	0.1%	79	124	0.4%	0.8%
Walked	103	64	2.3%	2.5%	1,131	872	5.0%	5.9%
Other means	16	25	0.4%	1.0%	183	130	0.8%	0.9%
Worked at home	313	145	7.1%	5.8%	1,172	707	5.2%	4.8%
Total	4,415	2,511	100.0%	100.0%	22,540	14,756	100.0%	100.0%

Table 2.5.3 (cont'd) "Usual" Means of Transportation to Work: Comparison by Place of Residence, 2000 vs. 1990 (U.S. Census) – Garfield Co. Detail

	Live in Garfield Co (Carbondale/Glenwood Spgs Detail)				Live in Garfield Co (New Castle/ Silt/ Rifle/ Parachute Detail)			
	# Workers 2000	# Workers 1990	% Workers 2000	% Workers 1990	# Workers 2000	# Workers 1990	% Workers 2000	% Workers 1990
Drove alone	6,831	5,482	60.6%	66.7%	7,773	4,391	69.0%	67.2%
Carpooled	2,172	1,293	19.3%	15.7%	2,519	1,576	22.4%	24.1%
Public transportation	640	140	5.7%	1.7%	40	41	0.4%	0.6%
Bicycle	79	115	0.7%	1.4%	0	9	0.0%	0.1%
Walked	727	673	6.5%	8.2%	404	199	3.6%	3.0%
Other means	127	87	1.1%	1.1%	56	43	0.5%	0.7%
Worked at home	694	435	6.2%	5.3%	478	272	4.2%	4.2%
Total	11,270	8,225	100.0%	100.0%	11,270	6,531	100.0%	100.0%

When commute mode share in the study area is compared to other communities (Table 2.5.4 below), some important observations about the Roaring Fork/Lower Colorado Valley can be made:

- First, the bus mode share is unusually high, as it was in 1998. A 10 to 11 percent bus mode share to and from work (12 to 13 percent with "park 'n ride") is about five to ten times what would normally be expected in a rural/small town regional setting in the U.S. It is also two to three times the rate of major rail transit cities like the Portland-Salem Metropolitan Statistical Area (5.7 percent public transportation in 2000).

- Second, the carpool/vanpool data is also relatively high (combined mode share of 15 to 16 percent). The average commute vehicle occupancy indicated by this data -- about 1.2 to 1.4 persons per vehicle -- remains higher than occupancies typically observed in Front Range cities, which are closer to 1.05 to 1.1.

- Finally, the 2000 US Census asked workers how they traveled to work "last week" (meaning March 2000). This shows that the percentage of employed residents of Basalt/El Jebel and Pitkin County that take public transit (16 percent and 12 percent respectively) is much higher than other mountain communities and counties, as well as the Front Range's Denver-Boulder-Greeley area. Only Crested Butte shows a similar percentage of residents using public transit for traveling to work (however, this percentage is for a much smaller commuteshed and includes fewer communities than the Parachute to Aspen region). Garfield County as a whole is at the low end among the communities compared in terms of transit use, but excels in the percentage of employed residents that carpool (22 percent).

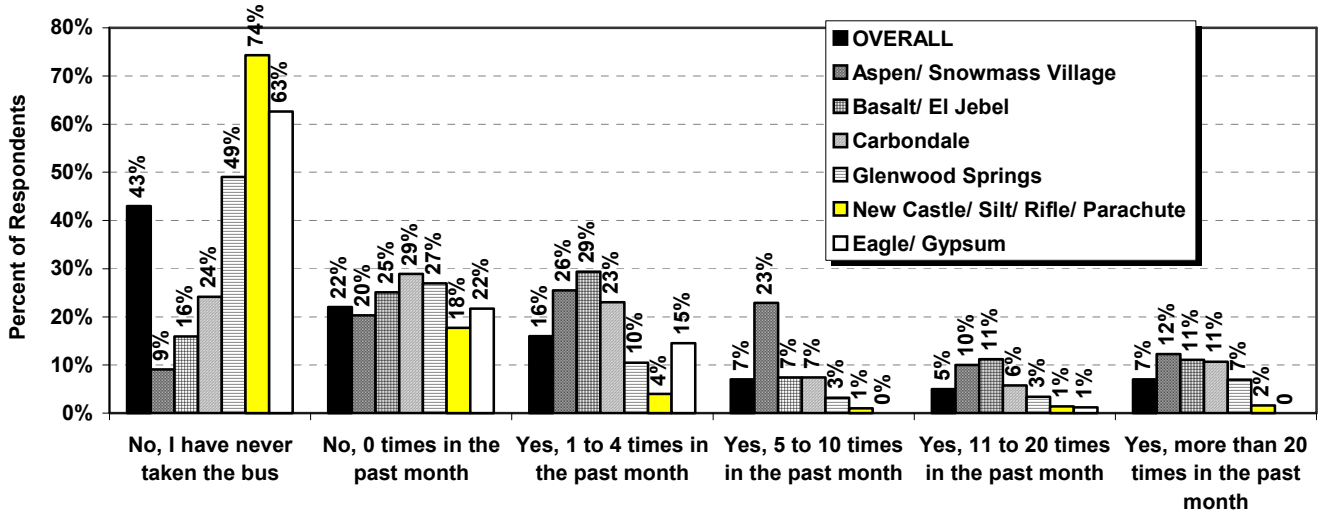
Table 2.5.4 Means of Transportation to Work: Comparison by Place of Residence (Study area vs. other communities), 2000

	Roaring Fk/Lower Colorado Total	Garfield County	Basalt / El Jebel	Pitkin County	Denver--Boulder--Greeley CMSA	Portland--Salem, OR--WA CMSA	Summit County	Routt County	Gunnison County	Crested Butte	Jackson, WY
Drive Alone	**64%**	**68%**	**60%**	**57%**	79%	77%	70%	73%	61%	35%	67%
Carpool	**20%**	**22%**	**22%**	**13%**	12%	13%	13%	16%	17%	9%	16%
Walk	**7%**	**5%**	**3%**	**14%**	2%	3%	9%	6%	13%	25%	11%
Bicycle	**1%**	**0%**	**0%**	**3%**	1%	1%	1%	2%	6%	17%	3%
Transit	**7%**	**3%**	**16%**	**12%**	5%	6%	5%	2%	3%	12%	3%
Other	**1%**	**1%**	**0%**	**1%**	1%	1%	1%	0%	1%	2%	0%
Total	**100%**	**100%**	**100%**	**100%**	100%	100%	100%	100%	100%	100%	100%

Source: 2000 US Census (excludes persons that work at home). CMSA=Consolidated Metropolitan Statistical Area.

Frequency of Bus Ridership: In a new question asked this year, about 57 percent of respondents have taken the bus at some point in time, with 35 percent having taken the bus at least once within the past month (Figure 2.5.5). Respondents residing in areas that have a longer history of service and more frequent service are more likely to have used the bus within the past month. For example, 71 percent of respondents from Aspen/Snowmass Village, which has a long history of bus service as well as frequent service (much of which is free), reported using the bus at least once in the past month. The percentage decreases to 58 percent of respondents from El Jebel/Basalt, 47 percent of respondents from Carbondale, 24 percent of respondents from Glenwood Springs, and only 8 percent of respondents residing in the New Castle to Parachute corridor (which has only had bus service on an infrequent basis for the last couple of years.).

Figure 2.5.5 – Have You Taken The Bus (for any purpose) Within The Past Month? How Many Times? Comparison by Place of Residence



Source: 2004 Employee Survey

Stops On The Way To/From Work: A number of factors influence commute mode choice. One of these is whether people need to run errands on the way to or from work. If so, it is harder for them to take the bus or share a ride.

In 2004, 40 percent of respondents indicated they made a stop as part of their commute during their most recent workday, for an average of 0.7 stops per respondent. This compares to 53 percent of respondents that made stops in 1998, averaging about 1 stop per respondent. It should be noted that if respondents were asked to report on their most recent work *week*, the percentage answering yes would most likely approach 90 percent or more and would most likely be more consistent with the 1998 survey.

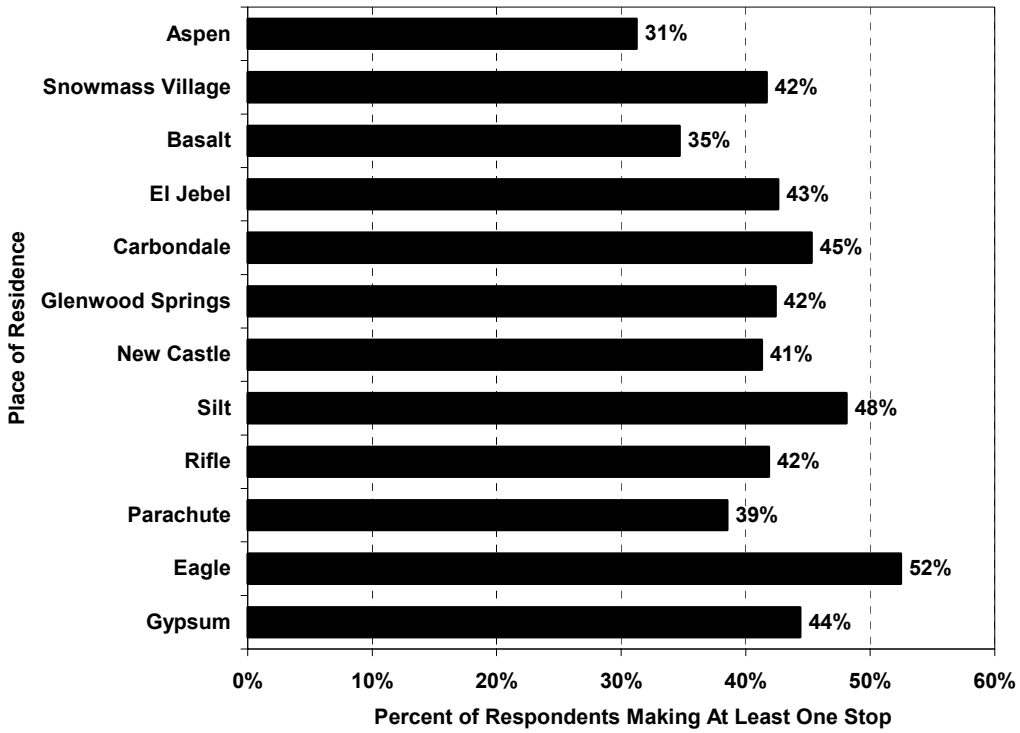
Figure 2.5.6 to follow shows the percentage of respondents that made at least one stop as part of their commute on their most recent workday, by place of residence. This proportion of residents making a stop during their commute varies somewhat geographically, from a high of 52 percent of respondents living in or nearest to Eagle to a low of 31 percent of respondents living in or nearest to Aspen.

Additional differences are observed by commute mode. Not surprisingly, respondents that drove alone were more likely to make a stop (53 percent) and make a larger number of stops, on average (0.8), than respondents taking other modes. About 47 percent of car/vanpoolers made a stop (averaging 0.7 stops), along with 41 percent of bus riders (0.6 average stops) and 25 percent of bikers/walkers (0.3 average stops).

Regarding stops made by bus commuters, it should be noted that approximately 17 percent of bus users drove to a park-n-ride as part of their commute, and an additional 7 percent reported biking to the bus. As such, bus riders who used multiple modes may have made a portion of their stops using these other modes.

Overall, these results reflect an important consideration in transportation planning: nearly everyone needs to drive at least some of the time, but most people do not need to drive every day. This has significance for the design of employer-based transportation demand management programs. Successful programs help people drive on the days they need to drive and help them take other modes on the days they do not need to drive.

Figure 2.5.6 – Percentage Of Respondents Making Stops On Their Way To/From Work, by Place of Residence – 2004 Employee Survey



Proximity to Transit Service: Another important consideration in mode choice is the proximity of transit service to the home of the commuter. Table 2.5.7 shows, not surprisingly, that as the distance to transit service increases, respondents are less likely to take the bus and more likely to drive alone. Of interest is that the percentage of carpool/vanpool users is highest among commuters when transit service is between six blocks and five miles from their residence. This somewhat compensates for the reduced bus transit usage at these distances in helping to reduce drive alone traffic. Vanpools often serve as precursors to transit and can set the stage for increased transit ridership once services are expanded and improved.

It should also be recognized that proximity of the workplace to bus service, and a built environment that supports walking or otherwise traveling to the place of employment from the transit stop, is also an important determinant of transit use. Employment centers well-served by transit typically enjoy higher bus ridership than job centers without conveniently located transit.

Table 2.5.7 – Mode of Transportation to Work on Last Workday: By Distance To Nearest Bus Stop that You Could Use to Ride to Work

Mode Used:	Less than 2 blocks to bus stop	2 to 5 blocks to bus stop	6 blocks to 1 mile to bus stop	1 to 5 miles to bus stop	More than 5 miles to bus stop
Drive alone	55%	63%	63%	70%	78%
Carpool/ Vanpool	16%	12%	21%	19%	9%
Bus	16%	14%	13%	10%	9%
Bicycle/ Walk	13%	11%	3%	2%	4%
Total	100%	100%	100%	100%	100%

Source: 2004 Employee Survey

Transit Pass: Another important factor in transportation mode choice is the availability of a transit pass. Research elsewhere indicates that this relationship goes beyond the simple cost savings achieved in using a pass rather than paying cash fare. People who hold a pass are more likely to use transit even if they can easily afford to drive alone.

Figure 2.5.8 below shows that roughly 30 percent of respondents reported having a transit pass in both 2004 and 1998. About 27 percent of these passes were provided by employers in both survey years. However, a higher percentage of 2004 respondents purchased their own pass (49 percent) than in 1998 (38 percent), while the proportion that shared the cost with their employer declined to 24 percent from 36 percent. If this trend is in fact true, it could have significant implications for RFTA and the region. There is a point beyond which a decline in employer-subsidized passes will manifest itself in a decline in the number of people holding passes, a point the region may be at or near that point already. Further declines in employer- subsidized bus passes could lead to declines in the number of pass-holders and, as a secondary impact, in bus ridership. This issue (and related issues, such as pricing of passes) warrants continued monitoring.

Figure 2.5.9 illustrates the far greater likelihood of pass holders to use the bus than non-pass holders. Fully 85 percent of pass holders took the bus in the previous month, compared to 19 percent of non-pass holders. Interestingly, passes purchased by employers for employees received the most frequent use (51 percent of those owning an employer-purchased pass used the bus at least 11 times in the past month), followed by jointly purchased passes (40 percent of such passes used at least 11 times in the past month), self-purchased passes (24 percent used at least 11 times in the past month), and use by persons not owning a pass (4 percent of persons NOT owning a pass used the bus at least 11 times in past month).

Figure 2.5.8 – RFTA Pass/Punch Card Ownership: 2004 and 1998 Employee Surveys

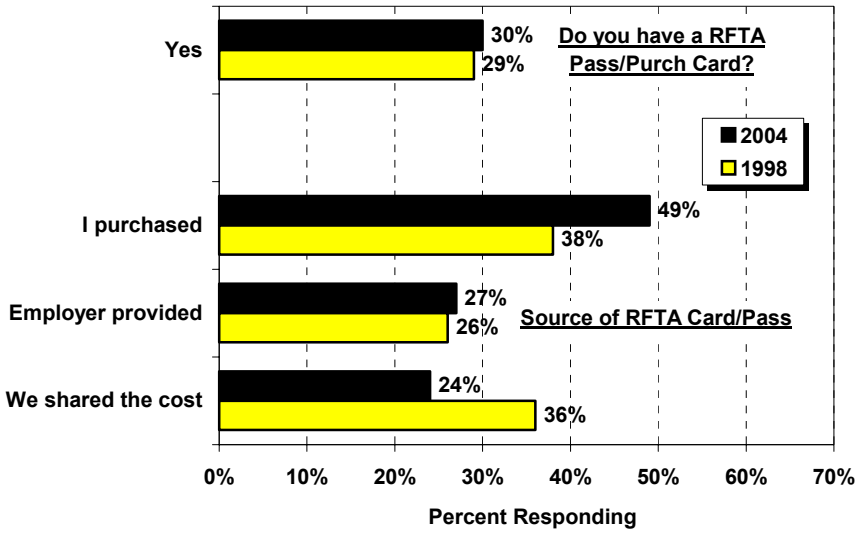
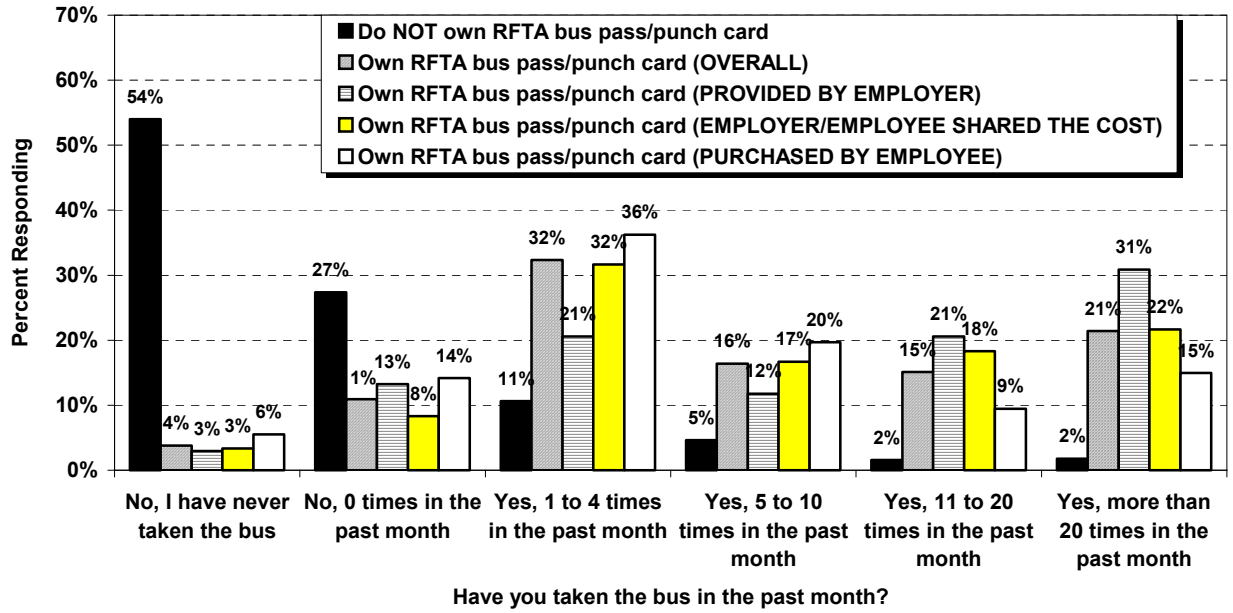


Figure 2.5.9 – Frequency of Bus Usage by Ownership of RFTA Pass/Punch Card: 2004 Employee Survey



Based on the data, it appears that there are probably two distinct markets for transit passes: commuters who work for companies that encourage non-single occupancy vehicle (SOV) commuting and provide or subsidize transit passes to back that up, and people who need a transit pass and buy it themselves. The first category will generally be working in environments where parking is largely unavailable (Aspen and Snowmass Village), where SOV commuting is discouraged, and where the company is communicating with employees about

travel choices (e.g., companies participating in Aspen's TOPS program). People in the second category are probably more likely to work where parking is at least somewhat available (e.g. Glenwood Springs) and where the company is not involved in commuter travel behavior. These employees are more likely to drive sometimes and take the bus other times. This probably explains why persons with employee-purchased passes/coupon books show up in the mid-range of transit pass usage, while commuters with company-purchased passes show up in the higher use ranges.

Parking: One of the most important determinants of mode choice -- especially drive-alone mode share -- is the availability of free parking. As similarly observed in 1998, Roaring Fork residents are much more likely to drive alone if parking is free or if they have a permit than if they have to pay for it themselves. As shown in Table 2.5.10, below, respondents that must pay for their own parking are about 4 times more likely to take the bus than those that have free parking. Conversely, those who pay for their own parking are 45 percent less likely to drive alone.

Table 2.5.10 – Commute Mode Used on Last Workday: by Type of Space You Usually Park In When You Drive to Work (2004 Employee Survey)

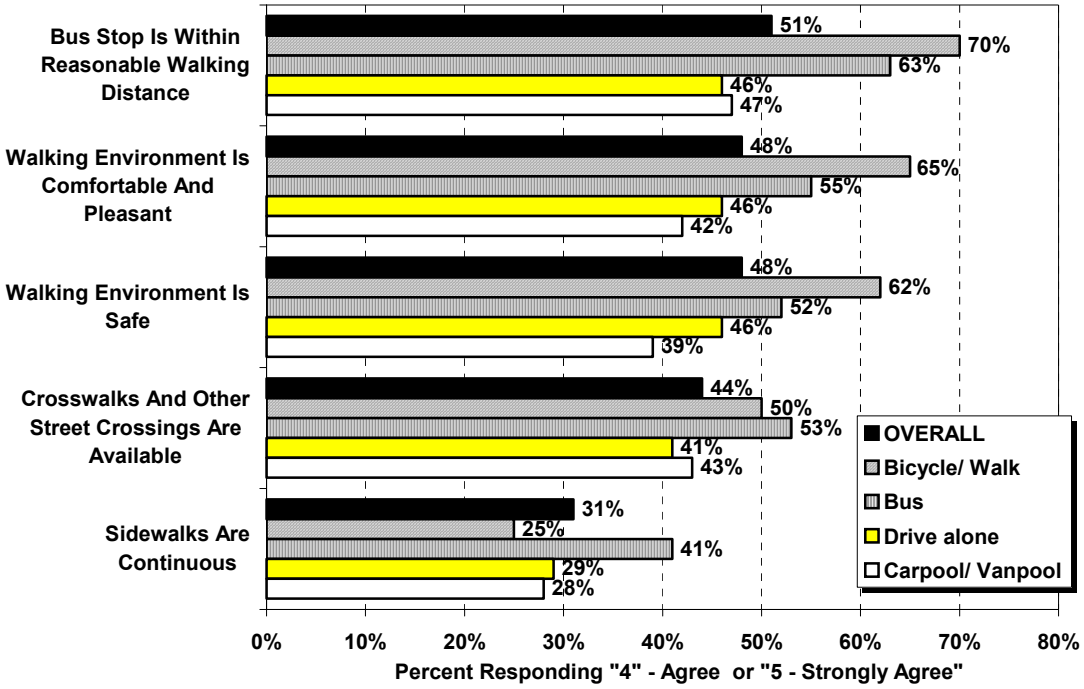
	Public Lot or Structure; or Private Lot / Space:			
	Paid	Permit	Free	Street, No Meter
Drive alone	41%	62%	74%	71%
Carpool/ Vanpool	26%	17%	14%	16%
Bus	26%	16%	6%	7%
Bicycle/ Walk	7%	5%	6%	6%
TOTAL	100%	100%	100%	100%

Walking Environment: Research in other areas of the country has shown that one of the most important determinants of mode choice is the walk environment where people live. The Portland Metro Area's LUTRAQ (land use, transportation and air quality) Study conducted in the early 1990s demonstrated a clear connection between walk environment and mode choice. A good neighborhood walking environment encourages not only walking, but transit patronage as well, since at least some walking is an essential part of most transit travel.

The 2004 survey probed respondent perceptions of the walking environment between their home and the nearest bus stop, including the availability of crosswalks, continuous sidewalks, safety, comfort and distance. The relationships between these walking characteristics and mode choice are evaluated in this section to determine their relative effect on mode share. (Data are not directly comparable to the 1998 survey, which probed the general neighborhood walking environment, rather than the walking environment to the nearest bus stop.)

Figure 2.5.11 shows that correlations are apparent between the quality of the walking environment near the place of residence and mode choice. In general, persons who commute via bus or walking/biking rate the walking environment to the nearest bus stop more favorably than those who drive or carpool to work. This suggests a likely causation effect, whereby a more favorable walking environment encourages use of alternate modes of transportation.

Figure 2.5.11 – Rate Your Ability to WALK to The Nearest Bus Stop From Your Residence: Percent Agreeing with Statements – By Commute Mode Used on Last Workday, 2004



<u>Family Responsibilities (Children):</u> One of the reasons people give for driving to work is the need to provide transportation for their children -- whether to school or to childcare -- as part of the commute trip. The survey documented the prevalence of transportation of children on the commute trip, by transportation mode. As described below:

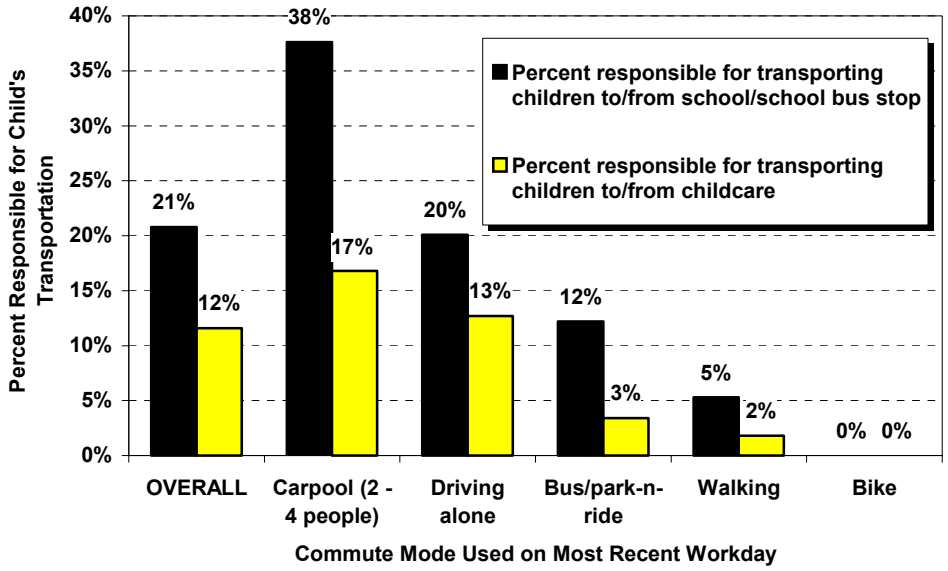
- Overall, 21 percent of respondents are responsible for transporting children to/from school or a school bus stop. A lower 12 percent are responsible for transporting children to/from childcare.

- Carpoolers are much more likely than other commuters to transport children to school/school bus stop (38 percent, vs. 21 percent overall). Additionally, carpoolers are somewhat more likely than other commuters to transport children to childcare (17 percent, vs. 12 percent overall). However, the high carpooling rates almost certainly

reflect respondents using the presence of children in the car for a portion of the commute to classify the trip as carpooling. Future surveys in the region should probably distinguish between child and adult occupants in commuter vehicles. Coordination among families for carpooling is likely not especially prevalent, given the scheduling challenges involved.

- Also of interest is the relatively low proportion of bus riders, walkers and bikers responsible for transporting children. These results suggest that for many residents, it is difficult to transport children and simultaneously commute to work by bus, foot, or bike. These results reinforce the importance of neighborhood elementary schools and employment-based daycare, not only as quality of life measures, but also as traffic reduction strategies.

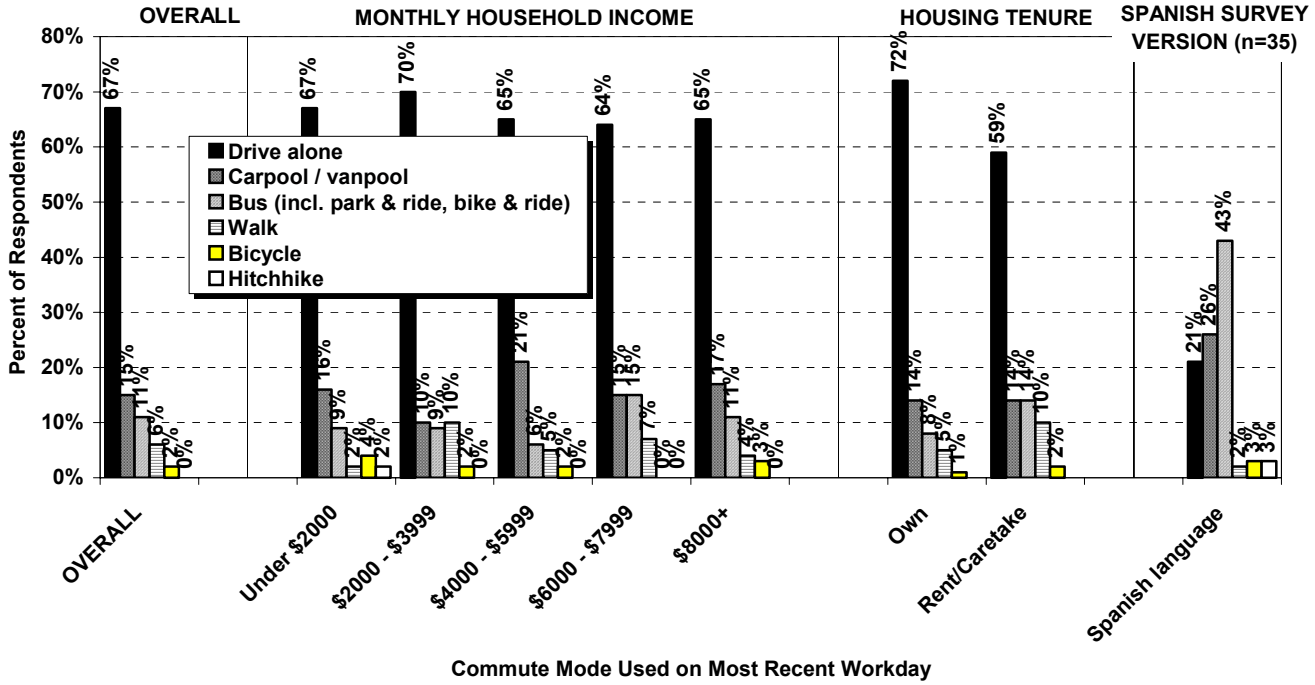
Figure 2.5.12 – Percent of Respondents Responsible for Transporting Children to School / Child Care – By Commute Mode Used on Last Workday, 2004



<u>Household Income, tenure, and Spanish as primary language:</u> Figure 2.5.13 to follow shows that commute mode in the region varies only slightly with household income. A steady share of households with low, medium, and high incomes drive alone (65 – 70 percent), and usage of other modes also varies only moderately by income. However, mode share does vary more significantly with housing tenure, an important socioeconomic variable. Owners are more likely than renters to drive alone (72 percent vs. 59 percent), while renters are more likely to take the bus (14 percent vs. 8 percent) and walk (10 percent vs. 5 percent). Additionally, respondents who completed the Spanish language version of the survey were much more likely to use the bus (43 percent) than respondents overall (11 percent), although it should be cautioned that this result is based on a relatively small sample size of 35 responses.

Research around the country has shown that wealthier people tend to drive more, although in those communities where transit service is high, the relationship between income and mode share is less significant (or even not significant). In the Roaring Fork/Lower Colorado region, the relationship between commute mode and income appears to be complicated by the availability of transit service, as well as unique patterns in the housing market and land development patterns, including the downvalley migration of relatively affluent residents to find affordable housing. Consequently, in the study area, mode choice appears to be the result of a complex interaction of variables, including housing affordability vs. place of residence tradeoffs, convenience of transit and other alternate modes, parking availability, childcare responsibilities, neighborhood and workplace walkability, weather and road conditions, and various other factors.

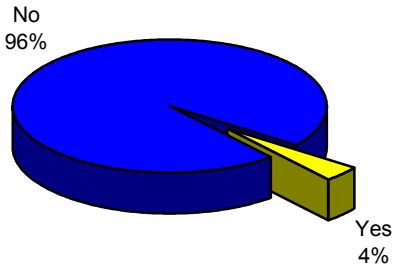
Figure 2.5.13 – Commute Mode Used on Last Workday: by Monthly Household Income, Housing Tenure, and Spanish Survey Version, 2004



Section 6 - Mode Choice: Telecommuting

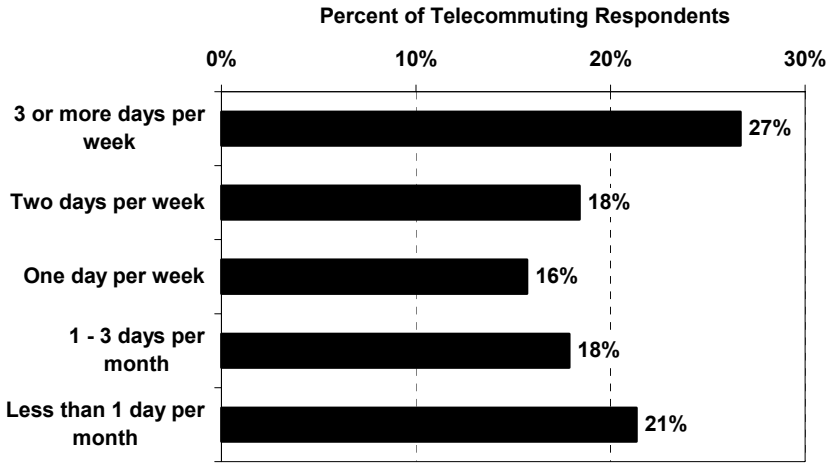
Very little telecommuting was reported by respondents to the employee survey. Only 14% of employees reported that their employers offer or encourage telecommuting, and only 29% of employees took advantage of the telecommuting option when offered. Netting these together, only 4% of respondents indicated that they telecommute at least occasionally, compared to 10% of respondents in 1998. (Some caution is required, due to differences in question design in 1998 and 2004.) Of those that do telecommute, only 61% telecommute at least once per week (Figure 2.6.2).

Figure 2.6.1 – Do You Telecommute?



The employer survey makes it clear that this situation is consistent with employer policies. Fully 65% of employers reported that "telecommuting is not a workable option for any employees" and another 21% indicated that "telecommuting is a workable option, but we have no regular telecommuting." Only 15% responded that "we encourage and support telecommuting for employees for whom it is workable."

Figure 2.6.2 – How Often Do You Telecommute?



Section 7 - Other Trips During the Workday

The employee survey explored travel behavior of employees during their workday in addition to the work commute. These other trips were categorized as "personal" (doctor, haircut, etc.); "lunch, shopping, recreation;" and, "work-related" (meetings, etc.) and, combined, average about 1.9 trips per day.[5] This is largely unchanged from 1998.

Table 2.7.1 – Average Number Of Non-Commuting Trips During the Workday By Trip Type: 2004 and 1998 Surveys

Type Of Trip	2004	1998
Personal Business	0.5	0.5
Lunch, Shopping, Recreation	0.8	0.8
Work Related (non-commuting)	0.6	0.6
TOTAL	1.9	1.9

Figure 2.7.2 below compares the mode shares of non-commute trips by type of trip. In general, travel modes for personal trips resemble travel modes for commute trips, in large part because the commute mode choice influences other trip-making throughout the day. Lunch/personal and shopping trips tend to be more social in nature and thus reflect higher shared ride and walking components than work-related (non-commuting) trips. Largely similar mode share patterns were observed in 1998.

Figures 2.7.3 through 2.7.5 illustrate mode share by type of trip by place of work. A surprise in this data is the high transit mode share for business travel (Figure 2.7.5). The use of transit for work tops out for employees working in Aspen/Snowmass (24 percent), and decreases downvalley through Basalt/El Jebel (11 percent), Carbondale/Glenwood Springs (7 percent), and New Castle/Silt/Rifle/Parachute (4 percent). Use of transit for lunch/personal trips and shopping trips is also comparatively high for persons working in Aspen/Snowmass and Basalt/El Jebel (typically 20 percent or more), indicating that transit is an effective mode for mid-day trips for many workers in these areas.

[5]The definition of "trip" utilized here is different from what traffic modelers use. This study does not treat "stops" on the way to and from work as separate trips. Many computerized traffic models would count these separately.

Figure 2.7.2 – Method of Travel Used for Workday Trips: By Trip Type,2004 Employee Survey

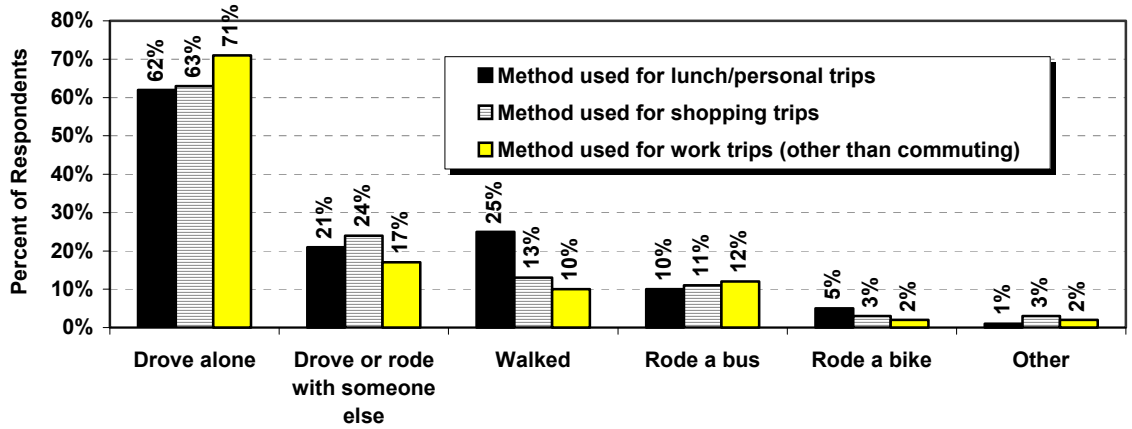


Figure 2.7.3 – Method of Travel Used for Workday Lunch/Personal Trips: By Place of Work, 2004 Employee Survey

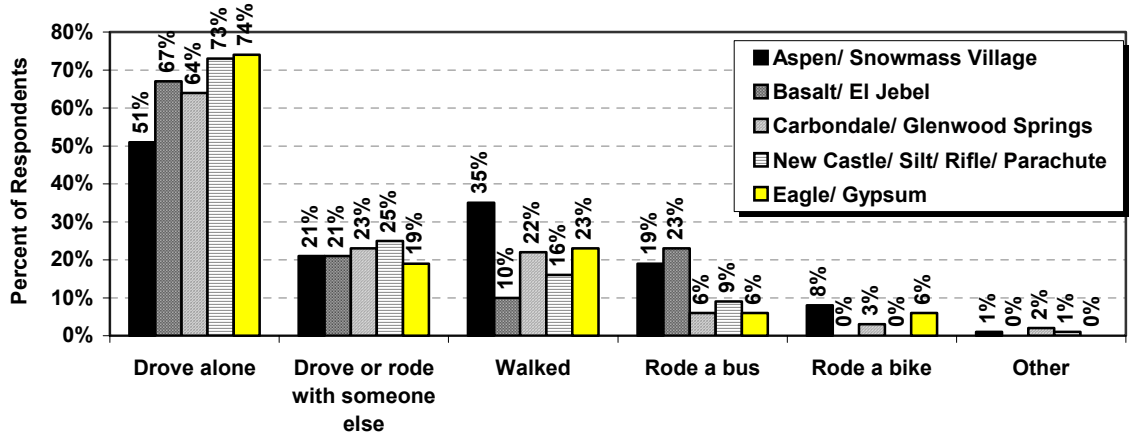


Figure 2.7.4 – Method of Travel Used for Workday Shopping Trips: By Place of Work, 2004 Employee Survey

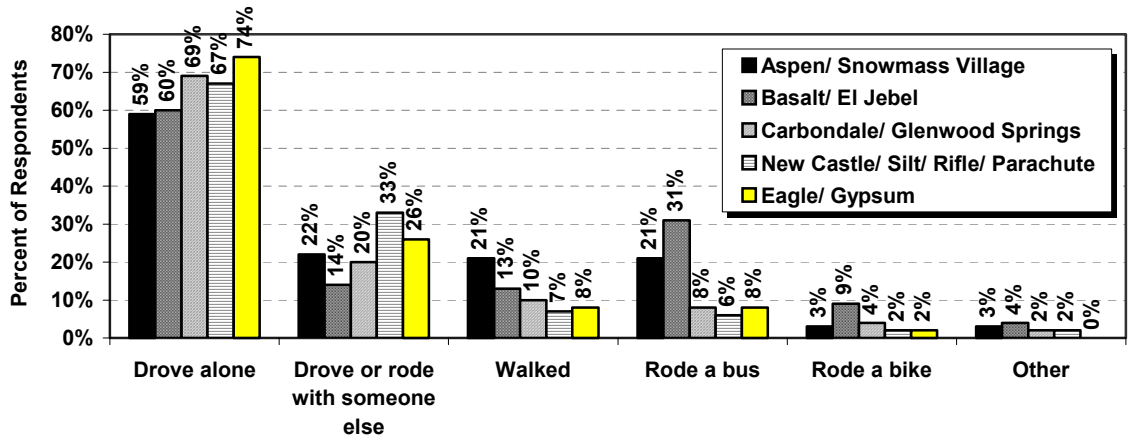
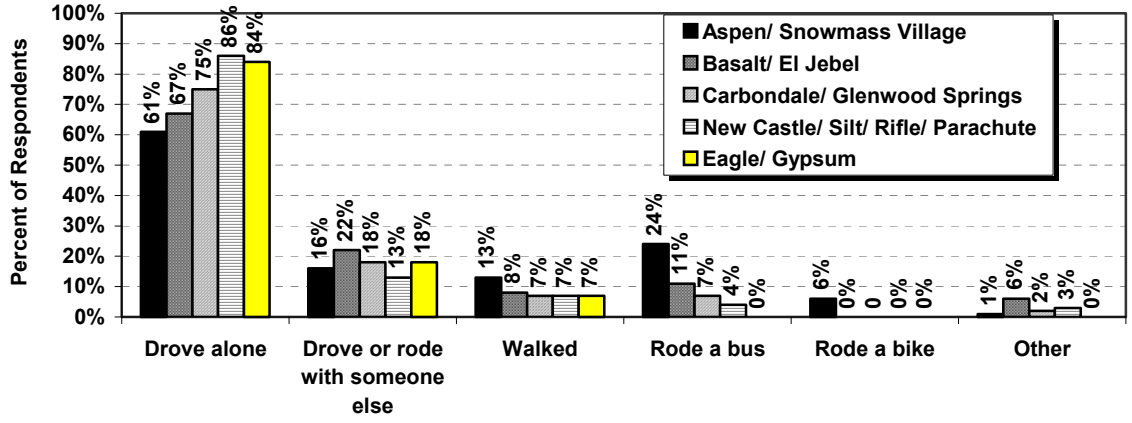


Figure 2.7.5 – Method of Travel Used for Work-Related Trips (Other Than Commuting): By Place of Work, 2004 Employee Survey



Section 8 - Housing Choices and Preferences

This section of the report evaluates employer attitudes toward the provision of employee housing and housing assistance for their workers, as well as employee preferences when selecting a residence and their willingness to move closer to work, if housing were available. Differences in opinions and household demographics of respondents that live and work within the same community and that live and work in different communities are also presented.

Employers: Table 2.8.1, below, compares 1998 and 2004 employer survey results pertaining to housing, excluding those businesses surveyed in Eagle and Gypsum. Caution is necessary in interpreting the results due to the modest sample size of the employer survey (123 responses in 2004, 94 responses in 1998; smaller for subgroups). In general, results show that:

- In the region as a whole, a similar percentage of employers offered some form of housing assistance to their employees in 2004 (21 percent of responding employers) as in 1998 (20 percent).

- Employers were less likely to say they would assist with the provision of housing in the future in 2004 (11 percent) than in 1998 (24 percent), although caution is required due to small sample sizes. An additional 34 percent of 2004 respondents were uncertain, and 55 percent said they were not willing. Aspen/Snowmass Village employers were somewhat more likely to express willingness to assist with the provision of employee housing (17 percent in 2004) than employers in other regions (8 percent).

- Among those employers that would be willing to assist with housing in the future, 36 percent indicated they would prefer to lease housing for their employees, 27 percent would prefer to assist employees in purchasing housing, 9 percent would rather build

housing for their employees, and 27 percent prefer other approaches.

- Businesses that employ at least one primarily Spanish-speaking employee are more likely to presently provide housing assistance to their employees (30 percent) than employers that do not employ any primarily Spanish-speaking persons (12 percent). However, only 3 percent of Spanish-speaking employee survey respondents indicated they receive housing assistance from their employer or live in employee housing, compared to 12 percent of other workers.

Table 2.8.1 – Employer Survey Results: Employee Housing

Do you have employees who primarily speak Spanish?	**1998**	**2004**
Yes:	51%	50%
Mean # Spanish speakers	10.6	12.4
Median # Spanish speakers	1.0	1.0

Do you offer housing for any of your employees?		
Yes	20%	21%
(IF YES) How Many?		
Mean	15	28
Median	3	5

Source: 2004 Employer Survey

In the future, would you be willing to assist with the provision of affordable / employee housing?	**1998**	**2004**
Yes	24%	11%
No	36%	55%
Uncertain	40%	34%

(If yes) Would you rather:		
Lease housing for your employees	32%	36%
Assist employees in purchasing housing	21%	27%
Build housing for your employees	26%	9%
Other	-	27%
Don't know	21%	-

Employees: As illustrated in Table 2.8.2 below, the demographics of employee households in the survey region have held relatively stable between 1998 and 2004 with regards to housing tenure (65 – 66 percent owner) and household composition (32 – 33 percent couple with children, 33 – 32 percent couple, 35 percent other arrangements). The most notable shift is that median yearly household incomes are higher in 2004 ($60,000) than in 1998 ($48,000), although an increase would be expected due in part to inflation.

Of interest for housing purposes is the finding that 10 percent of respondents in the overall study region (including 12 percent of Roaring Fork/Lower Colorado respondents) currently receive housing assistance from their employer or live in employee housing. Fully 43 percent of respondents living in the Aspen/Snowmass Village area report living in assisted housing, compared to just 1 – 3 percent of respondents living in midvalley and downvalley communities. This indicates that assisted housing is primarily a phenomenon of the upper valley at this time.

A few new questions were asked this year to better understand the level of importance that respondents place on proximity to employment when selecting a place to live. Responses to these questions among Roaring Fork Valley residents and residents in Eagle and Gypsum are compared in Table 2.8.2 and described below:

- When asked if they would consider moving closer to work if housing they could afford to buy (or rent, if preferred) were available to them, respondents from the Roaring Fork Valley were more likely to consider moving (44 percent) than Eagle/Gypsum respondents (26 percent). Respondents working, but not living, in Aspen/Snowmass Village (60 percent), Carbondale/ Glenwood Springs (46 percent) and Basalt/El Jebel (37 percent) were most likely to indicate they would consider moving closer to work.

- In general, respondents that would consider moving earn slightly lower incomes than those that want to stay put (median $55,000 vs. $60,000 respectively), and are much more likely to have lived in their current residence for less than 3 years (62 percent vs. 29 percent). Renters are more likely than owners to consider moving (63 percent vs. 30 percent, respectively); Spanish-speaking respondents are more likely than other respondents to consider moving (78 vs. 40 percent); and singles (51 percent) are more likely to consider moving than couples (39 percent) and couples with children (33 percent).

- The primary reason respondents from both regions would not consider moving is that they prefer to live in their present community (77 to 78 percent). Distance to work for others in the home was also a factor for 23 percent of Roaring Fork Valley respondents and 14 percent of Eagle/Gypsum respondents. Only 5 percent of respondents in each area indicated that they actually enjoy commuting.

- When asked if they are searching for work closer to their home, 11 percent of Roaring Fork Valley respondents and 7 percent of Eagle/Gypsum respondents said "yes." This indicates that if local jobs opened up, businesses in other parts of the region would risk losing employees. Respondents presently living in Carbondale, New Castle and Rifle expressed the most interest in finding work closer to home (13 to 20 percent of respondents).

- Respondents searching for work closer to their homes generally earn somewhat lower household incomes than others (median $48,000 vs. $60,000 respectively). Looking at incomes in more detail, persons with a household income of under $2000 per month are more likely to be searching for work closer to home (22 percent) than persons with monthly incomes of $2000 - $5999 (11 percent) and persons with monthly incomes of $6000+ (5 percent). Relatedly, renters are more likely to be searching for work closer to home (17 percent) than owners (6 percent), and persons who have lived in their current residence for less than three years are more likely to be searching for work closer to home than others (13 percent vs. 5 percent).

Table 2.8.2 – Employee Household Characteristics and Live/Work Considerations

Tenure	**1998**	**2004**
Own	66%	65%
Rent	28%	31%
Caretake	1%	2%
Seeking housing	1%	1%
Other	3%	1%

Household Type		
Live alone	12%	15%
Single parent with children	4%	5%
Couple	32%	33%
Couple with children	33%	32%
Unrelated roommates	11%	10%
Other	8%	4%
Persons per household		
Mean (Total)	2.7	2.7
Mean (Under 16)	0.6	0.5

Median Household Income	$48,000	$60,000

Do you receive housing assistance from your employer?		
Yes	4%	12%
No	96%	88%

Source: 2004 Employee Survey

Do you receive housing assistance from your employer?	**Roaring Fork Valley**	**Eagle/ Gypsum**
Yes	12%	2%
No	88%	98%

Would you consider moving nearer your place of employment if housing were available that you could afford?		
Yes	44%	26%
No - *If not, why not?*	56%	74%
I prefer to live in my present community	*78%*	*77%*
Current residence is closer to work for others in home	*23%*	*14%*
I enjoy commuting	*5%*	*5%*
Other	*18%*	*23%*

Are you searching for work closer to your place of residence?		
Yes	11%	7%
No	89%	93%

Figure 2.8.3 below illustrates the relative importance of different factors when respondents are searching for a residence. As shown, the cost of housing and type of residence are significantly more important considerations to respondents than proximity to their place of employment. In other words, respondents must first be able to afford the type of residence that suits their household's needs and preferences before being too concerned with the proximity to their place of employment. Evaluating this question by place of residence, household type, tenure, length of time in the area and other factors yields some interesting observations:

- Residents of different portions of the study area generally rank the importance of various housing choice factors in similar order (Fig. 2.8.3). However, importance of proximity to RFTA bus service, although a secondary or tertiary consideration of residents in each community, is most important among residents of the upper valley (mean 2.8 in Aspen/Snowmass), decreasing through midvalley and downvalley communities, to a low of 1.4 in the New Castle to Parachute corridor. Aspen/ Snowmass Village residents also place greater importance on proximity to employment and various community amenities and services than residents of other communities, but place a somewhat lower importance on housing unit type.

- Owners are somewhat more concerned with the "type of residence" and with finding a place proximate to places of employment for others in the household than renters. Renters are more concerned with being proximate to RFTA bus service than owners, although this was still rated as the least important factor to renters (average rating on a 5-point scale of 2.4 vs. 1.9 for owners, where 5="extremely important" and 1="not at all important").

- All household types ranked the "cost of housing" as their primary factor considered when looking for a residence, although single parent households rated this factor the highest (4.6 average). Proximity to RFTA bus service was the lowest ranked factor for all households, with the exception of unrelated roommates (2.7 average) and "live alone" households (2.3 average), where "proximity of work for others in the household" was rated lower.

- Respondents that presently receive employer housing assistance or live in employee housing are more concerned than other households with living proximate to their place of employment (4.2 versus 3.1), living proximate to services (3.5 versus 3.0) and living proximate to RFTA service (2.8 versus 2.0). Respondents with assistance are also less concerned with the type of residence (3.7 average) than other households (4.1 average).

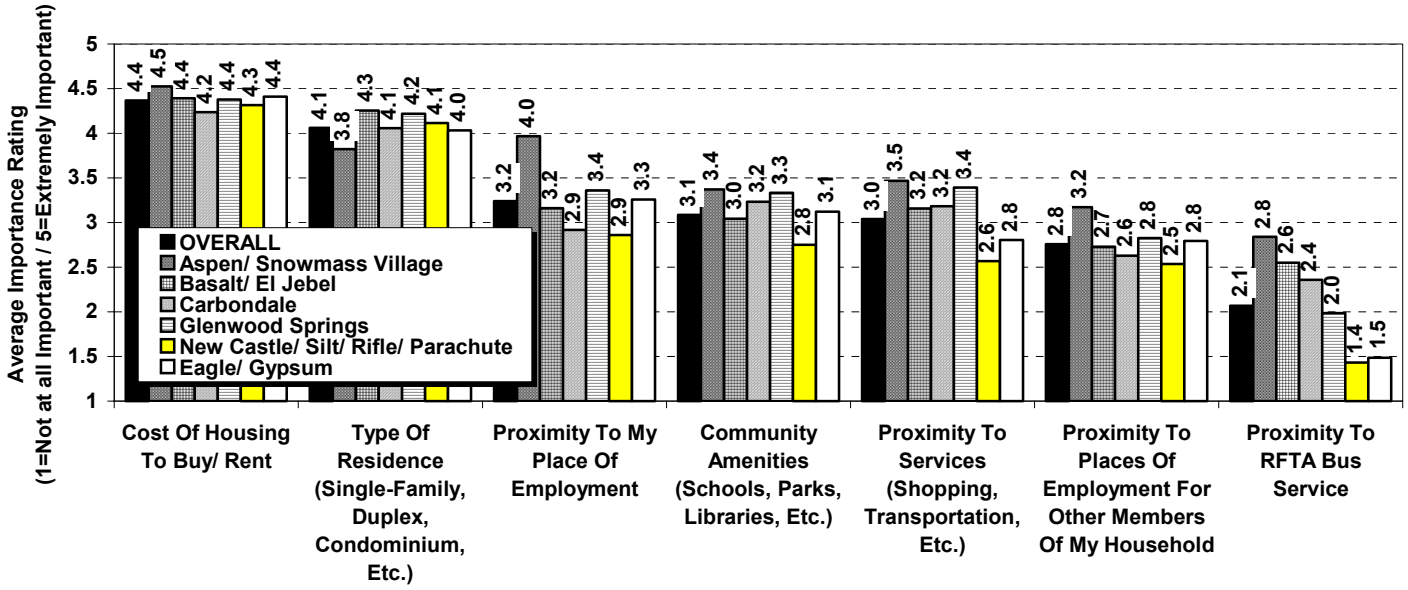
- Respondents that would consider moving closer to work if housing were available are more concerned with the cost of housing (4.6 versus 4.2) and with living proximate to work (3.4 versus 3.1), services (3.2 versus 2.9) and RFTA bus service (2.3 versus 1.9) than are other respondents.

- Respondents searching for work nearer their present home are more concerned with being proximate to other household members' places of work (3.0 versus 2.7), community amenities (3.5 versus 3.0) and being proximate to RFTA service (2.5 versus 2.0) than other respondents.

- Newcomers to the area (residence 1 year or less) are somewhat more likely to want to be near their place of employment (3.5 average) and RFTA service (2.3 average) than residents overall (3.3 and 2.1 average, respectively).

- Proximity to RFTA service is much more important to Spanish-speaking respondents (3.9 average) than other respondents (2.0 average). In fact, proximity to employment for themselves and others in the household and the "type of residence" is less important to Spanish-speaking respondents than proximity to RFTA service.

Figure 2.8.3 – Importance Of Factors When Selecting Your Current Place of Residence: By Region Of Residence



Source: 2004 Employee Survey

Comparison Of Commuter Households: Respondents that live and work within the same community have somewhat different household characteristics and preferences than respondents that live and work in different communities, as illustrated in Table 2.8.4 and described below.

- Respondents that live and work in the same community are more likely than average to rent their residence, live alone, live with unrelated roommates, or be single-parent households. By contrast, respondents that live and work in different communities are more likely to own their residence and be couples or couples with children. This indicates that many couples may reside in communities where they can afford to purchase homes, as well as areas that are more central to places of employment for all working adults in the household.
- Respondents that live and work in the same community are much more likely to currently

receive housing assistance from their employer or live in employee supported housing (21 percent) than respondents that live and work in different communities (4 percent). Examined by community, about 49 percent of respondents that live and work in Aspen and Snowmass Village reside in assisted or supported housing, compared to 4 percent of respondents that live and work in other communities. This illustrates the critical role of housing programs in Aspen/Snowmass especially to help local workers reside within their community of employment.

Table 2.8.4 – Characteristics And Preferences Of Commuter Households

Tenure	Live/Work: Same community	Live/Work: Different communities
Own	58%	70%
Rent	37%	26%
Caretake	2%	1%
Seeking housing	0%	1%
Other	2%	1%
Median Household Income	$57,988	$60,000

Household type	Live/Work: Same community	Live/Work: Different communities
Live alone	18%	13%
Single parent w/ children	8%	4%
Couple	28%	34%
Couple w/ children	31%	37%
Unrelated roommates	11%	8%
Other	4%	5%

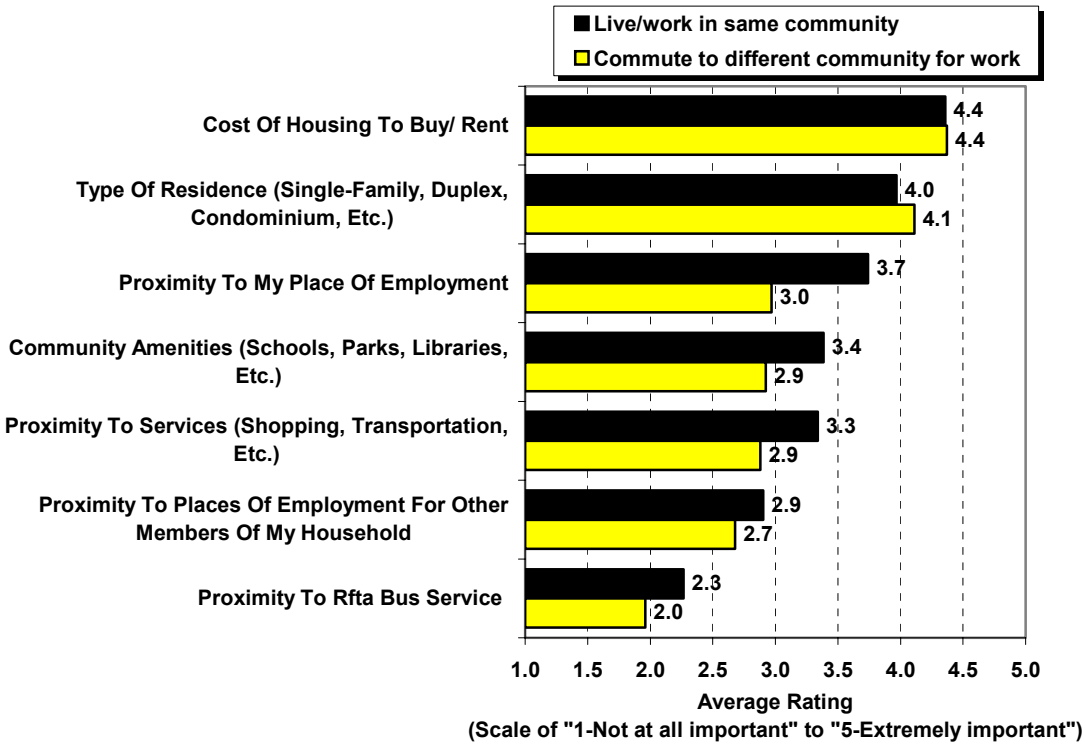
	Live/Work: Same community	Live/Work: Different communities
Currently receive housing assistance from employer or live in supported employee housing:	21%	4%
Would consider moving nearer to place of employment if housing were available:		
Yes	35%	45%
No - *If not, why not?*	65%	55%
I prefer to live in my present community	67%	84%
Current residence is closer to work for others in home	20%	22%
I enjoy commuting	1%	8%
Other	30%	13%
Percent of respondents searching for work closer to place of residence:	6%	12%

Source: 2004 Employee Survey

- As would be expected, respondents that live and work in the same community as their place of employment are less inclined to want to move closer to work (35 percent) or to seek a job closer to their place of residence (6 percent) than respondents that live and work in different communities (45 percent and 12 percent respectively). Provided that resident workers are content with their job and the community, this results in a more stable workforce.

Figure 2.8.5 below illustrates the relative importance that respondents that live and work in the same community and respondents that live and work in different communities place on selected factors when selecting their place of residence. As shown, both groups place a similar (and high) level of importance on housing costs and residence type in selecting their place of residence. However, respondents that live and work in the same community tend to place greater importance than others on proximity to various amenities and services (work, schools, shopping, RFTA service, etc.).

Figure 2.8.5 – Importance Of Factors When Selecting Your Current Place of Residence: By Whether Live & Work in Same Community



Source: 2004 Employee Survey

CHAPTER 3 – Mode Shift Issues

Section 1 - Mode Shift Opportunities

Chapter 2 identified a number of opportunities to influence the travel behavior of area residents and commuters. This chapter explores some of these opportunities in more detail (with an emphasis on mode choice).

In reviewing the data in this chapter, it may be helpful to keep in mind that significant reductions in future traffic levels do not require a complete shift away from driving alone. If commuters were to drive, on the average, one less day per week, the result would be a 20% decrease in commute traffic. Two days of not driving would result in a 40% decrease.

It is also important to note that how people get to work in the morning shapes their travel behavior all day long. Reductions in commute driving significantly affect other travel as well.

The data in this section reinforces the realities of transit planning – that certain characteristics of the environment at the place of work may be significantly more important than characteristics of the residential environment, including:

- the level of transit service;
- whether there are opportunities to walk to lunch, shopping and other activities; and,
- the extent to which free (to the commuter) or inexpensive parking is available to commuters within 500 to 1,000 feet of the workplace.

The data also shows the influence of a number of changes in the transportation infrastructure since 1998, including the completion of four-laning of Highway 82 from Basalt to Buttermilk (with the exception of Snowmass Canyon) with High Occupancy Vehicle lanes (HOV), and the expansion of bus service from Glenwood to Rifle after the creation of the Regional Transportation Authority (RTA) in 2000.

The following set of three graphs compares commute modes of residents that live in each community with those that work in each community. Figure 3.1.1 shows the "drive alone" mode share for residents and workers in each community. For example, the graph shows that 43 percent of respondents that live in Aspen "drive alone," and 49 percent of respondents that work in Aspen "drive alone," and so on for each community, based on the mode used by the respondent on the most recent workday. Similarly, Figure 3.1.2 shows the share that used the bus, and Figure 3.1.3 shows the proportion which walked/biked to work.

Figure 3.1.1 – Percent of Respondents who Commuted by Driving Alone on Most Recent Workday – By Place of Residence and Place of Work (2004 Employee Svy)

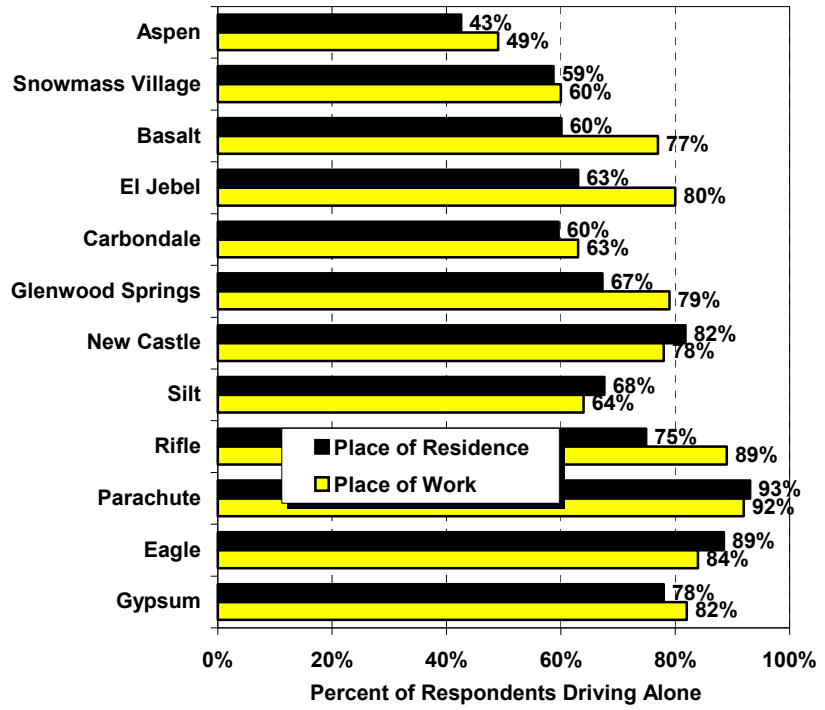


Figure 3.1.2 – Percent of Respondents who Commuted by Bus on Most Recent Workday – By Place of Residence and Place of Work (2004 Employee Survey)

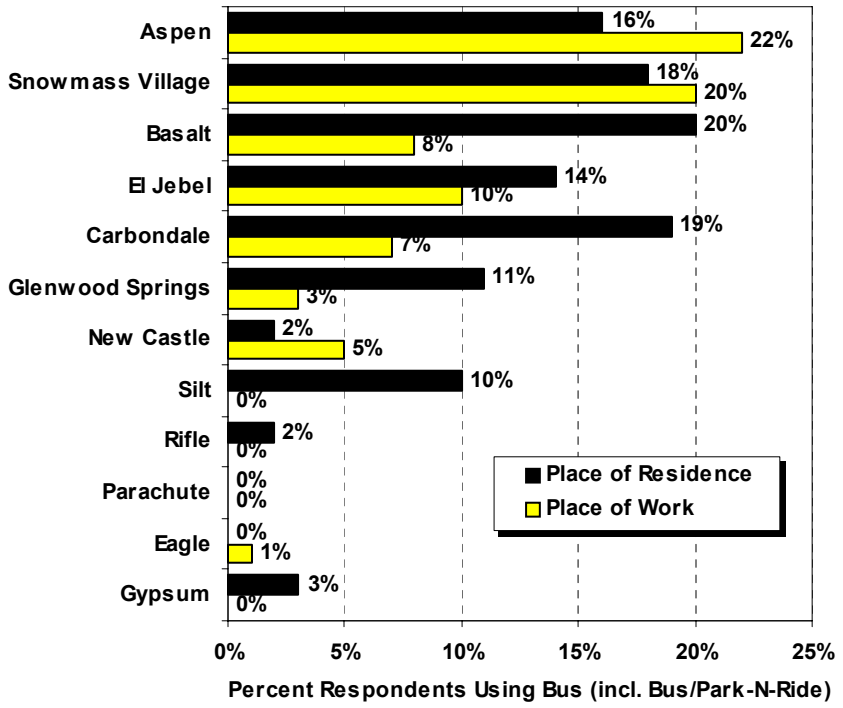
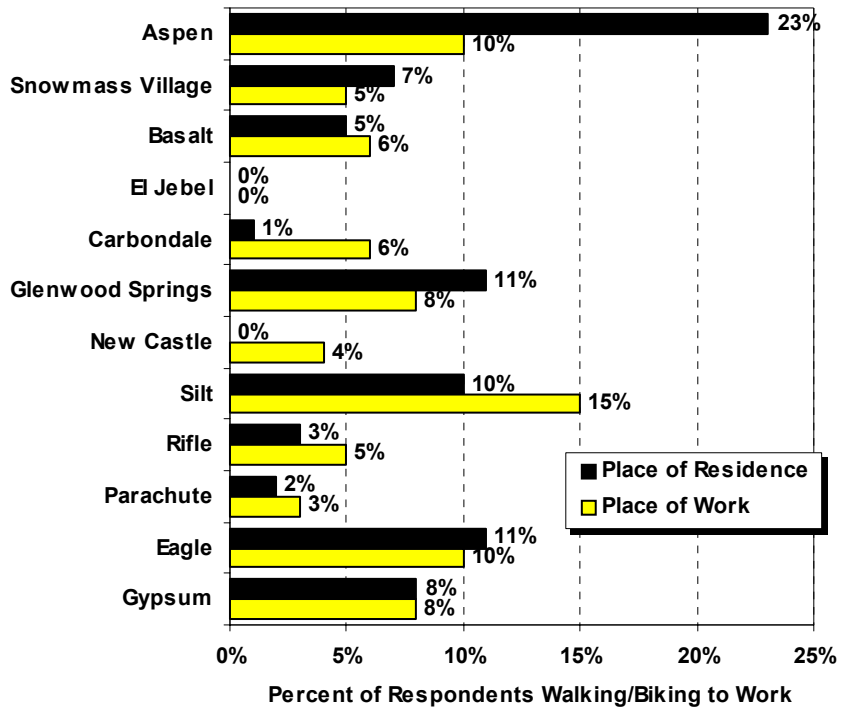


Figure 3.1.3 – Percent of Respondents who Commuted by Foot/Bike on Most Recent Workday – By Place of Residence and Place of Work (2004 Employee Svy)



The next set of graphs (8 total) compare the change in commute mode by where respondents live (1 through 4) and where respondents work (5 through 8) between 1998 survey and 2004 survey. Four regions are evaluated: Aspen/Snowmass Village, Basalt/ El Jebel, Carbondale/Glenwood Springs, and New Castle-to-Parachute. By grouping communities we can compensate for the lower sample sizes in 1998 to some extent. Many of the smaller changes between 1998 and 2004 are likely due to differences in sampling rather than actual changes in behavior. However, infrastructure changes such as the four-laning of Highway 82 from Basalt to the Buttermilk ski area outside Aspen and the new bus service from Rifle to Glenwood Springs could play an important role in explaining some of the larger changes. For example, the 13 percentage point drop in transit share based on survey data in Basalt/El Jebel could in part be the result of highway improvements (although sampling issues are also likely to be a factor).

Figure 3.1.4 – Mode Split By Place of Residence: 2004 and 1998 Employee Surveys Compared

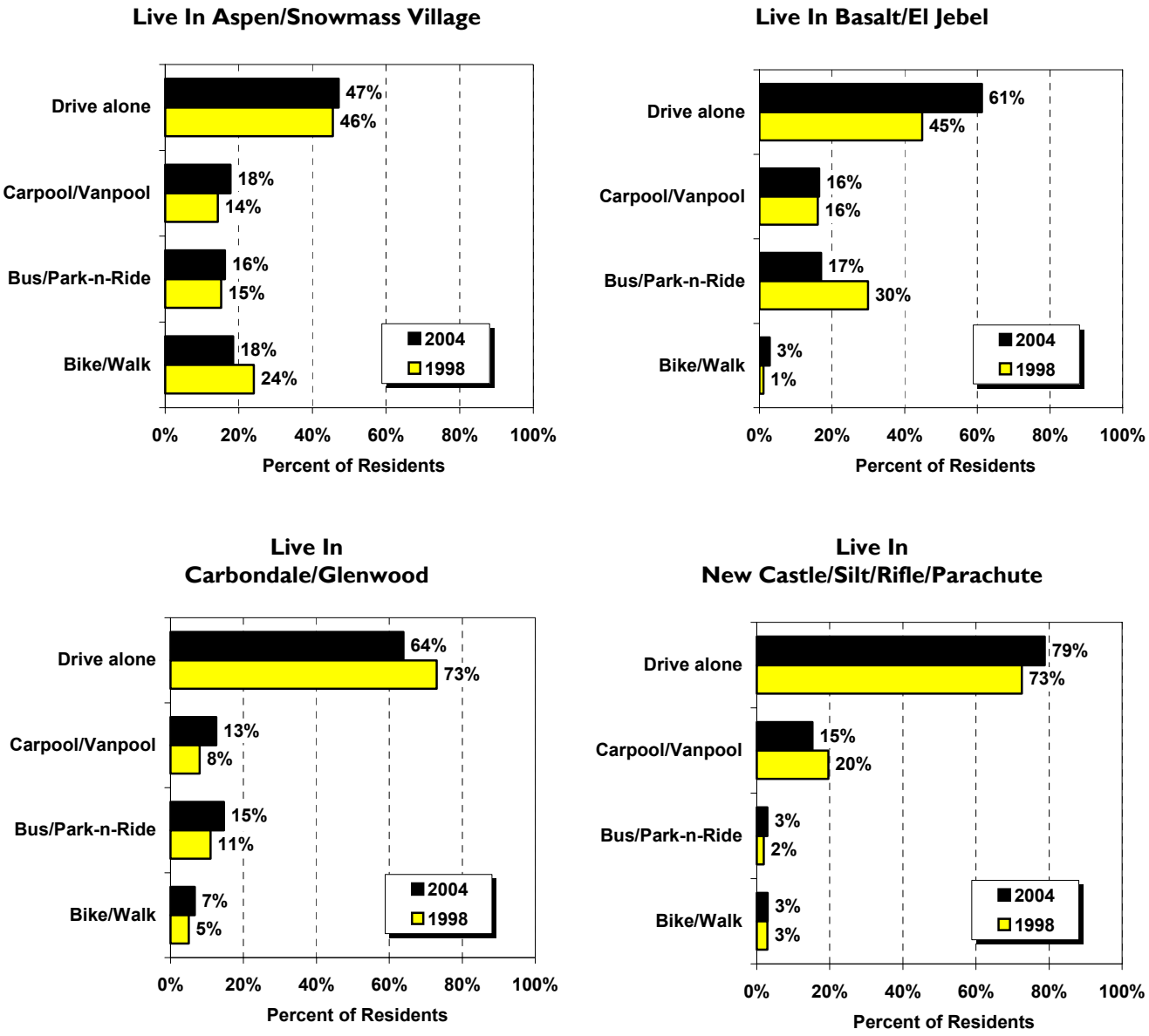
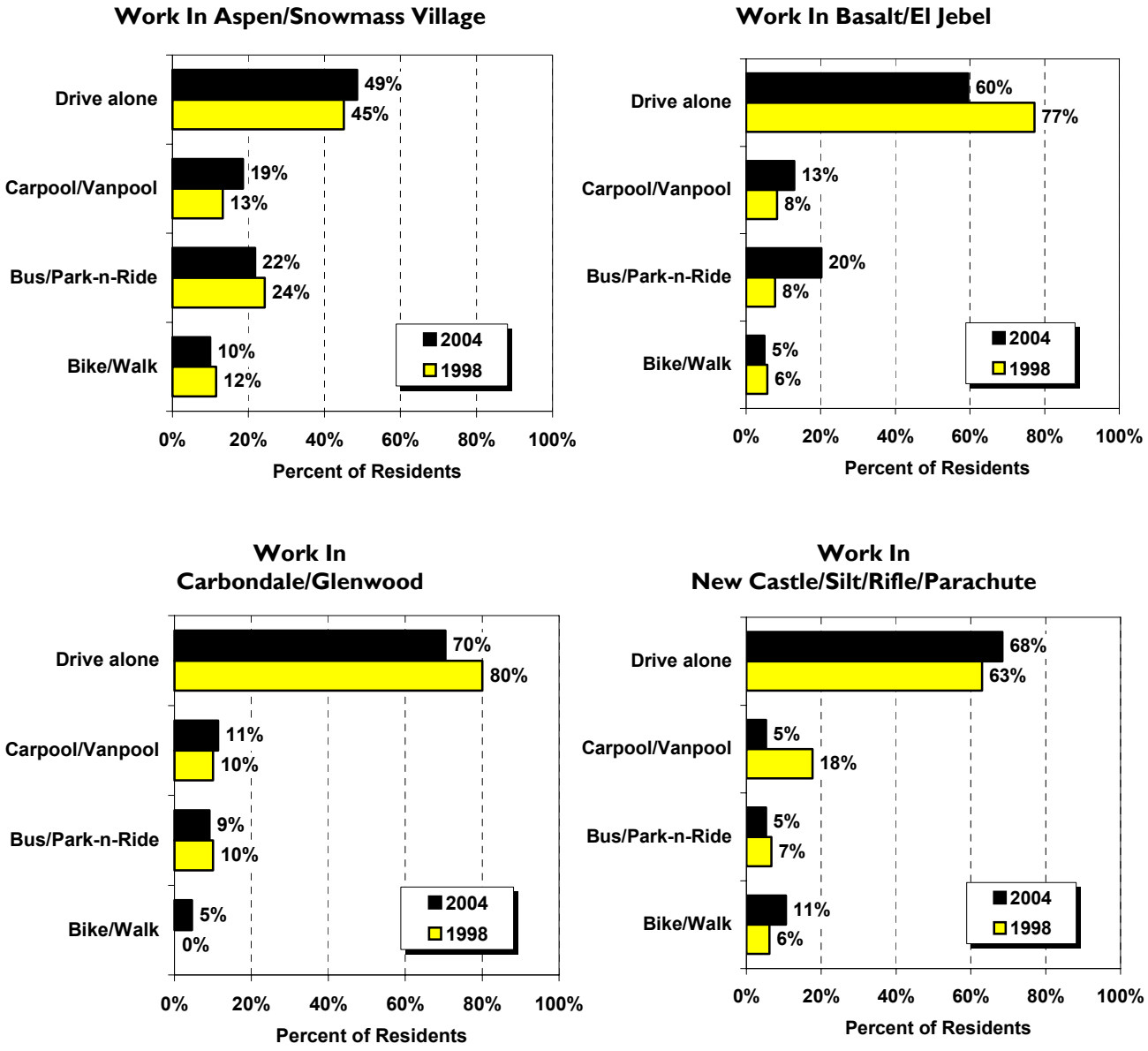


Figure 3.1.5 – Mode Split By Place of Work: 2004 and 1998 Employee Survey Compared



Section 2 - Pedestrian Friendliness

The least expensive mode of travel from the public perspective (cost of infrastructure, etc.) is the pedestrian mode. Figure 3.1.3 previously on the next page shows significant variations in the amount of walking and biking to work occurring in different communities in the study area. Three factors are important here:

- the characteristics of the walk environment near home and work (we saw in Chapter 2 that a more favorable pedestrian environment near the home is associated with increased use of alternate transportation modes);
- the level of transit service (transit commuters become pedestrians for other trip types); and,
- the percentage of people who live close to where they work.

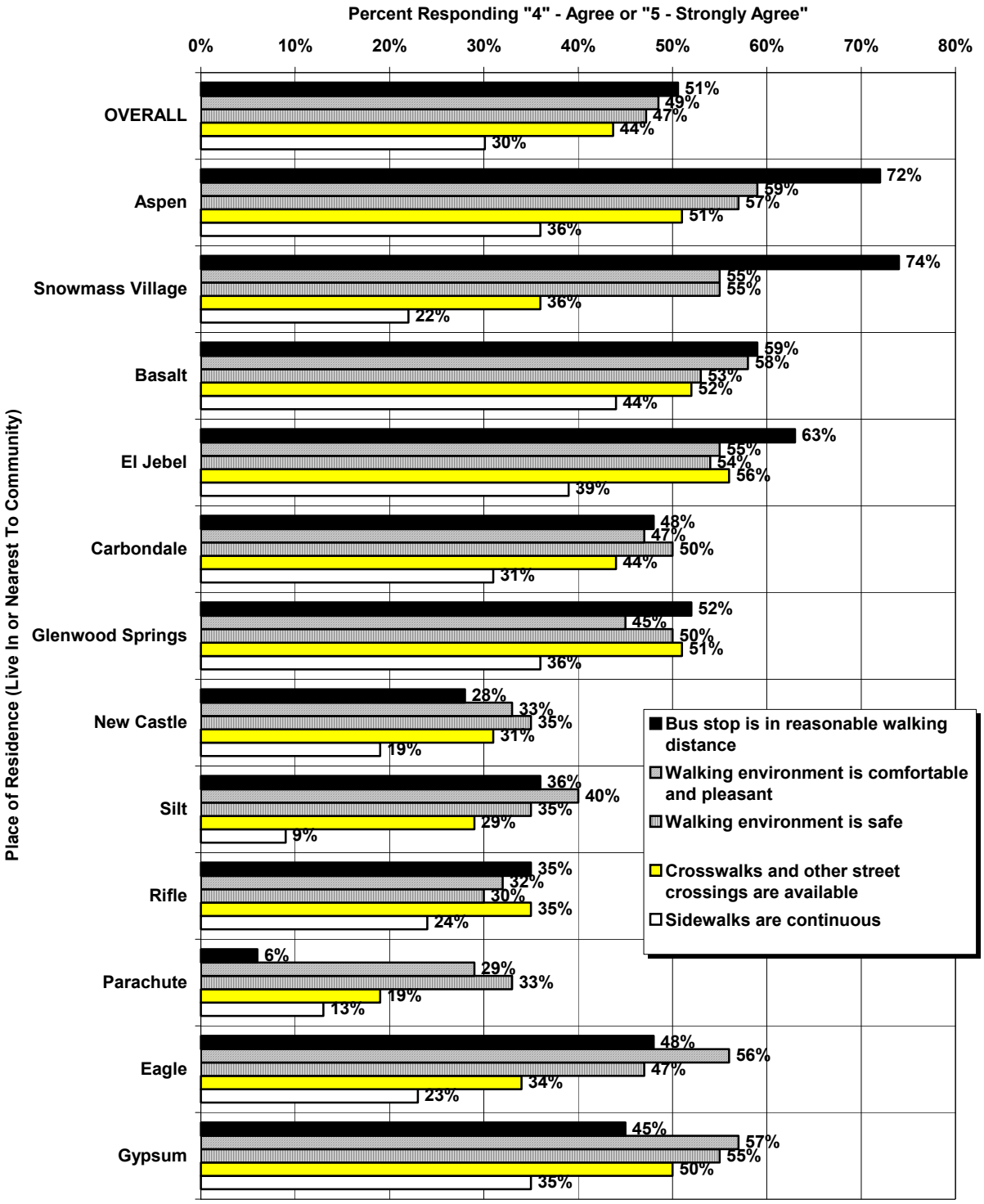
Influencing these characteristics would require a mix of local pedestrian improvements, regional transit service increases, and more mixed-use land development patterns. Combining these three strategies in the same travel market could be expected to significantly reduce drive-alone commuting and, as a result, peak hour traffic congestion.

Figure 3.2.1 illustrates how residents rate the walking environment from their home to the nearest bus stop in their own communities. Overall, across the study area, 51 percent of residents feel that there is a bus stop within reasonable walking distance; 49 percent feel that the walking environment is comfortable and pleasant; 47 percent feel that the walking environment is safe; 44 percent feel that crosswalks/street crossings are available; and lagging behind, 30 percent feel sidewalks are continuous.

Clearly, improvements in walk environment are achievable everywhere in the region. Improvements in walk environment pay off in a variety of ways in addition to increasing walk mode share:

- they also increase transit mode share;
- they add quality of life for residents and employees;
- they enhance retail and restaurant revenues by attracting workers as new customers;
- they improve the attractiveness of existing developed areas for infill and redevelopment projects; and
- they encourage active lifestyles that improve individual and community health.

Figure 3.2.1 Rate your ability to walk to the nearest bus stop from home: Percent of respondents who "agree" or "strongly agree" with selected statements



Section 3 - The Transit Experience

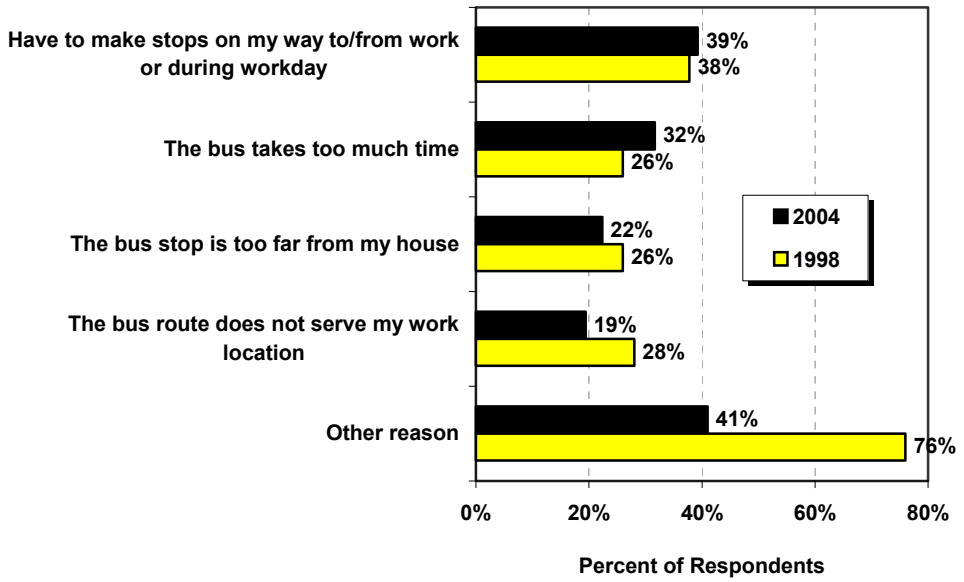
The employee survey asked people who do not ride the bus to identify their reasons. The factor receiving the largest response (39 percent) is the one discussed in some detail in Chapter 2: people need to make stops on the way to and from work. These stops relate both to other trip purposes (e.g., grocery shopping) and to the need to transport children to school and daycare. A number of strategies could be pursued to change these factors:

- daycare centers could be established within employment centers or near future major (destination) transit stations (these are not as effective on the home end because the children are too far away for parents to be comfortable without a car); and,
- local circulator service could be provided in employment centers outside Aspen and Glenwood Springs (demand permitting).

Most of the other responses in Figure 3.3.1 relate to transit service levels. People desire more frequent service (shorter headways); service that comes closer to their homes and workplaces; more direct routes (especially over the long haul); and longer hours of service. Addressing these issues, of course, requires increased funding for transit.

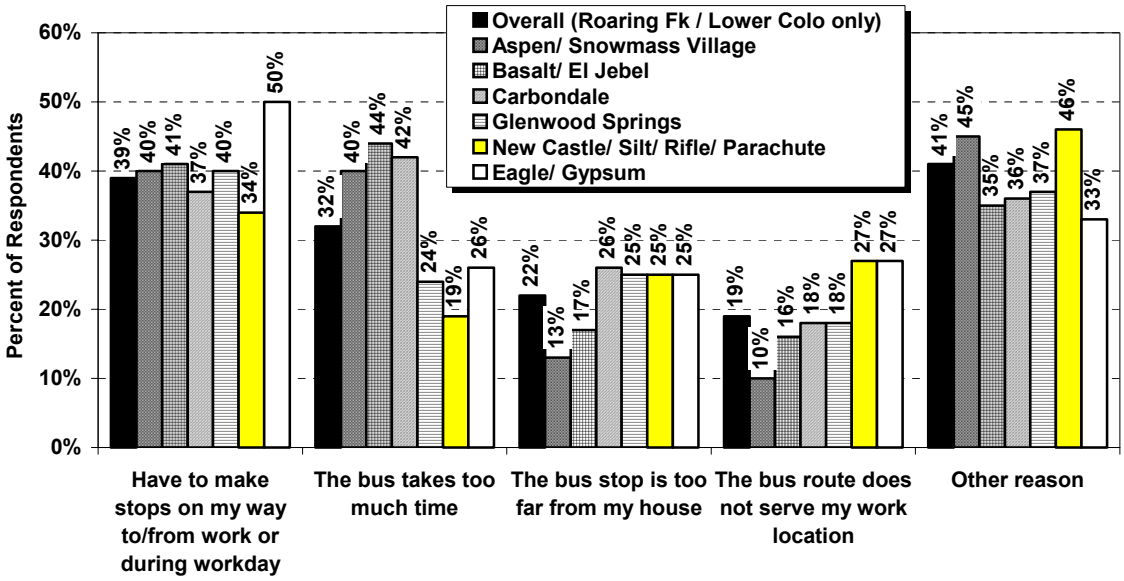
"Other reasons" account for a higher response in 2004 than in 1998 due to differences in question construction, rather than a true difference in respondent opinion. (The 1998 survey probed additional factors, with multiple responses permitted, which have been lumped into the "other" category for purposes of comparisons to the 2004 survey.)

Figure 3.3.1 – If You Generally Do Not Ride The Bus, Why Not?
2004 vs. 1998 Employee Surveys



Note: Several other reasons were provided as options in 1998, and multiple responses were permitted. These were consolidated in the "other" category for 2004 comparison, resulting in the high percentage of respondents having "other reasons" in 1998.

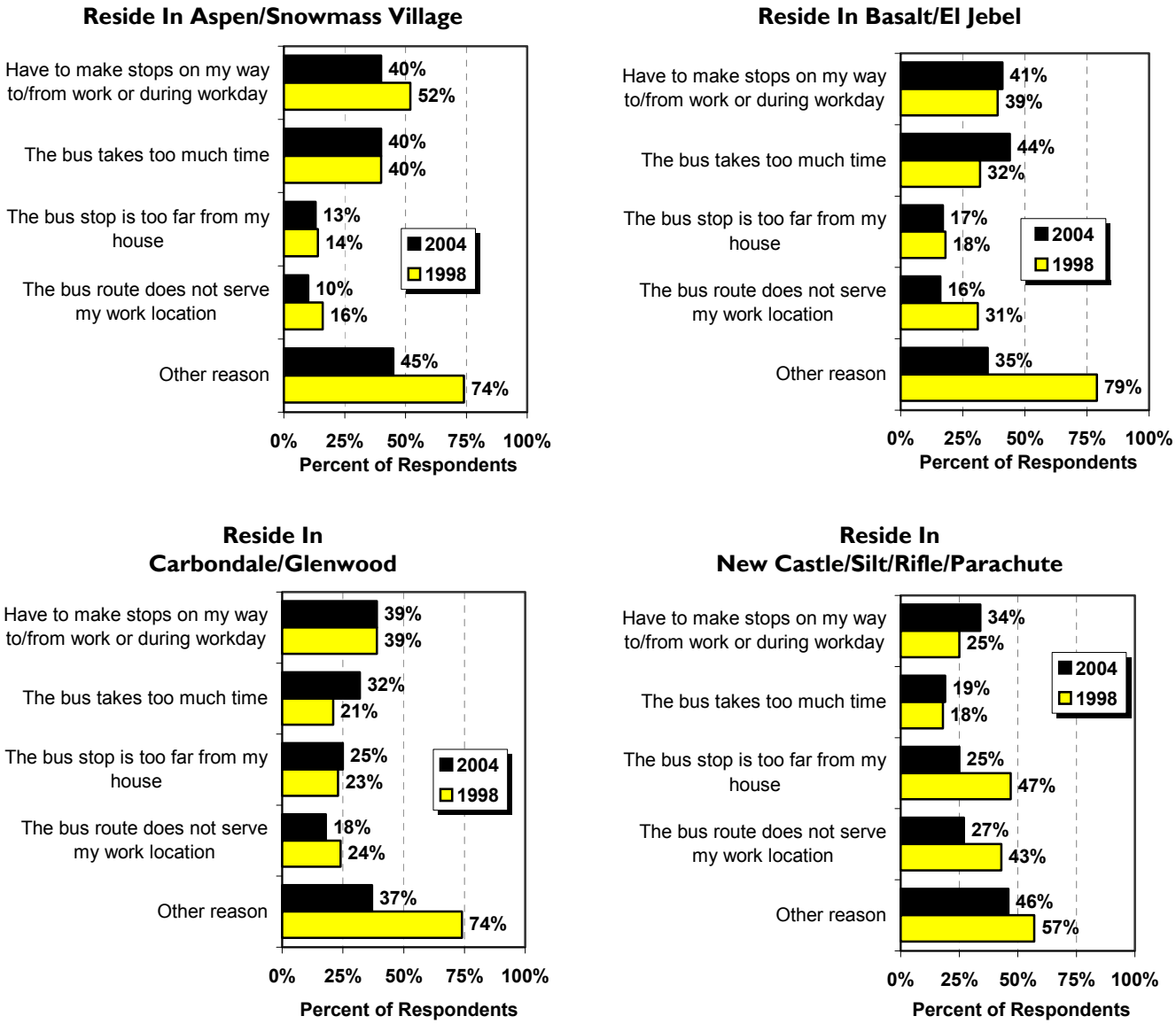
Figure 3.3.2 – If you don't ride the bus, why not?
Comparison by Place of Residence, 2004 Employee Survey



Reasons for not riding the bus show variations in some areas over time (Figure 3.3.3). Basalt /El Jebel residents reported over a 10% increase in responses that the bus takes too much time. This increase is echoed in Carbondale / Glenwood Springs. It is unclear if these results reflect longer bus travel times; less frequent headways; drive times that have gotten comparatively shorter relative to the bus (potentially due to the increased four-laning of Highway 82); or if the differences are exaggerated by random sampling error.

In the New Castle to Parachute corridor, the proportion of residents who said that the bus is too far from my house dropped from 47 percent in 1998 to 25 percent in 2004. Additionally, the proportion who said that the bus does not serve their work location dropped from 43 percent to 27 percent. Both of these improvements are a logical reflection of the new bus service in the I-70 corridor.

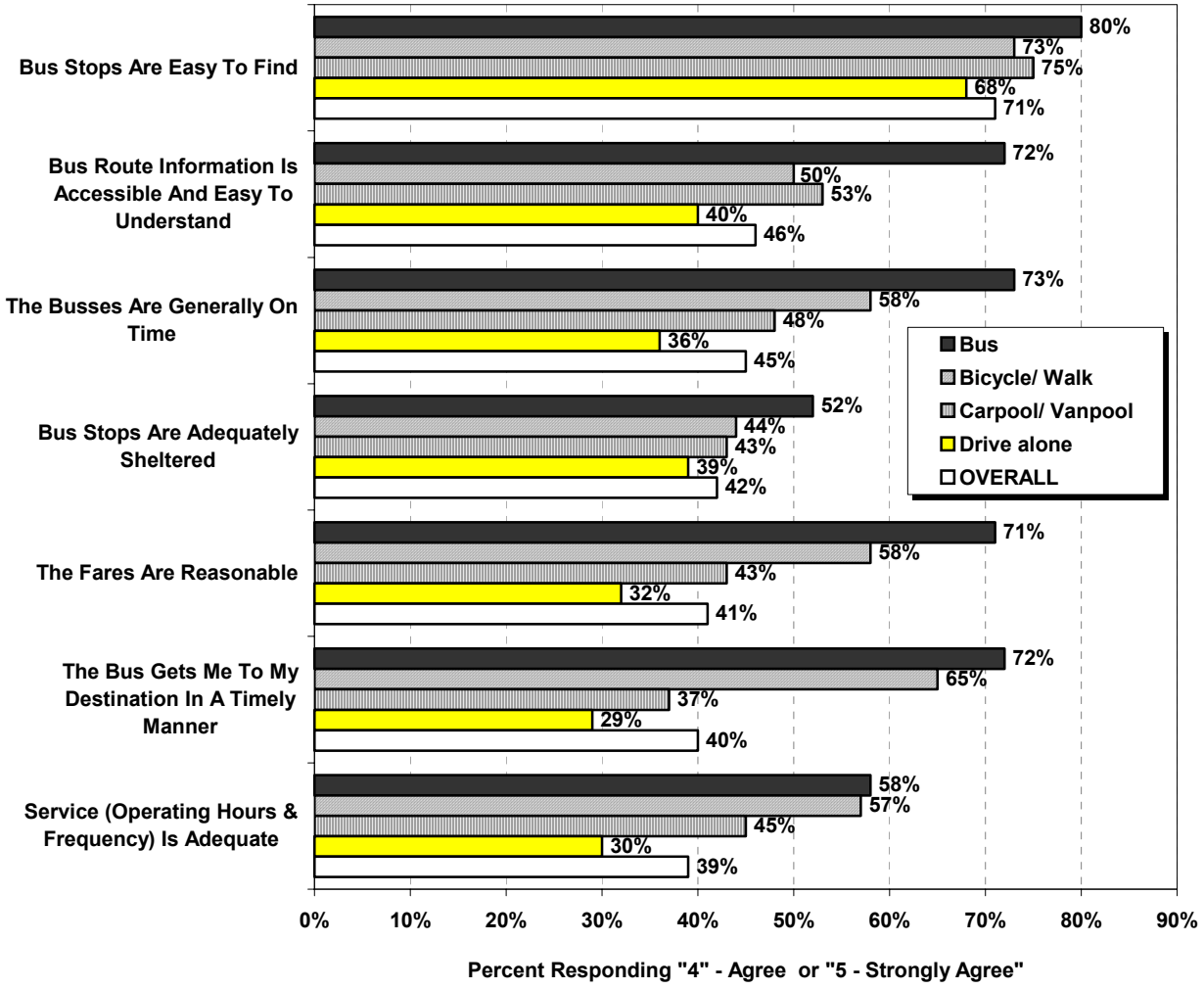
Figure 3.3.3 – If you don't ride the bus, why not? (By region of residence) 2004 and 1998 Employee Surveys



Ratings of the bus travel experience (Fig. 3.3.4) show that bus commuters and persons who use other alternative transportation modes consistently rate bus travel more favorably than those that drive alone. This implies that current bus riders are comparatively well-served by the system, that the bus system currently carries riders for whom the system works best, and/or that non-riders have more negative perceptions (either based on impression or experience) that need to be overcome to increase ridership.

Additionally, in a positive finding, 70 – 80 percent of bus riders have favorable impressions of a variety of aspects of the bus experience, including ease of finding bus stops, accessibility of bus route information, timeliness of buses (run on time, get to the destination in a timely manner), and reasonableness of fares. Items that lag somewhat are adequacy of bus shelters (52 percent) and operating hours and frequency (58 percent).

Figure 3.3.4 – Rate Your Bus Travel Experience: By Mode of Transportation Used to Get to Work On Most Recent Workday, 2004 Employee Survey

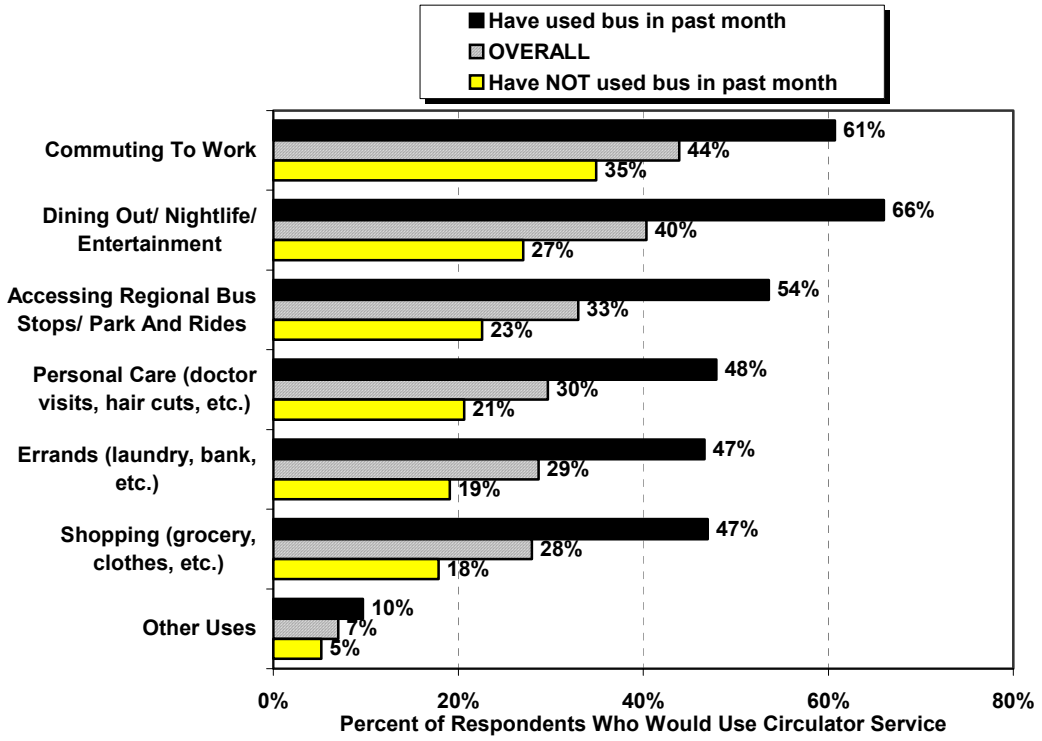


Section 4 - Interest in Local Circulator Service

A number of communities in the region have interest in starting or building upon local circulator bus services. Consequently, the 2004 survey asked what people would use local circulator service for. As show in Figure 3.4.1 below, respondents are most likely to say they would use such services for commuting (44 percent), followed by dining out/entertainment (40 percent), accessing park-n-rides (33 percent), personal care (30 percent), errands (29 percent), shopping (28 percent), and other uses (7 percent).

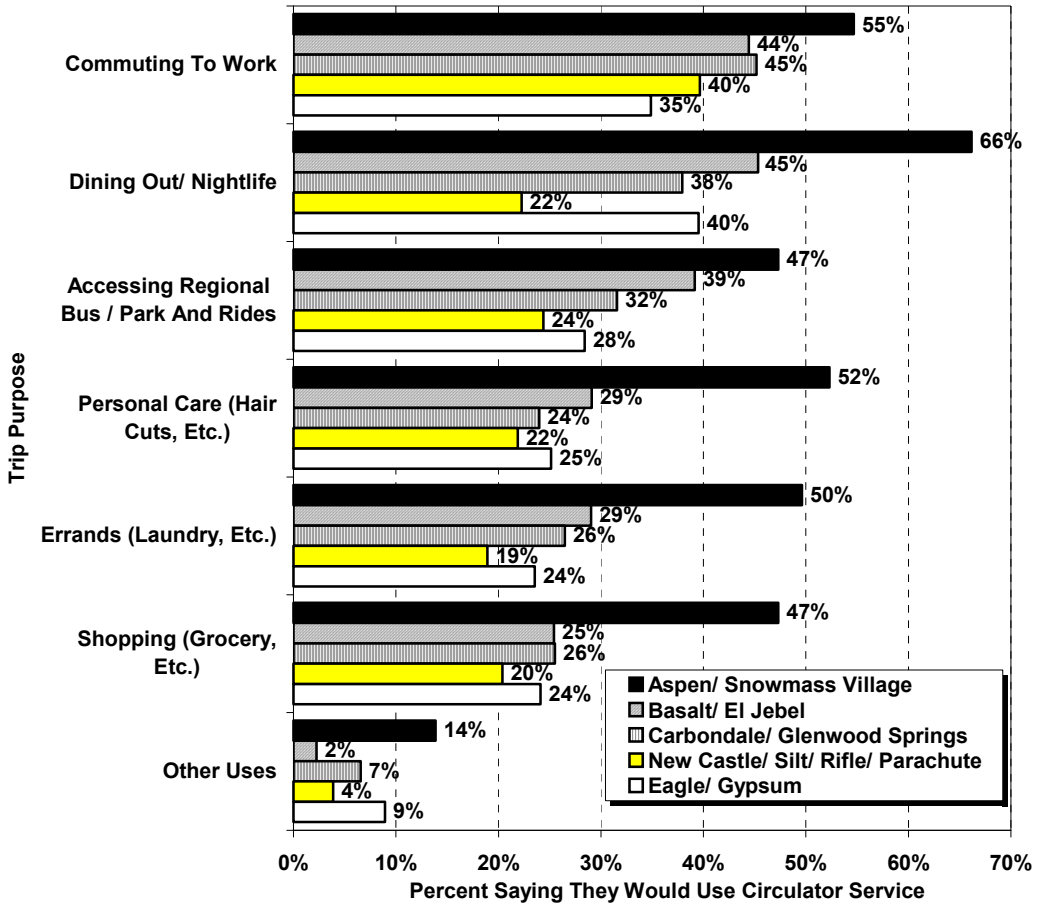
Figure 3.4.1 highlights differences between respondents who regularly use the bus already compared to those who do not. In general, regular bus riders respond twice as favorably to local circulator service than do non riders. Surprisingly, an optimistic 35 percent of non riders say they would use local commuter service for commuting to work. This is a significant percentage indicating that local circulator service plays an important role in influencing whether or not an individual will commute via car or bus.

Figure 3.4.1 – If local circulator services were available in your community, would you use this service for the following? 2004 Employee Survey



As shown in Figure 3.4.2 below, Aspen/Snowmass Village area residents indicate the highest likelihood of using local circulator service (note that these towns, as well as Glenwood Springs, already have such service). Interest generally decreases as one moves downvalley, although a substantial share of persons in each community say they would use local circulator service. The results of this question are probably of greatest interest for communities which do not currently have local circulator service but are considering it in the future.

Figure 3.4.2 – Percentage of Community Residents That Would Use Local Circulator Service For Various Trip Purposes: By Place Of Residence, 2004



CHAPTER 4 - Future Travel Patterns

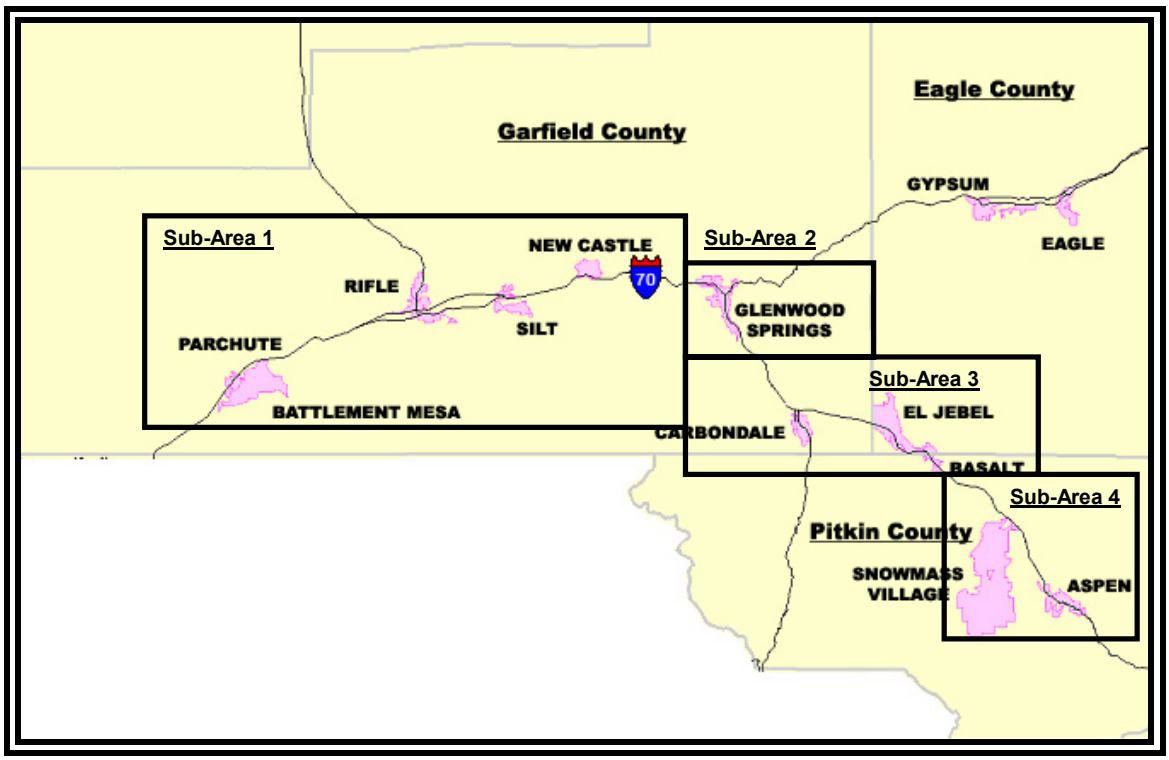
Section 1 – Overview

Chapter 4 of this report provides projections for use in transportation planning for the study area (depicted in Figure 4.1.1 below) from Parachute to Aspen, as well as between the Roaring Fork Valley and the Eagle Valley area (Gypsum/Eagle and points east). This chapter corresponds to Volume II of the 1998 report, with the exception that it includes analysis of commuting from the Roaring Fork region into the Eagle River Valley. (For purposes of this section, the term "Roaring Fork" area is generally used to describe the region between Aspen and Parachute.)

In addition to the survey research conducted for this study, the following data sources were utilized in this chapter of the report:

- U.S. Census Transportation Planning Package datafiles, 2000;
- County population projections - Colorado State Demographer, 2003;
- Subcounty population projections (Garfield County) – Leigh Scott & Cleary, 2004;
- Subcounty population projections (Eagle County) – Eagle County Planning Department, 2004;
- Employment estimates and projections by county - ES 202 data files, 1990 and 2000 U.S. Census, and Center for Business and Economic Forecasting, Inc.;
- Current and projected traffic on I-70 and SH 82 - Colorado Dept. of Transportation;
- Economic base analysis (2002) – Colorado State Demographer;
- Social and economic effects of second homes (2004) - Northwest Colorado Council of Governments; and,
- Transit ridership trends and related data on transit service - Roaring Fork Transit Authority.

Figure 4.1.1. Sub-Areas in Regional Travel Shed Map



For purposes of analyzing existing and future commuting patterns, the study region has been segmented into five subareas for this chapter of the report. The subareas, shown in Figure 4.1.1 above, are geographically identical to the subareas analyzed in the 1998 report (except that a new Subarea 5 has been added), and are described as follows:

- **Subarea 1** -- Garfield County along I-70 west of Glenwood Springs, including Parachute, Rifle, Silt and New Castle and including various rural subdivisions accessible to the I-70 corridor;
- **Subarea 2** -- Glenwood Springs and the area along I-70 east of Glenwood to the Eagle County line including No Name;
- **Subarea 3** -- areas along the SH 82 corridor south of Glenwood, including Carbondale, El Jebel and Basalt and associated rural subdivisions in Garfield, Eagle and Pitkin Counties;
- **Subarea 4** -- communities in the SH 82 corridor south of Snowmass Canyon including the Town of Snowmass Village and the City of Aspen; and
- **Subarea 5** – Gypsum, Eagle, and points east in the Eagle River Valley. For purposes of this report, the focus is limited to commuting between the Roaring Fork region and the Eagle River Valley region (generally), and is not concerned with commuting patterns between locations within the Eagle River Valley.

Section 2 - Population and Job Growth

Despite a slowing of the Colorado economy since 2000, the communities of the Roaring Fork Valley and Eagle River Valley are projected to grow considerably by the year 2025.

Table 4.2.1. Growth Projections in the Roaring Fork & Eagle River Valleys

	Place of Residence				Place of Work			
	Pop'n 2000	Pop'n 2025	Pop'n % Chg	Pop'n # Chg	Workers 2000	Workers 2025	Workers % Chg	Workers # Chg
Pitkin County total	14,872	25,204	69%	10,332	18,423	37,648	104%	19,225
Eagle County (Basalt/El Jebel part)	7,410	11,206	51%	3,796	2,997	5,401	80%	2,405
Garfield County total	43,791	86,922	98%	43,131	24,371	39,316	61%	14,945
Subareas 1 - 4 total (R. Fk Valley)	66,073	123,332	87%	57,259	45,790	82,365	80%	36,575
Subarea 5 (Eagle River Valley)	35,945	62,977	75%	27,032	25,787	59,738	132%	33,951

Source of population projections (for Table 4.2.1 and Figure 4.2.2):
- Pitkin and Garfield Counties: Colorado State Demographer.
- Eagle County: Eagle County Planning Department; Colorado State Demographer.

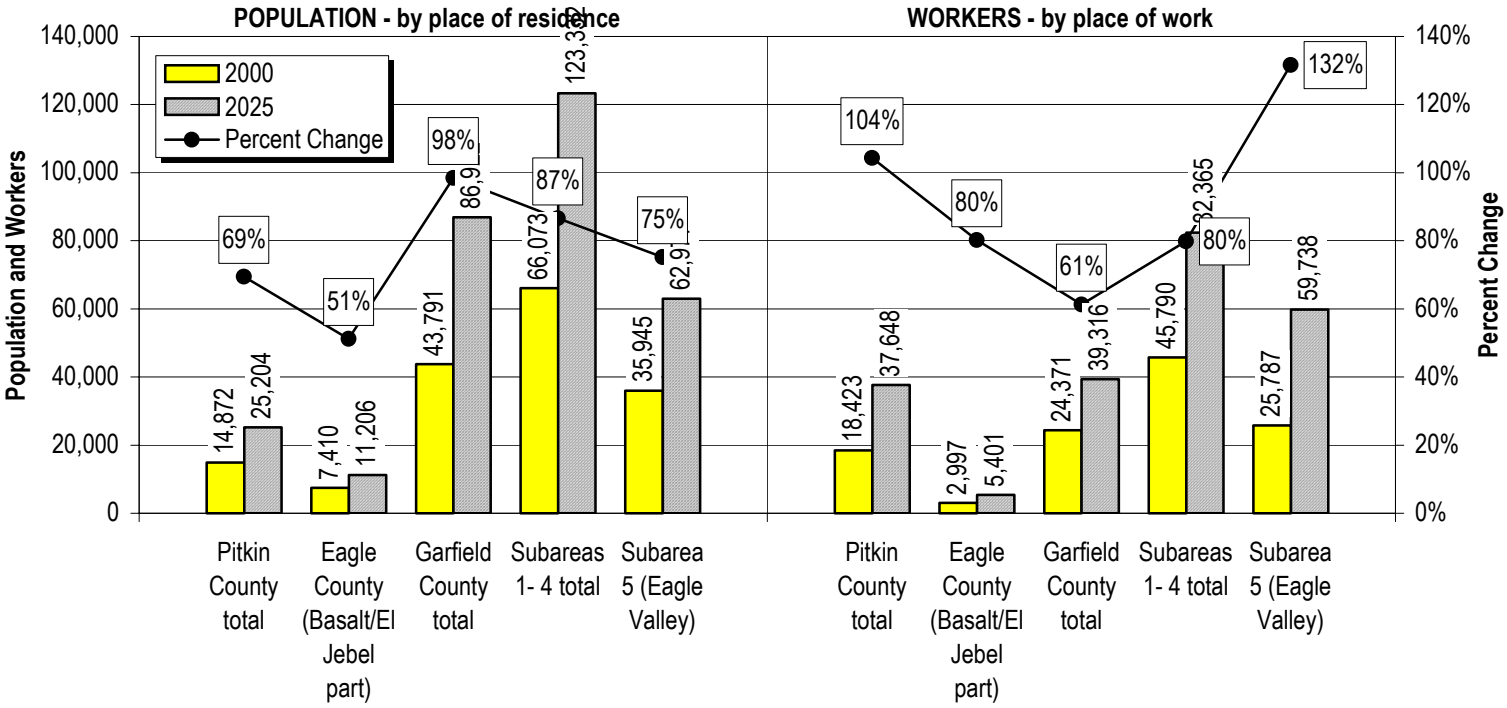
Source of employment projections:
- Pitkin and Garfield Counties: Center for Business and Economic Forecasting; study authors.
- Eagle County: ES202 employer address files; CBEF; study authors.

As illustrated in Table 4.2.1 above and Figure 4.2.2 below, population in the Roaring Fork region is projected to grow by 87 percent over the 2000 – 25 period, with the largest absolute

growth occurring in Garfield County (+43,131 people), followed by Pitkin County (+10,332 people) and the Basalt/El Jebel portion of Eagle County (+3,796 people). Population in the Eagle River Valley (subarea 5) is projected to grow by 75 percent (+27,032 people).

Additionally, the number of employed persons working in the Roaring Fork region is projected to grow by approximately 80 percent, with the highest amounts of growth occurring in Pitkin County (increase of +19,225 people working in the County), followed by Garfield County (+14,945 people) and the Basalt/El Jebel portion of Eagle County (+2,405 people). The number of employed persons in the Eagle Valley is projected to grow by 132 percent (+33,951 people).

Figure 4.2.2. Growth Projections in the Roaring Fork & Eagle Valleys



The projections used here are based primarily on modeling done by the Colorado State Demographer and the Center for Business and Economic Forecasting, with some estimation required by the project team. Importantly, ongoing work by the Watershed Growth Scenarios Task Force is indicating that a more rapid growth curve is likely to occur the Roaring Fork region than is described in this report. Based on the Task Force's work, readers should be cautioned to review the Roaring Fork projections with a sense that they may apply to a time closer to 2020 than 2025.

Of interest is that in Pitkin County, the projections used in this report suggest that jobs will grow significantly faster than population over the 2000 – 2025 period (growth of 19,225 persons working in Pitkin vs. growth of 10,332 persons living in Pitkin). Given that Pitkin County already imports thousands of commuting workers, this means that in-commuting into

Pitkin County will according have to grow significantly in the future, assuming the underlying job and population projections are correct. By contrast, in Garfield County, population is expected to grow faster (98 percent / 43,131 people) than jobs (61 percent / 14,945 employees) over the 2000 – 2025 period, meaning that Garfield County's overall role as a workforce supplier to the region will continue to grow. Combined, these projections imply that upvalley commuting on Highway 82 will increase significantly in the future (as analyzed in more detail later in this chapter).

Additionally, in the Eagle River Valley, job growth over the 2000 – 2025 period (+33,951 employees) is projected to significantly outpace population growth (+27,032 persons), which is projected to result in a large jump in in-commuting to that region as well. This demand for imported workers is likely to impact the Roaring Fork Valley and particularly Garfield County, resulting in increased commuting flows up Glenwood Canyon to the Eagle Valley area.

Table 4.2.3 to follow summarizes the existing economic drivers of the tri-county region, based on 2002 analyses by the Colorado State Demographer. The table shows the distribution of "basic", "indirect", and "local resident service" jobs in the respective counties. The "basic" sectors are the key drivers of growth, insofar as they bring new money into the economy. "Indirect" jobs help support the basic sectors (i.e. provide goods and services consumed by the basic sectors), while "local resident service" jobs are created by the respending of money initially brought into the economy by the basic sectors (an "induced" effect). Base industry analysis helps to provide an understanding of the foundations of the economy, and is thus used by economists and demographers to help project future growth.

As shown in Table 4.2.3 the leading basic sector (as measured by jobs) in Pitkin County and Eagle County is tourism (54 and 53 percent of basic jobs respectively), which includes the operation of second homes. In Garfield County, tourism (17 percent), government (15 percent), construction (14 percent), and retirees (13 percent) are among the largest sources of basic jobs.

Table 4.2.3. Number of Jobs by Base Industry Sector
Pitkin, Eagle and Garfield Counties, 2002

	Pitkin County		Eagle County		Garfield County	
Basic Industry Groups	Amount	% of Basic	Amount	% of Basic	Amount	% of Basic
Agribusiness	398	2.49	1,010	3.57	1,277	6.98
Mining	0	0	0	0	239	1.31
Manufacturing	238	1.49	496	1.75	404	2.21
Regional Center / National Services	1,406	8.78	2,987	10.56	3,320	18.14
Communications	15	0.1	30	0.11	8	0.05
Construction	433	2.7	1,381	4.88	2,557	13.98
Finance, Insurance and Real Estate	47	0.29	233	0.82	130	0.71
Trade and Transportation	58	0.37	227	0.8	315	1.72
Professional and Business Services	345	2.16	335	1.18	274	1.5
Private Education and Health Services	507	3.17	782	2.76	37	0.2
Tourism	8,656	54.08	15,036	53.13	3,192	17.44
Resorts	5,805	36.27	8,330	29.44	1,944	10.62
Second Homes	1,766	11.03	4,533	16.02	790	4.32
Tourist Services	799	4.99	1,863	6.58	364	1.99
Tourism Transportation	287	1.79	310	1.09	94	0.51
Government	930	5.81	1,957	6.91	2,792	15.26
Indirect: unassigned	1,936	12.1	3,584	12.67	3,035	16.59
Investment Construction	0	0	0	0	0	0
Households	2,044	12.77	3,205	11.33	4,039	22.07
Retirees	1,984	12.4	2,153	7.61	2,440	13.33
Commuters	-1,449	-9.05	-587	-2.08	554	3.03
Households with public assistance income (excluding retirees)	59	0.37	155	0.55	279	1.52
Households with dividends, interest and rental income (excluding retirees)	1,450	9.06	1,485	5.25	767	4.19
Local Resident Services (non-basic jobs)	3,198		5,232		6,698	
Total All Industries	19,204	100	33,530	100	24,997	100

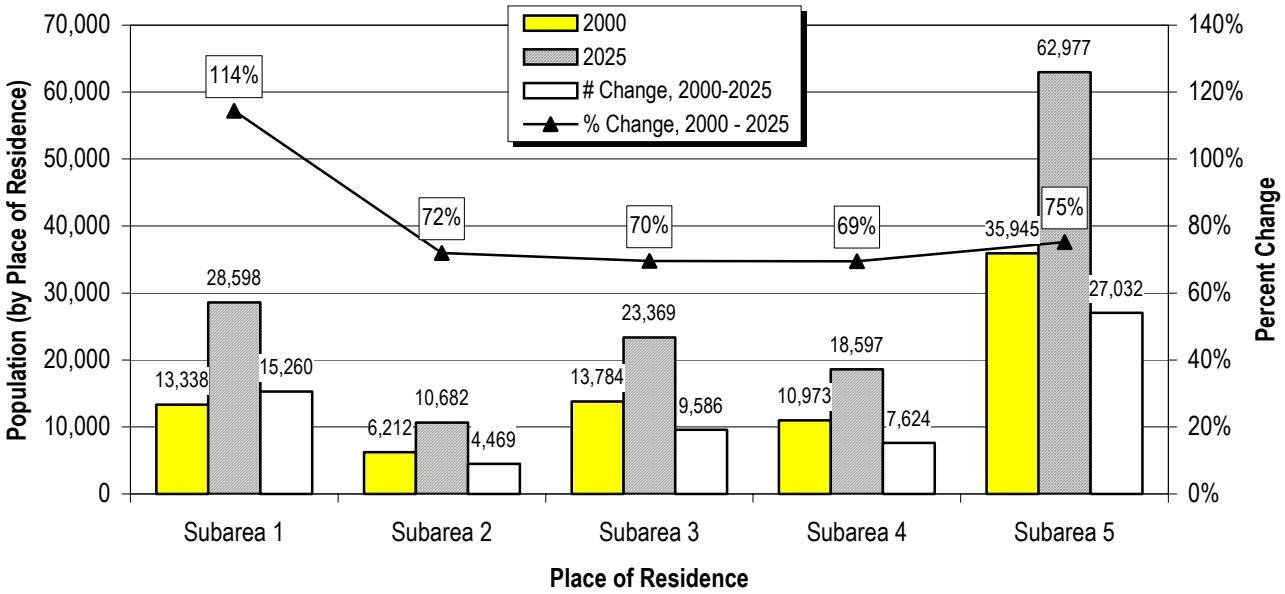
Source: Colorado State Demographer, 2002.
Note: In 2004, NWCCOG released a study of the economic impact of second homes on selected resort counties. The numbers presented in the above table predate that study.

For purposes of transportation analysis, the county-level population projections described in this section have been broken down into the five subareas described in the introduction. The results are shown in graph form in Figure 4.2.4 (population, by place of residence) and Figure 4.2.5 (workers, by place of work), and in map form in Figure 4.2.6.

While all five subareas are projected to have significant population growth, Subarea 1 (western Garfield County) is projected to have significantly greater percentage growth in population (114 percent) than the other four subareas (69 – 75 percent increases each). The largest absolute population growth is projected to occur in Subarea 5 (Eagle River Valley, +27,032 persons), followed by Subarea 1 (lower Colorado Valley, +15,260 people). By place of work, the largest

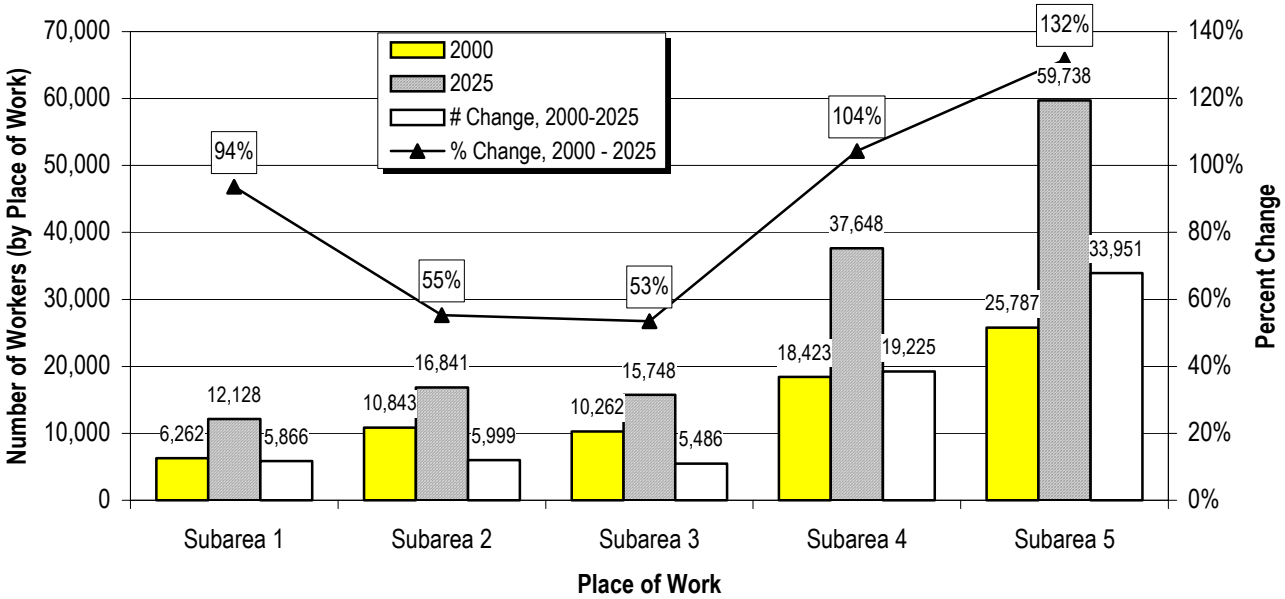
percentage and absolute growth in workers is projected to occur in Subarea 5 (132 percent, +33,951 workers), followed by Subarea 4 (Pitkin County: 104 percent, +19,225 workers).

Figure 4.2.4. Population Forecast Graph (by Place of Residence)



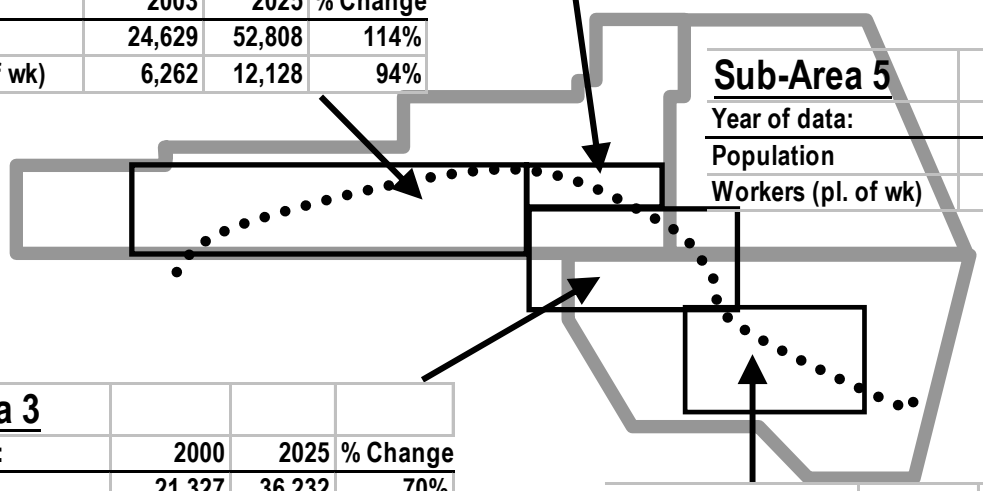
Source:
- Pitkin County: Colorado State Demographer.
- Eagle County: Colorado State Demographer, Eagle County Planning Department.
- Garfield County: Leigh Scott and Cleary, Working Paper #1 for the Garfield County Transportation Master Plan, 2004.
- Note: Additional sub-county estimations were made by the authors of this study.

Figure 4.2.5. Workforce Forecast Graph (by Place of Work)



Source: Center for Business and Economic Forecasting; Colorado State Demography; study authors.

Figure 4.2.6. Population & Workforce Forecasts Map



Sub-Area 1			
Year of data:	2003	2025	% Change
Population	24,629	52,808	114%
Workers (pl. of wk)	6,262	12,128	94%

Sub-Area 2			
Year of data:	2000	2025	% Change
Population	8,048	13,839	72%
Workers (pl. of wk)	10,843	16,841	55%

Sub-Area 3			
Year of data:	2000	2025	% Change
Population	21,327	36,232	70%
Workers (pl. of wk)	10,262	15,748	53%

Sub-Area 4			
Year of data:	2000	2025	% Change
Population	12,069	20,454	69%
Workers (pl. of wk)	18,423	37,648	104%

Sub-Area 5			
Year of data:	2000	2025	% Change
Population	35,945	62,977	75%
Workers (pl. of wk)	25,787	59,738	132%

LEGEND:

(see page 70 for full description)

Sub- Area 1 – Parachute, Rifle, Silt, New Castle

Sub- Area 2 - Glenwood Springs

Sub- Area 3 - Carbondale, El Jebel, Basalt

Sub- Area 4 - Snowmass Village & Aspen

Sub- Area 5 - Eagle River Valley

Section 3 - CDOT Traffic Counts and Projections

The population and job growth in the study area over the next twenty years will contribute to a significant increase in traffic on the major regional highway corridors (I-70 and SH 82). The Roaring Fork area is like many other mountain regions in Colorado, in that development occurs along river valleys, with a single spine roadway corridor providing intercity and interregional circulation. The absence of a grid-oriented roadway network (such as occurs in the Front Range) means that traffic growth on existing major highways will be roughly proportional to population and job growth, since, in most cases, new parallel roadways cannot be built to relieve traffic on the spine routes.

Figures 4.3.1 and 4.3.2 below illustrate the Colorado Department of Transportation's (CDOT's) estimates and projections of traffic counts in 2003 and 2025 at key points along I-70 and Colorado 82 respectively. As shown in Figure 4.3.1, traffic is expected to grow in excess of 50 percent between 2003 and 2025 along each stretch of I-70 between Rifle and Dotsero. Additionally, as shown in Figure 4.3.2, traffic is projected to grow in excess of 50 percent along most of Highway 82 between Glenwood Springs and Aspen. It should be noted that these counts and projections were developed by CDOT completely independently of this study, and might assume somewhat different job and population projections. Given the population and employment projections contained in this report, the forecasts shown in Figures 4.3.1 and 4.3.2 should generally be about 10 points higher (e.g., 50% instead of 40%; 70 % instead of 60%, etc.). Note that some percentage of traffic in these corridors is driven by economic considerations and statewide travel trends.

Figure 4.3.1. I-70: 2003 Traffic Counts vs. 2025 Traffic Projections

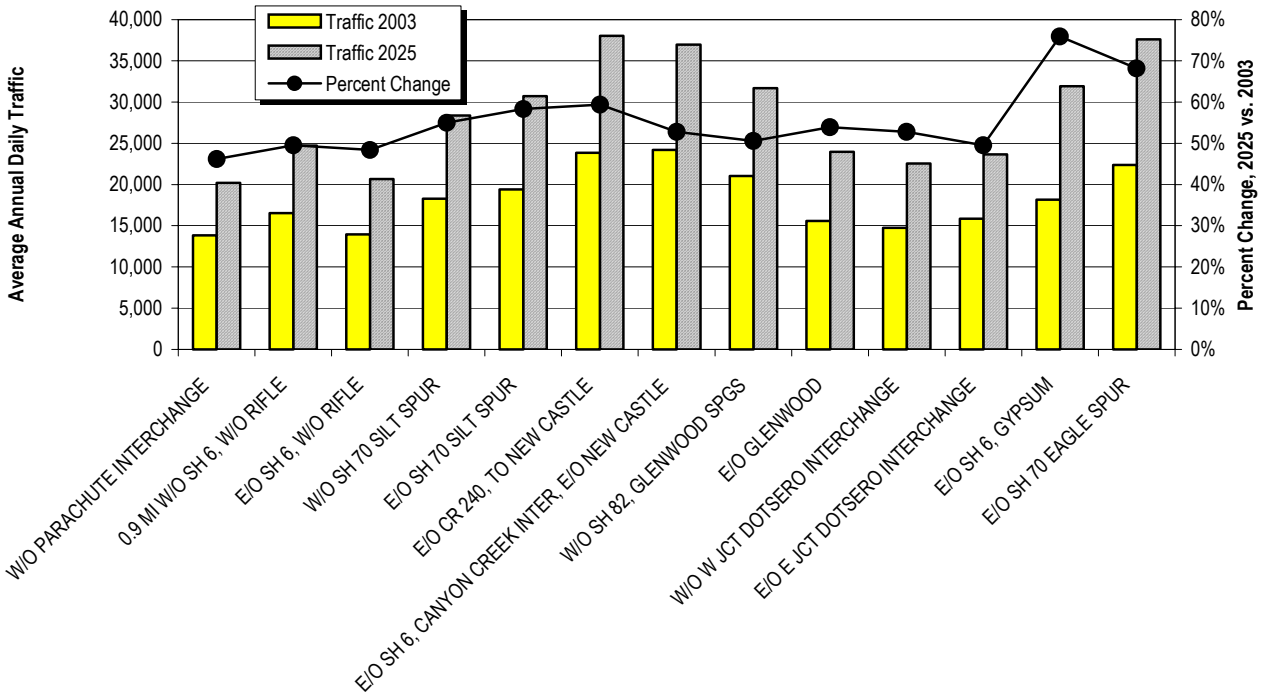
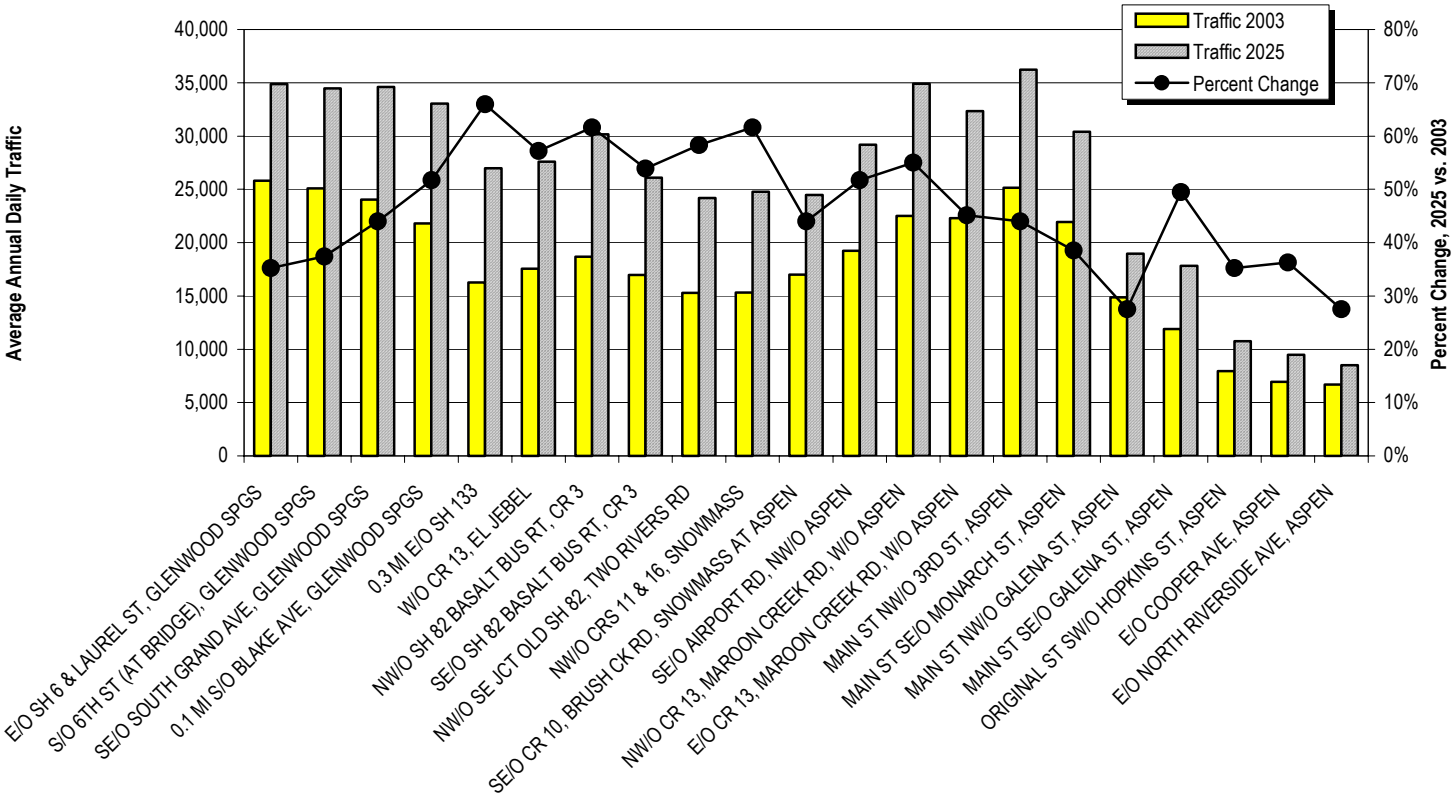


Figure 4.3.2. State Highway 82: 2003 Traffic Counts vs. 2025 Traffic Projections



The data in Figures 4.3.1 and 4.3.2 is "annual average daily vehicle traffic" or ADT. Average daily traffic represents a count of the total vehicles passing a point (in both directions) during a 24-hour day. Annual ADT is a year's worth of traffic divided by 365. (It is not of peak season traffic.)

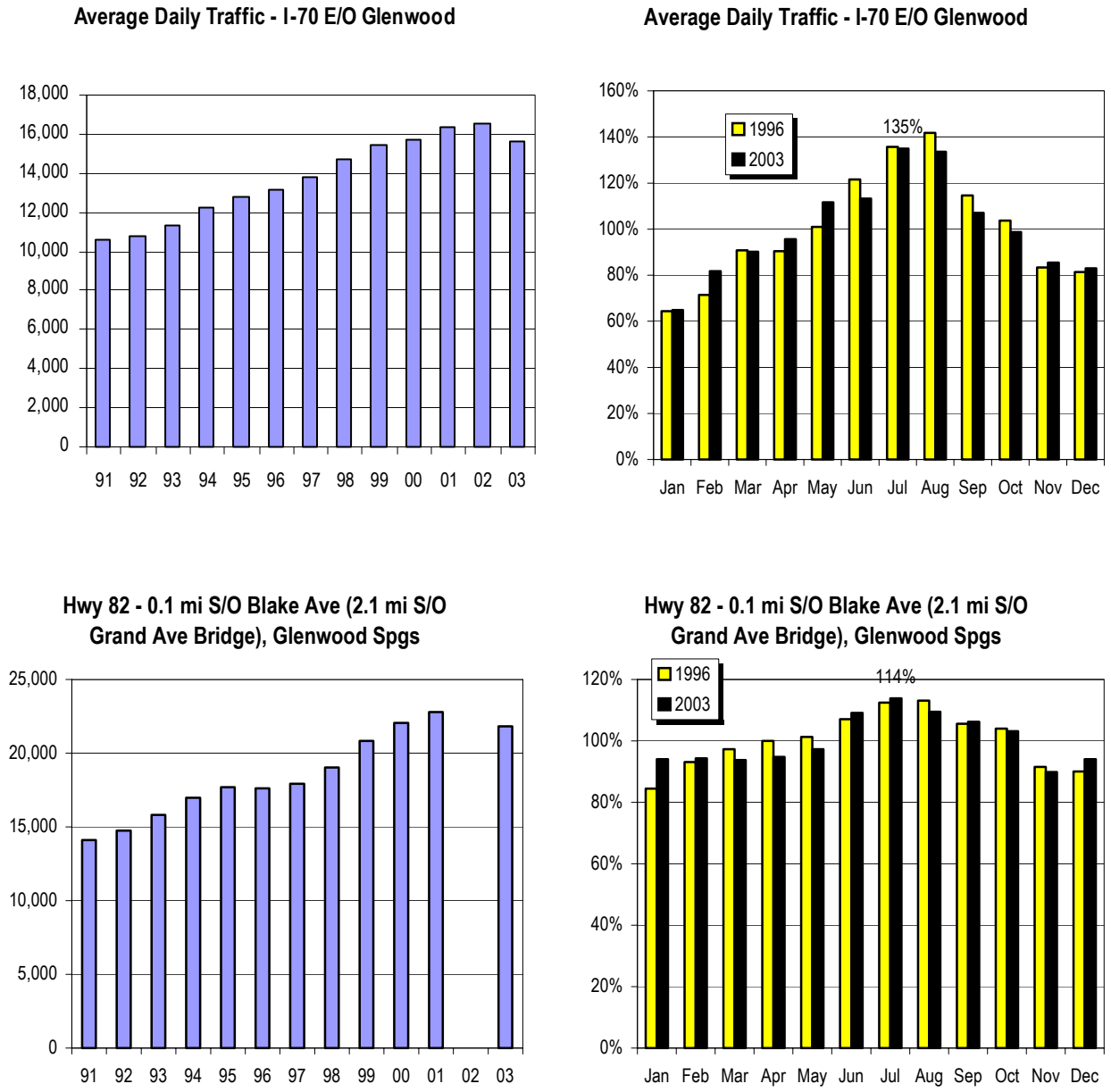
Figure 4.3.3 to follow shows regional traffic trends by looking at seasonal variation in traffic at various points in the network as well as average annual traffic volume. This data is taken from three permanent count locations on the state highway system within the study area. Since some of the stations have changed since the 1998 report, this report looks at trend data for the current permanent traffic counters. (Old Snowmass is the only location with a count station similar to the 1998 study.)

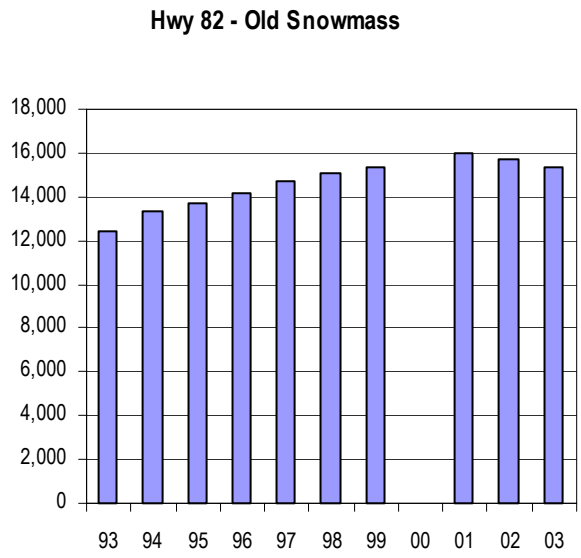
While traffic grew steadily at each count station through the 1990s and early 2000s, each station has shown a drop in traffic in 2003 relative to peak levels in 2001 or 2002. This likely reflects the economic slowdown which has occurred in the region, and is likely to be temporary, with a rebound likely when the economy picks back up.

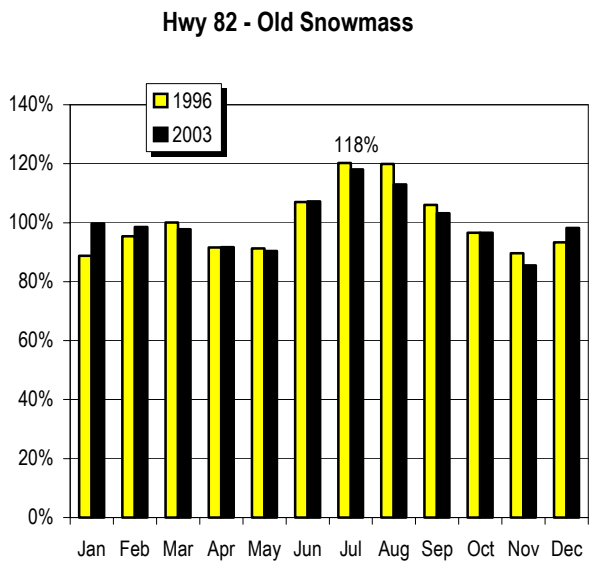
Looking at seasonal patterns, the greatest monthly fluctuation in traffic among the three stations occurs on I-70 east of Glenwood, where July traffic was 135% of average monthly traffic in 2003. The corresponding low point occurred in January, which was 65% of an average

month that year. The other locations show less variation by season, although each shows a summer peak. The seasonal patterns have shown little change since 1996. However, it is possible that as the economy in the study area continues to diversify and resident trips become a larger share of total trips on the roadways (as opposed to visitor trips), monthly counts on local highways could begin to flatten out, with less seasonal fluctuation than occurs today.

Figure 4.3.3. Historic Traffic Counts and Monthly Variation in Traffic Counts: Three Selected Locations in Study Area







Source: CDOT permanent traffic recorders.

Section 4 – Commuting Trends, 1990 vs. 2000

The 1990 and 2000 U.S. Census provide illuminating data on regional commuting patterns. This data helps to document the patterns which existed as of 2000, as well as the change which occurred in the region between 1990 and 2000. This data provides a background context for understanding future traffic projections.

Table 4.4.1 to follow provides an overall summary of commuting patterns in the study area by place of residence (at the county level) and place of work (also at the county level). Subcounty estimates were prepared by the study team for Eagle County (i.e. isolating the portions of Eagle County which lie in the Basalt/El Jebel area and the Vail to Gypsum/Eagle Valley area). The three separate portions of the table summarize commuting patterns in 2000, 1990, and the net change between 2000 and 1990 respectively. Each row in the table summarizes where residents of a given county work. Each column in the table summarizes where persons who work in a given county live. Workers who commute into the study area from outside the region – i.e. from Mesa County, Eagle County (Vail to Gypsum portion), and other areas – are also summarized in the table.

While there are numerous patterns of interest in Table 4.4.1, following are some of the key highlights.

- Commuting patterns in 2000, by place of work: Each of the three counties in the Roaring Fork study area has a distinct pattern of commuting. The large majority of persons working in Garfield County also live in Garfield County (16,586 of 18,603 workers, or 89 percent). By contrast, in the Basalt/El Jebel area, approximately 1,237 of

the 2,947 people working in that subarea (42 percent) are estimated to be residents of the subarea, with the remaining 58 percent commuting in from other counties, particularly Garfield County. In Pitkin County, 55 percent of the county workforce is housed in Pitkin County (8,602 of 15,768 workers), while the remaining 45 percent commute in form other counties, especially Garfield and Eagle Counties.

- Commuting patterns in 2000, by place of residence: In 2000, Garfield County was home to 59 percent of the region's workforce (22,540 of 38,499 workers). The largest share of employed Garfield residents also worked in Garfield County (74 percent), while the remaining 26 percent commuted to other counties, particularly to Basalt/El Jebel (1,374 workers / 6 percent) and Pitkin County (3,685 workers / 16 percent). Among residents of Basalt/El Jebel, the largest share commuted to Pitkin County (62 percent, or 2,717 or 4,415 workers), with 28 percent working in Basalt/El Jebel. Among residents of Pitkin County, fully 91 percent worked in Pitkin County.

- Change in Commuting Patterns, 1990 – 2000: Garfield County accounted for both the largest number of new workers and largest number of new jobs added in the Roaring Fork region between 1990 and 2000. Of the 10,802 additional workers added to the region between 1990 and 2000, fully 7,784 workers (72 percent) live in Garfield County, and 5,285 workers (49 percent) work in Garfield County. Because workers grew faster than jobs in Garfield County, Garfield County saw a net growth of 2,499 out-commuting workers (174 percent) between 1990 (1,438 net out-commuting workers) and 2000 (3,937 net out-commuting workers).

  By contrast, Pitkin County added 3,487 more people employed in Pitkin County, and 1,264 more workers living in Pitkin County, resulting in a need to import a net increase of 2,223 more in-commuters to fill available jobs (54 percent increase from 1990 to 2000, from 4,102 net in-commuters in 1990 to 6,325 in 2000). In other words, between 1990 and 2000, Pitkin County's role as a regional job center (and importer of workers) intensified, while Garfield County's role as a net exporter of workers also grew.

  Table 4.4.2 also illustrates estimated commuting flows through Glenwood Canyon over time. Commuting from the Roaring Fork Valley to the Eagle River Valley increased from approximately 144 workers in 1990 to 406 workers in 2000. Commuting in the opposite direction, from the Eagle Valley to the Roaring Fork valley, increased more modestly, from approximately 156 workers to 196 workers.

Table 4.4.2 to follow summarizes selected key county-to-county commuting flows in the study region in 2000 and 1990. The most important trend in the data is the significant growth of upvalley commuting over the decade. Commuting from Garfield County to Pitkin County grew by 69 percent over the period (to 3,685 workers); commuting from Eagle County to Pitkin County grew by 64 percent (to 2,767 workers); and commuting to Pitkin County from Garfield and Eagle Counties combined grew by 66 percent (to 6,452 workers). By contrast, downvalley commuting grew at much more modest percentage rates, and by very modest levels in absolute terms.

Table 4.4.1. County-to-County Worker Flows By Place of Work and Place of Residence, 2000 vs. 1990

2000 county-to-county worker flows

	County of Workplace						
County of Residence	Work in Garfield	Work in Eagle (Basalt/EJ part)	Work in Pitkin	Work in Mesa	Work in Eagle Valley	Work in Other	Live or Work in Gar/Eag/Pit
Live in Garfield	16,586	1,374	3,685	156	372	367	22,540
Live in Eagle (Basalt part)	366	1,237	2,717	0	10	85	4,415
Live in Pitkin	420	230	8,602	0	24	167	9,443
Live in Eagle (Vail Valley part)	136	10	50	n/a	n/a	n/a	196
Live in Mesa	593	16	135	n/a	n/a	n/a	744
Live in Other	502	80	579	n/a	n/a	n/a	1,161
TOTAL WORKERS	18,603	2,947	15,768	156	406	619	38,499

1990 county-to-county worker flows

	County of Workplace						
County of Residence	Work in Garfield	Work in Eagle (Basalt/EJ part)	Work in Pitkin	Work in Mesa	Work in Eagle Valley	Work in Other	Live or Work in Gar/Eag/Pit
Live in Garfield	11,601	428	2,186	134	116	291	14,756
Live in Eagle (Basalt part)	172	622	1,667	0	10	40	2,511
Live in Pitkin	311	175	7,482	27	18	166	8,179
Live in Eagle (Vail Valley part)	126	5	25	n/a	n/a	n/a	156
Live in Mesa	636	8	92	n/a	n/a	n/a	736
Live in Other	472	40	829	n/a	n/a	n/a	1,341
TOTAL WORKERS	13,318	1,278	12,281	161	144	497	27,679

2000 vs. 1990 county-to-county worker flow CHANGE

	County of Workplace						
County of Residence	Work in Garfield	Work in Eagle (Basalt/EJ part)	Work in Pitkin	Work in Mesa	Work in Eagle Valley	Work in Other	Live or Work in Gar/Eag/Pit
Live in Garfield	4,985	946	1,499	22	256	76	7,784
Live in Eagle (Basalt part)	194	615	1,050	0	0	45	1,904
Live in Pitkin	109	55	1,120	-27	6	1	1,264
Live in Eagle (Vail Valley part)	10	5	25	n/a	n/a	n/a	40
Live in Mesa	-43	8	43	n/a	n/a	n/a	8
Live in Other	30	40	-250	n/a	n/a	n/a	-180
TOTAL WORKERS	5,285	1,669	3,487	-5	262	122	10,820

Source: 2000 U.S. Census and 1990 U.S. Census. Study team estimates were required for subcounty commuting patterns (particularly for splitting up Eagle County into Basalt/El Jebel and Vail Valley parts).
Note: Workers living or working in "other" are in many cases seasonal workers who indicated that their place of residence or work was outside of the study area (and often out of state), even though Census methodology would normally classify them as being residents and workers of the study area.

Table 4.4.2. Selected Key County-to-County Worker Flows, 2000 vs. 1990

Garfield to Pitkin	Workers 2000	Workers 1990	# Change	% Change
Garfield to Pitkin	3,685	2,186	1,499	69%
Pitkin to Garfield	420	311	109	35%
Net commuting to Pitkin	3,265	1,875	1,390	74%

Eagle (entire county) to Pitkin	Workers 2000	Workers 1990	# Change	% Change
Eagle to Pitkin	2,767	1,692	1,075	64%
Pitkin to Eagle	254	193	61	32%
Net commuting to Pitkin	2,513	1,499	1,014	68%

Garfield & Eagle (entire county) to Pitkin	Workers 2000	Workers 1990	# Change	% Change
Garfield & Eagle to Pitkin	6,452	3,878	2,574	66%
Pitkin to Garfield & Eagle	674	504	170	34%
Net commuting to Pitkin	5,778	3,374	2,404	71%

Garfield to Eagle (entire county)	Workers 2000	Workers 1990	# Change	% Change
Garfield to Eagle	1,746	544	1,202	221%
Eagle to Garfield	502	298	204	68%
Net commuting to Eagle	1,244	246	998	406%

Mesa to Garco/Eagle/Pitkin	Workers 2000	Workers 1990	# Change	% Change
Mesa to Garco/Eagle/Pitkin	892	777	115	15%
Garco/Eagle/Pitkin to Mesa	160	182	-22	-12%
Net commuting to Garco/Eagle/Pitkin	732	595	137	23%

Source: 1990 and 2000 Census. Eagle County data is for entire county, not just Basalt/El Jebel portion.

Section 5 - The Commuter Trip Market, 2000 vs. 2025

Planning for future mobility in the study area should address a range of mobility needs including: residents and visitors; personal and commercial travel; and commuting and discretionary travel. However, it is appropriate to focus the analysis to some degree on commuting, and on the needs of people trying to get to work.

The data presented in this section is stated in terms of "commuters" (one person making a round trip to work) on an average day in 2000 and 2025. The commuting estimates in this section use a combination of data from the Bureau of Transportation Statistics – Census Transportation Planning Package (CTPP) 2000 (worker flow files), Center for Business and

Economic Forecasting job and labor force projections (as of 2003), and Colorado State Demographer population projections (2003). For purposes of this section, subarea 4 encompasses all of Pitkin County and subarea 3 encompasses the Garfield and Eagle County portions of subarea 3 only. Subareas 1 and 2 are largely the same described in portions of Chapter 4, except that they incorporate all of Garfield County to the north and south of those respective subarea boundaries. Subarea 5 includes all of Eagle County except the Basalt/El Jebel portion.

As a starting point in this analysis, 2000 commuting patterns by place of work and place of residence were determined, based on 2000 Census Transportation Planning Package commuting data files (analyzed at the tract and county levels). This data was used to develop year 2000 benchmark data of the commuting patterns within and between the five different subareas.

For purposes of projecting future commuting patterns, population, workforce, and employment projections were developed for each of the five subareas. Population projections were gathered from the Colorado State Demographer, Eagle County Planning Department (for the Basalt/El Jebel area), and a 2004 Leigh/Scott/Cleary transportation working paper for Garfield County (breaking down Garfield County population by Census Tract). County-level workforce (place of residence) and employment (place of work) projections were taken from the Center for Business and Economic Forecasting, and broken down to the subcounty level based on local labor force participation rates and population growth patterns. Finally, within-region and between-region commuter flows were projected, assuming that commute patterns would be similar to those in 2000, with adjustments to account for the differing distribution of jobs and population between 2000 and 2025. For example, subarea 4 (Pitkin County) is projected to add many more jobs than population by 2025 and the commuter flows were adjusted accordingly to accommodate increased commuter flows into subarea 4.

To the extent that future jobs and population are distributed between each subarea in different patterns than is assumed here, the amount of commuting between areas may differ from the patterns indicated. Additionally, future commuting patterns may differ from the projections shown here if directional patterns of commuting within and between each subarea differ from the estimates presented here.

The results of the analysis are summarized in Table 4.5.1 to follow, by both place of residence (lefthand side of the table) and place of work (righthand side). Evaluating commuter travel by subarea, it is apparent that:

- **Subarea 1** (New Castle to Parachute) will grow as a net supplier of workers to jobs in other parts of the study area. In 2000, subarea 1 exported approximately 7,900 workers to other subareas; by 2025, which could grow to 18,000 workers, with much of the growth in outflow going to subarea 2 and subarea 4. By contrast, in-commuting to subarea 1 is expected to grow very modestly (by under 1000 commuters), as local residents fill available jobs. Inherent in these projections is the assumption that the subarea's relatively low jobs/population ratio currently will continue in the future;

should a larger share of Garfield County's jobs be located in subarea 1, less outcommuting will likely occur.

In percentage terms, the proportion of resident workers living in subarea 1 who out-commute to other subareas is projected to rise from 59 percent in 2000 to 63 percent in 2025. In terms of in-commuting, employers in subarea 1 currently import 13 percent of their workforce; that is projected to hold relatively steady at 12 percent in 2025.

- **Subarea 2** (Glenwood Springs area) will continue to be a net supplier of jobs for residents in other parts of the study area, assuming future job/population ratios in the subarea resemble those of today. Currently, subarea 2 imports approximately 60 percent of its workforce, or 6,500 workers; that is expected to grow to 11,000 in-commuters by 2025, with the bulk of in-commuters continuing to come from subarea 1.

  In percentage terms, the proportion of resident workers who out-commute is projected to rise from 31 percent in 2000 to 45 percent in 2025, primarily due to increased out-commuting to Pitkin County. In terms of in-commuting, the proportion of employees working in subarea 2 who commute from other regions is projected to rise from 60 percent in 2000 to 65 percent in 2025.

- **Subarea 3** (Carbondale/El Jebel/Basalt) is projected to continue to be a net supplier of workers to other parts of the study area. In 2000, subarea 3 exported 3,500 more workers than it imported; by 2025, this could rise to 7,600 exported workers. The largest outflow is projected to continue to be from subarea 3 to subarea 4, with the number of workers commuting from 3 to 4 rising from 5,500 in 2000 to 11,600 in 2025.

  In percentage terms, the proportion of resident workers who out-commute is projected to rise from 54 percent in 2000 to 63 percent in 2025, primarily due to increased out-commuting to Pitkin County. In terms of in-commuting, the proportion of employees working in subarea 3 who commute from other regions is projected to rise from 39 percent in 2000 to 45 percent in 2025.

- **Subarea 4** (Pitkin County), as noted elsewhere in this chapter, will intensify its role as a net supplier of jobs to the region. In 2000, subarea 4 imported 8,400 commuters from other areas; in 2025, the number of in-commuters is projected to swell to 20,500. Substantial growth in in-commuting to subarea 4 is expected to come from each of the other three Roaring Fork subareas, with subarea 3 continuing to account for the largest absolute number of commuters to subarea 4.

  In percentage terms, the proportion of resident workers who out-commute from Pitkin County is projected to hold relatively steady at 9 percent in 2000 and 8 percent in 2025. In terms of in-commuting, the proportion of employees working in subarea 4 who commute from other regions is projected to rise from 46 percent in 2000 to 55 percent in 2025.

- **Subarea 5** (Eagle River Valley) will attract an increasing number of workers living in the Roaring Fork Valley, to help fill projected workforce demand. Total commuters from the Roaring Fork Valley to the Eagle River Valley are projected to grow from roughly 486 in 2000 to approximately 1,421 in 2025. The reverse commute (from Eagle Valley to Roaring Fork Valley) is projected to grow more modestly, from approximately 247 workers in 2000 to 457 in 2025.

In summary, although commuting is projected to increase within and between all subareas by 2025, the largest impact will be from traffic commuting into subarea 4 from other subareas within the study area. The fundamental driver of this pattern is the projection that job growth will far outstrip population growth in Pitkin County, as estimated by the Center for Business and Economic Forecasting and the Colorado State Demographer.

Key commuting flows are also illustrated in map form in Figures 4.5.2 (2000 commuting patterns) and 4.5.3 (2025 commuting patterns) to follow. Arrows are used to illustrate flows between identified subareas, with the thickness of the arrows roughly indicating the relative volume of the commuter flows.

Table 4.5.1. Inter-Region Commuter Trip Market: 2000 vs. 2025

PLACE OF RESIDENCE -- BY REGION OF WORK

	2000 Workers	2025 Workers	2000-2025 % change	% of 2000	% of 2025
LIVE IN 1:					
Commute from 1 to 1:	5,429	10,617	96%	41%	37%
Commute from 1 to 2:	4,446	7,557	70%	33%	26%
Commute from 1 to 3:	1,439	3,107	116%	11%	11%
Commute from 1 to 4:	1,235	4,512	265%	9%	16%
Commute from 1 to 5:	165	895	443%	1%	3%
Commute from 1 to other	625	1,909	206%	5%	7%
Total live in 1	13,338	28,598	114%	100%	100%
LIVE IN 2:					
Commute from 2 to 1:	159	241	52%	3%	2%
Commute from 2 to 2:	4,309	5,874	36%	69%	55%
Commute from 2 to 3:	603	1,116	85%	10%	10%
Commute from 2 to 4:	800	2,833	254%	13%	27%
Commute from 2 to 5:	98	169	72%	2%	2%
Commute from 2 to other	243	448	84%	4%	4%
Total live in 2	6,212	10,682	72%	100%	100%
LIVE IN 3:					
Commute from 3 to 1:	137	205	50%	1%	1%
Commute from 3 to 2:	1,340	2,011	50%	10%	9%
Commute from 3 to 3:	6,288	8,686	38%	46%	37%
Commute from 3 to 4:	5,492	11,571	111%	40%	50%
Commute from 3 to 5:	195	314	61%	1%	1%
Commute from 3 to other	333	582	75%	2%	2%
Total live in 3	13,784	23,369	70%	100%	100%
LIVE IN 4:					
Commute from 4 to 1:	20	29	50%	0%	0%
Commute from 4 to 2:	156	233	50%	1%	1%
Commute from 4 to 3:	575	860	50%	5%	5%
Commute from 4 to 4:	9,995	17,096	71%	91%	92%
Commute from 4 to 5:	28	43	53%	0%	0%
Commute from 4 to other	200	335	68%	2%	2%
Total live in 4	10,973	18,597	69%	100%	100%
Total live in 1-4	44,307	81,246	83%		

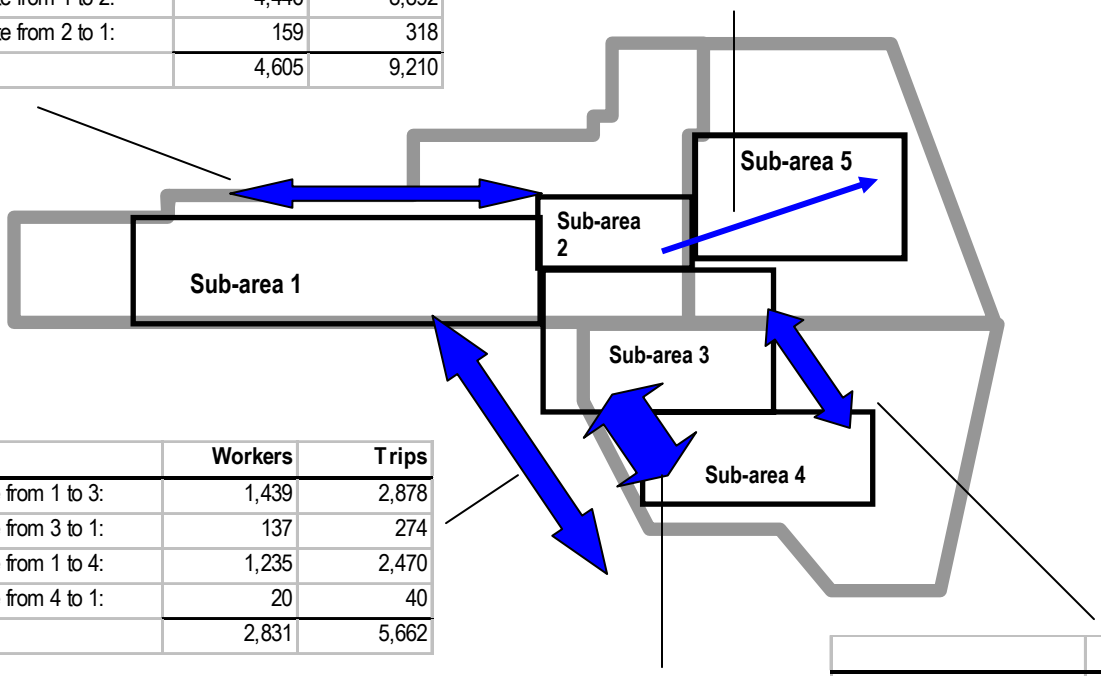
PLACE OF WORK -- BY REGION OF RESIDENCE

	2000 Workers	2025 Workers	2000-2025 % change	% of 2000	% of 2025
WORK IN 1:					
Commute from 1 to 1:	5,429	10,617	96%	87%	88%
Commute from 2 to 1:	159	241	52%	3%	2%
Commute from 3 to 1:	137	205	50%	2%	2%
Commute from 4 to 1:	20	29	50%	0%	0%
Commute from 5 to 1:	47	87	85%	1%	1%
Commute from other to 1:	471	948	101%	8%	8%
Total work in 1	6,262	12,128	94%	100%	100%
WORK IN 2:					
Commute from 1 to 2:	4,446	7,557	70%	41%	45%
Commute from 2 to 2:	4,309	5,874	36%	40%	35%
Commute from 3 to 2:	1,340	2,011	50%	12%	12%
Commute from 4 to 2:	156	233	50%	1%	1%
Commute from 5 to 2:	105	194	85%	1%	1%
Commute from other to 2:	487	973	100%	4%	6%
Total work in 2	10,843	16,841	55%	100%	100%
WORK IN 3:					
Commute from 1 to 3:	1,439	3,107	116%	14%	20%
Commute from 2 to 3:	603	1,116	85%	6%	7%
Commute from 3 to 3:	6,288	8,686	38%	61%	55%
Commute from 4 to 3:	575	860	50%	6%	5%
Commute from 5 to 3:	29	54	85%	0%	0%
Commute from other to 3:	1,328	1,926	45%	13%	12%
Total work in 3	10,262	15,748	53%	100%	100%
WORK IN 4:					
Commute from 1 to 4:	1,235	4,512	265%	7%	12%
Commute from 2 to 4:	800	2,833	254%	4%	8%
Commute from 3 to 4:	5,492	11,571	111%	30%	31%
Commute from 4 to 4:	9,995	17,096	71%	54%	45%
Commute from 5 to 4:	66	122	85%	0%	0%
Commute from other to 4:	836	1,513	81%	5%	4%
Total work in 4	18,423	37,648	104%	100%	100%
Total work in 1-4	45,790	82,366	80%		

Figure 4.5.2 – Current Commuter Trip Market (daily commuting in 2000)

	Workers	Trips
Commute from 1 to 5:	165	330
Commute from 2 to 5:	98	196
Commute from 3 to 5:	195	390
Commute from 4 to 5:	28	56
TOTAL	486	972

	Workers	Trips
Commute from 1 to 2:	4,446	8,892
Commute from 2 to 1:	159	318
TOTAL	4,605	9,210



LEGEND:

(see page 70 for full description)

Sub- Area 1 – Parachute, Rifle, Silt, New Castle

Sub- Area 2 - Glenwood Springs

Sub- Area 3 - Carbondale, El Jebel, Basalt

Sub- Area 4 - Snowmass Village & Aspen

Sub- Area 5 – Eagle River Valley

	Workers	Trips
Commute from 1 to 3:	1,439	2,878
Commute from 3 to 1:	137	274
Commute from 1 to 4:	1,235	2,470
Commute from 4 to 1:	20	40
TOTAL	2,831	5,662

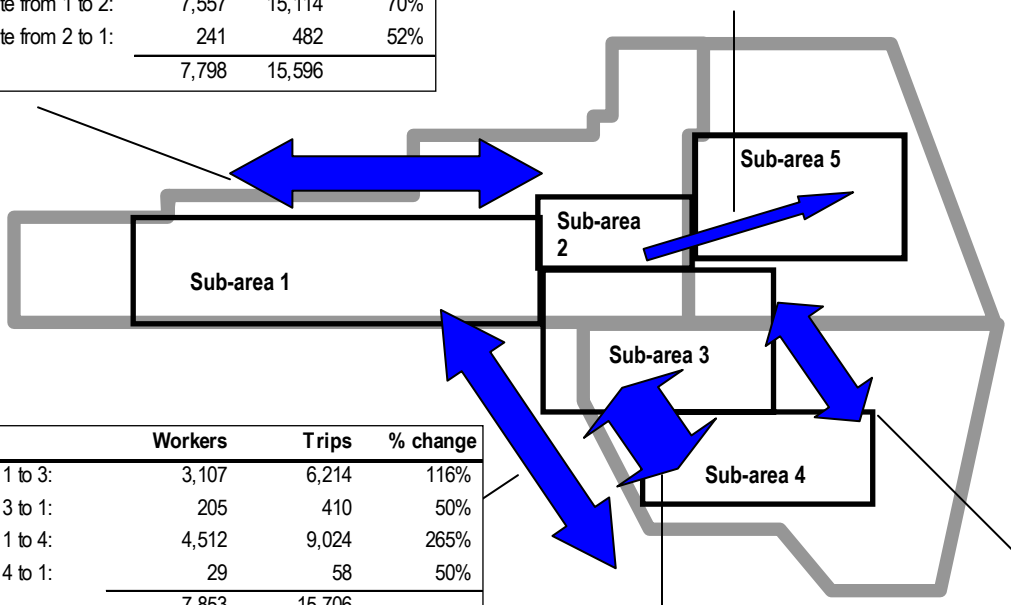
	Workers	Trips
Commute from 2 to 3:	603	1,206
Commute from 3 to 2:	1,340	2,680
Commute from 2 to 4:	800	1,600
Commute from 4 to 2:	156	312
TOTAL	2,899	5,798

	Workers	Trips
Commute from 3 to 4:	5,492	10,984
Commute from 4 to 3:	575	1,150
TOTAL	6,067	12,134

Figure 4.5.3 – Future Commuter Trip Market (daily commuting in 2025) % change is between 2000 - 2025

	Workers	Trips	% change
Commute from 1 to 5:	895	1,790	443%
Commute from 2 to 5:	169	338	72%
Commute from 3 to 5:	314	628	61%
Commute from 4 to 5:	43	86	53%
TOTAL	1421	2,842	

	Workers	Trips	% change
Commute from 1 to 2:	7,557	15,114	70%
Commute from 2 to 1:	241	482	52%
TOTAL	7,798	15,596	



LEGEND:

(see page 70 for full description)

Sub- Area 1 – Parachute, Rifle, Silt, New Castle

Sub- Area 2 - Glenwood Springs

Sub- Area 3 - Carbondale, El Jebel, Basalt

Sub- Area 4 - Snowmass Village & Aspen

Sub- Area 5 – Eagle River Valley

	Workers	Trips	% change
Commute from 1 to 3:	3,107	6,214	116%
Commute from 3 to 1:	205	410	50%
Commute from 1 to 4:	4,512	9,024	265%
Commute from 4 to 1:	29	58	50%
TOTAL	7,853	15,706	

	Workers	Trips	% change
Commute from 3 to 4:	11,571	23,142	111%
Commute from 4 to 3:	860	1,720	50%
TOTAL	12,431	24,862	

	Workers	Trips	% change
Commute from 2 to 3:	1,116	2,232	85%
Commute from 3 to 2:	2,011	4,022	50%
Commute from 2 to 4:	2,833	5,666	254%
Commute from 4 to 2:	233	466	50%
TOTAL	6,193	12,386	

Section 6 - Future Transit Opportunities

The data on commuting patterns provides a useful information base for transit planning in the Roaring Fork region.

Current Transit Services
Four principal transit markets are being served by the Roaring Fork Transit Authority (RFTA) today:

- "City services" – local circulation within the City of Aspen.
- "Valley services" – regional commuting in the Highway 82 corridor between Glenwood Springs and Aspen/Snowmass Village;
- "Grand Hogback services" – service to New Castle, Silt and Rifle (service started 4/15/02); and
- "Other services" – specialty ski shuttles operating between Aspen and Snowmass Village; Ride Glenwood Springs; and various other services.

"Valley services" and the Grand Hogback service require fares or passes. The skier shuttles and "city services" are fare-free.

A detailed summary of RFTA ridership by route is provided in Table 4.6.1 to follow, with a graphical summary contained in Figure 4.6.2, and map illustration shown in Figure 4.6.3. Long-term RFTA ridership trends are shown in Figure 4.6.4.

Valley services account for the largest share of RFTA ridership (1.55 million riders in 2003, or 45 percent of the RFTA total), followed by City Services (975,000 / 28 percent), "other services" (895,000 / 26 percent), and the Grand Hogback Services (44,000 / 1 percent).

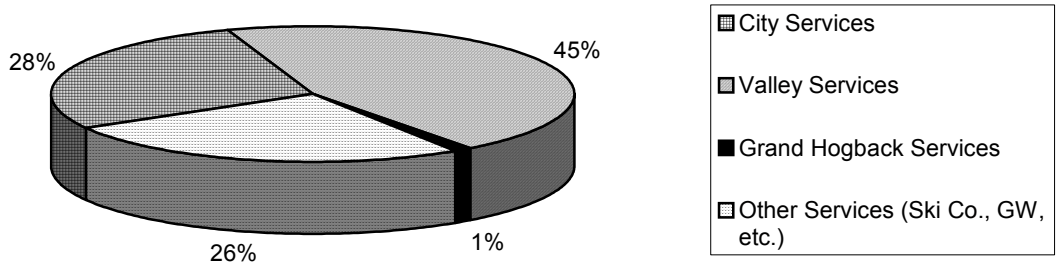
In addition to transit services provided by RFTA, transit services in the region are also provided by the following three entities:

- Ride Glenwood Springs: Ride Glenwood Springs is a year-round bus service with three routes, providing service in Glenwood Springs and connections to RFTA services. As noted above, the service is provided by RFTA under contract with Glenwood Springs. Total ridership was 139,232 in 2003 (this ridership is included in Table 4.6.1 and Figures 4.6.2 and 4.6.3 to follow).
- Town of Snowmass Village: The Town of Snowmass Village runs a free shuttle service along eight routes within the Town. The shuttle provided 652,806 transit trips in 2001.
- The Traveler: A demand-responsive shuttle service for seniors and the disabled in Garfield County. A total of 26,374 trips were provided in 2002.

Table 4.6.1. RFTA Ridership, 2000 – 2003

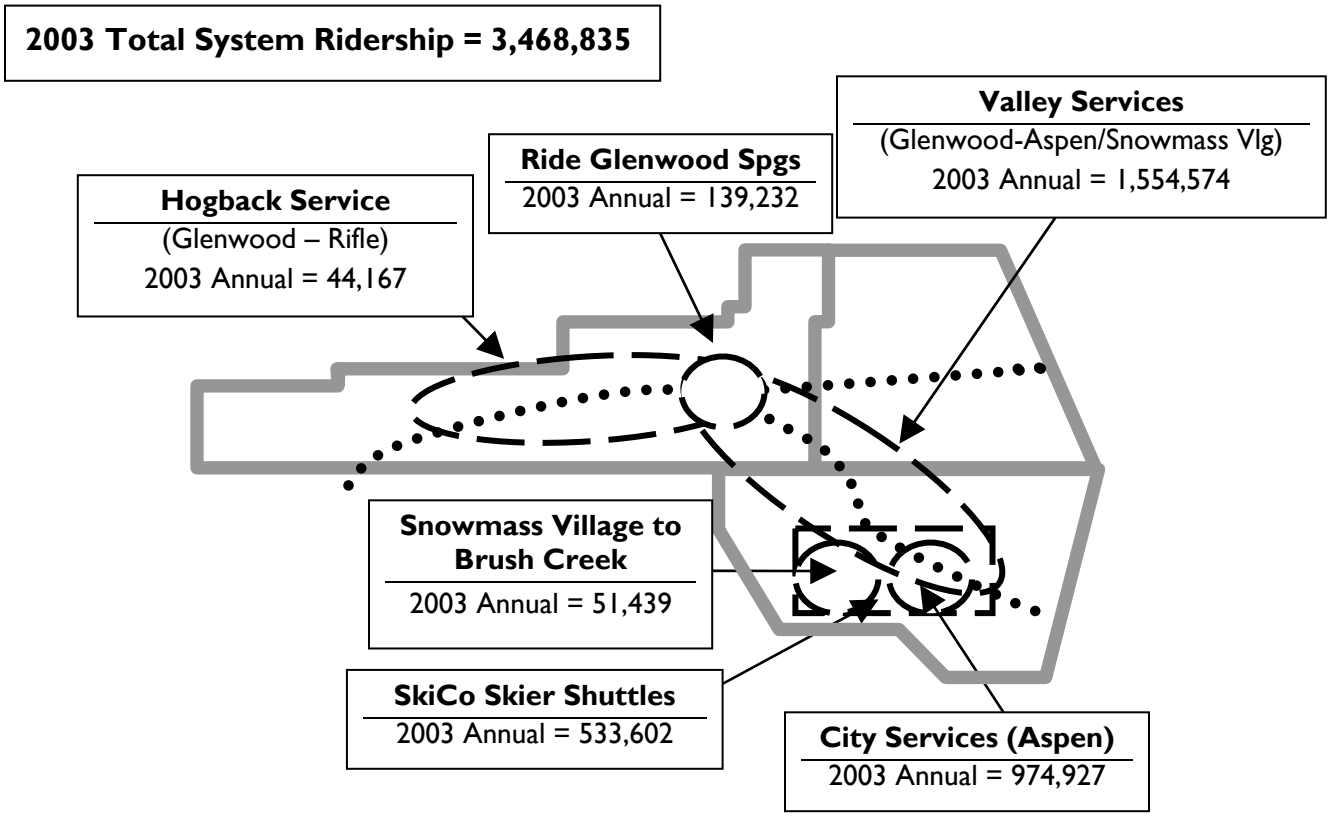
ROUTE	RFTA 2000	RFTA 2001	RFTA 2002	RFTA 2003	Percentage Difference 2003 vs 2002
Year Round City Service:					
Cemetery Lane	102,128	98,949	91,035	91,040	0.0%
Hunter Creek	271,595	250,052	237,861	246,711	3.7%
Castle/Maroon	390,806	407,017	422,862	407,922	-3.5%
East End Dial A Ride	65,023	74,242	56,977	49,242	-13.6%
Sub-Total City Service:	829,552	830,260	808,735	794,915	-1.7%
Seasonal City Service:					
Galena St Shuttle	92,554	83,868	77,062	70,173	-8.9%
Cross Town Shuttle	32,712	37,058	31,303	32,360	3.4%
Maroon Creek Road	n/a	n/a	13,101	77,479	491.4%
Sub-Total Seasonal Service:	125,266	120,926	121,466	180,012	48.2%
Total City Service:	954,818	951,186	930,201	974,927	4.8%
Valley Service:					
Hwy 82 Corridor	1,330,653	1,396,101	1,253,229	1,242,840	-0.8%
Valley/Snowmass/Valley - Direct	64,394	62,138	50,263	43,509	-13.4%
Snowmass/BC82/Snowmass	111,155	105,115	75,538	83,383	10.4%
Aspen/Snowmass/Aspen - Direct	131,817	117,335	124,645	126,993	1.9%
Woody Creek*	9,598	10,313	7,191	6,410	-10.9%
TOSV/BC & 82	60,412	59,542	56,253	51,439	-8.6%
Total Valley Service	1,708,029	1,750,544	1,567,119	1,554,574	-0.8%
* Includes Transfers from Other Valley Buses.					
Grand Hogback Service					
Silt, New Castle, and Rifle (Service started 04/15/02)	n/a	n/a	19,358	44,167	128.2%
Other Services:					
Ski Co.	578,933	529,427	538,520	533,602	-0.9%
Ride Glenwood Springs - Hwy. 6 (all routes 2000 & 2001)	218,461	202,155	156,423	85,351	-45.4%
Ride Glenwood Springs - Community Center, as of 01/01/03	n/a	n/a	0	53,881	#DIV/0!
IDCA	684	0	n/a	n/a	n/a
Burling Game MAA	18,511	18,182	17,557	15,524	-11.6%
MAA Campus	91,480	82,206	81,111	66,064	-18.6%
Maroon Bells	66,992	78,122	75,055	75,865	1.1%
Charters	9,084	12,123	56,929	61,917	8.8%
ADA - Aspen	273	130	147	63	-57.1%
ADA - Glenwood Springs	0	100	164	177	7.9%
Senior Van	4,395	3,288	3,426	2,723	-20.5%
Total Other Services:	988,813	925,733	929,332	895,167	-3.7%
Total Ridership	3,651,660	3,627,463	3,446,010	3,468,835	0.7%

Figure 4.6.2. Current RFTA Ridership by Service Component, 2003



City Services	974,927	28%
Valley Services	1,554,574	45%
Grand Hogback Services	44,167	1%
Other Services (Ski Co., GW, etc.)	895,167	26%
	3,468,835	

Figure 4.6.3. Current RFTA & Ride Glenwood Springs Transit Ridership Map



*Note: Figure 4.6.3 above shows RFTA & Ride Glenwood Springs ridership only. An additional 652,000 transit trips are provided by the Town of Snowmass Village shuttle, and 26,000 trips are provided for seniors and the disabled by The Traveler (CMC demand-response shuttle), that are not depicted graphically.

Looking at long-term trends, as illustrated in Figure 4.6.4 below, annual RFTA ridership climbed significantly through the late 1980s and early to mid 1990s, before plateauing at the 3.6 – 3.7 million level in 1996 – 2002, and dropping slightly to approximately 3.47 million in 2003. Total annual ridership on RFTA services for year 2004 is projected to be 3.5 million.

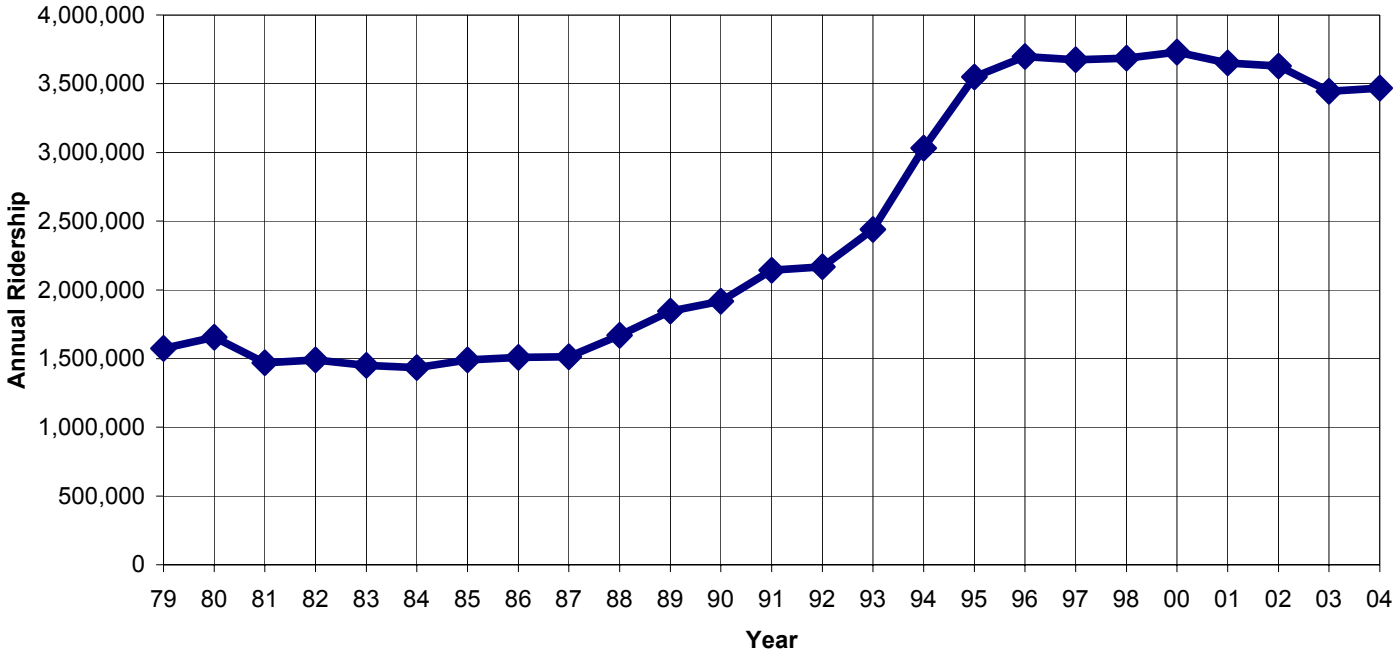
Since 1998, RFTA has slightly reduced services in the following ways:

- During the off-seasons, it was determined that ridership numbers dropped after evening hours and during weekends. Therefore, in 2002, service between El Jebel and Aspen was decreased from 30 minutes to hourly service after 8:15 pm in the Spring and Fall seasons.
- Also, in 2004, service was reduced from 30 minutes to hourly during the weekends only from El Jebel to Aspen in the Spring and Fall seasons.

In other changes, RFTA also raised fares at the beginning of 2002 by approximately 15 percent, and reduced the discount that was obtained by purchasing passes. RFTA also raised prices in 2004 and at the beginning of 2005 also (by approximately 2-3 percent each year).

The slight drop in ridership in 2003-04 from the peak years in the late 1990s and 2000-02 is likely attributable in part to the economic recession and reduced tourist business, higher fares, less employer provided incentives, the improvements to Highway 82, and RFTA service reductions, all of which may have had a combined effect.

Figure 4.6.4. Annual RFTA Ridership, 1979 – 2004



Rationale for Targeting Future Transit Efforts on Commuters

A primary goal of expanding transit service in the region should be to serve commute trips within and between cities and towns. Commuters are the best market for transit after skiers. While skier days will grow somewhat over the next two decades, they will not grow nearly as much as daily commute trips. While other trip purposes – recreation, shopping, trips by visitors, etc. -- are important, they typically experience lower transit usage rates and are more challenging to convert to transit.

More specifically, the reasons for focusing on commuters as the leading target for transit use include the following:

- Commuters face all-day parking and cost of travel issues, both of which make transit an attractive choice. Commuters generally travel on set daily schedules and are able to adapt to transit by settling into a daily routine with specific bus schedules and routes. Most other trip purpose categories are more spontaneous, requiring knowledge of transit schedules and routes.
- Transit passes work well for commuters because the pricing can be attractive to the transit agency, to the employer and to the commuter. Because of the concentration of commute trips in a few peak travel periods, transit operators can serve the commute market more efficiently than other markets because of higher average load ratios. Some of the associated benefits commonly rolled into transit passes (e.g., guaranteed ride home) can be priced most competitively for commuters.
- Most other trip categories including shopping, recreation, etc. (home-based-other trips) are much more difficult to attract to transit because the current mode of travel is more likely to be multi-occupant auto (as opposed to SOV) and these trips tend to be more complicated -- with more people involved and more trip ends in each journey.

Based on these factors, most transit agencies aspire to much higher mode shares for commuting than for other trip categories. Big cities like Portland, Minneapolis, Denver, and Seattle -- to pick a few examples – generally achieve 40% to 45% commute transit mode shares to their major employment areas, especially their downtowns. For other trip purposes, transit mode shares will be less than 10%, with most categories at much less than 5%.

Importantly, once the commuter market is well served by transit, other markets open up, including local circulation. Specifically, the availability of good trunk commuter services often helps create a market for the community transit network. People who ride the bus to work and have a transit passes in their pockets are highly likely to utilize circulators once they are initiated. However, if things were to develop in the reverse order -- circulator first, commuter lines later – the circulators would often fail because people have cars at their work site and would be less likely to have transit passes in their pockets.

Additionally, in ski towns, it is fairly common for the transit agency to develop the skier market first, then other markets. Skiers represent an excellent transit market. This is because skiers need to avoid parking problems and costs and because good bus service, especially front door

service, can be more convenient for the skier than driving. The point-to-point nature of skier services (lodging to ski base) allows the transit provider to provide reliable, efficient services. And, finally, load ratios can be high because of the concentrated market, both in terms of trip ends and in terms of time of travel.

RFTA is in the position of having developed both good skier services and good commuter services, and thus has set the stage for competitively serving other markets, such as local circulation in Aspen and Glenwood Springs (with Snowmass Village operating its own local circulation). One sign of this is the relatively high transit mode shares in Aspen, Snowmass Village, and even in Basalt and El Jebel, for mid-day trips (non-skier, non-commuter). However, this wouldn't be the case if RFTA hadn't had good commuter and skier services in place as a foundation.

Future Transit/Commute Market

Table 4.6.5 to follow provides forecasts of the potential size of the intercity transit commute market in 2025. The data in Table 4.6.5 indicates there will be a large potential market for commuting by transit between cities in this region. The data in Table 4.6.5 is derived from data in Table 4.5.1 and has been prepared to show four possible "transit mode share" scenarios in the future for commuter travel (with the existing regional commuting mode share being roughly 7 percent, per the 2000 Census). The term, "transit mode share" means the percentage of daily trips made by public transit. In this case, the data is focused on commute trips only, so the transit mode shares are for just those trips where people are traveling to or from their jobs (15% to 40% of daily traffic depending on location and day of week). The mode share scenarios in Table 4.6.5 are:

- at 3% -- this would be similar to many major metropolitan areas where the regional average percentage of daily commute trips made by transit would be about 3%, although the transit mode share at certain specific locations (e.g., a downtown) might be much higher;
- at 5% -- certain strong major metropolitan transit systems reach this higher average regional mode share (Twin Cities, Portland, Seattle), usually by achieving very high mode shares in their downtowns and at major activity centers; even in these regions, suburban transit mode shares will tend to be quite low (about 1% or so);
- at 15% -- this is the transit mode share currently experienced during the winter months within the City of Aspen; it is potentially feasible for certain other areas of the region, including the City of Glenwood Springs, and much of the upper valley;
- at 30% -- this is the transit mode share currently experienced during the winter months in the upper valley service area between Basalt, Snowmass Village and Aspen; it is achieved in part due to a high percentage of SkiCo employees riding transit, parking restrictions in Aspen and the Town of Snowmass Village, and comparatively frequent bus service (half-hourly bus service between El Jebel and Aspen/Snowmass).

The regional commute mode share has the potential to increase even more in the future with the improvement in the efficiency of existing commuter transit services, such as the implementation of Bus Rapid Transit (BRT). RFTA is currently pursuing the implementation of incorporating BRT's features and service characteristics into their existing system, to be implemented over the next 5 to 20 years.

Estimates of potential future transit commuting within communities (local trips only) for year 2025 have also been made and are shown in Table 4.6.6 to follow. Note that the data in Table 4.6.6 does not include the local portions of regional trips (local links of trips that transfer to regional transit routes). Thus, depending on service design, potential increases in local ridership from higher commuter mode shares could be somewhat underestimated in Table 4.6.6.

Table 4.6.5. Future Intercity Commute Market

	2025	2025	2025 Intercity Transit Commute Market (Person Trips)			
	Commuters	Person-Trips	@ 3% Transit	@ 5% Transit	@ 15% Transit	@ 30% Transit
Commute from 1 to 2 (Lower Colo to Glenwood):	7,557	15,114	453	756	2,267	4,534
Commute from 1 to 3 (Lower Colo to Carb/EJ/Basalt):	3,107	6,214	186	311	932	1,864
Commute from 1 to 4 (Lower Colo to Aspen/Snowmass):	4,512	9,024	271	451	1,354	2,707
Commute from 2 to 3 (Glenwood to Carb/EJ/Basalt):	1,116	2,233	67	112	335	670
Commute from 2 to 4 (Glenwood to Aspen/Snowmass):	2,833	5,667	170	283	850	1,700
Commute from 3 to 4 (Carb/EJ/Basalt to Asp/Snowmass):	11,571	23,143	694	1,157	3,471	6,943
Commute from 1-4 to 5 (R. Fk Valley to Eagle Valley):	1,421	2,842	85	142	426	853

Table 4.6.6. Future Local Transit Commute Market

	2025	2025	2025 Intercity Transit Commute Market (Person Trips)			
	Commuters	Person-Trips	@ 3% Transit	@ 5% Transit	@ 15% Transit	@ 30% Transit
Commute from 1 to 1 (lower Colorado):	10,617	21,234	637	1,062	3,185	6,370
Commute from 2 to 2 (Glenwood Spgs):	5,874	11,748	352	587	1,762	3,524
Commute from 3 to 3 (Carb/EJ/Basalt):	8,686	17,371	521	869	2,606	5,211
Commute from 4 to 4 (Aspen/Snowmass):	17,096	34,192	1,026	1,710	5,129	10,258

Section 7 – Summary Findings

Looking ahead to the future, among the major findings and conclusions that arise from the data in this section of the report are the following:

- Dramatic growth in population and jobs is projected in the region. Projections used in this report suggest an 87 percent growth in population and 80 percent growth in employment in the Roaring Fork Valley over the 2000 – 2025 period. Additional work currently underway by the Watershed Growth Scenarios Task Force suggests that this growth may be underestimated, and that these growth levels may occur sooner, closer to 2020 than 2025.

Significant growth in population and especially jobs is also projected in the Eagle River Valley.

- Jobs and housing will grow differentially across the region. While jobs and housing (residential population) will increase throughout the study region, they will grow differentially in different parts of the region. Pitkin County is projected to experience significantly more job growth than population growth over the 2000 – 2025 period (growth of 19,225 persons working in Pitkin vs. growth of 10,332 persons living in Pitkin), meaning that Pitkin County's role as a regional job center will intensify. By contrast, over the same period in Garfield County, population is expected to grow much faster (98 percent / 43,131 people) than jobs (61 percent / 14,945 jobs), meaning that Garfield County's role as a net workforce supplier to the region will also grow. In the Eagle Valley, job growth is projected to outstrip the growth in the resident workforce, setting up the conditions for increased commuting from adjacent counties.

- Up-valley commuting will grow significantly. Due primarily to differential patterns of job and population growth, upvalley commuting will grow dramatically. The largest growth will be from mid- and down-valley communities to Pitkin County, with an increase from approximately 7,500 in-commuters now to 18,900 in 2025. Upvalley commuting from lower valley communities (Parachute to New Castle) to Glenwood Springs and to mid-valley communities (Carbondale to Basalt) is also projected to grow significantly, based on projected patterns of job and population distribution. Commuting between the Roaring Fork Valley and Eagle River Valley is also projected to grow significantly, although remain modest relative to commuting flows within the Roaring Fork Valley.

- Local area commuting will also grow significantly. Local commuting within subregions of the study area is expected to grow significantly as well, especially in the Lower Colorado area (Parachute to New Castle) and in the Aspen/Snowmass area.

- Significant growth in vehicle traffic is projected. Traffic projections by CDOT developed independently of this study envision 50+ percent growth in average daily traffic along most portions of I-70 and State Highway 82 in the study area between 2003 and 2025. These projections may be conservative (by approximately 10 percentage points) in light of the higher levels of job and population growth noted as part of this study (80+ percent). These growth levels will likely create challenges for the region's roadway and parking infrastructure at key congestion points, and will also create opportunities for growth in transit service and utilization.

- Existing regional transit markets will grow. As a result of the strong growth in commuter flows, particularly upvalley to Aspen/Snowmass, there is significant potential for growth in transit service serving upvalley Roaring Fork communities. Much of this growth would result from the enlargement of established commuting flows, particularly from midvalley communities to upvalley destinations, as well as long-haul commutes from lower valley communities to upvalley communities.

- Transit opportunities will grow within the Lower Colorado corridor. The size of the workforce residing in the lower Colorado area (New Castle – Parachute) is expected to grow the most of any subarea in the region (114 percent over the 2000 – 2025 period), and become the single largest place of residence of local workers. Most of these workers will

either commute to work within the Lower Colorado region or commute to Glenwood Springs, with many also commuting to midvalley and upvalley locations. This growth will likely provide opportunities for expanded intra-region and inter-region transit within the Lower Colorado area and between the Lower Colorado area and upvalley areas.

- The forecast commute volume from the Roaring Fork Valley to the Eagle River Valley (up Glenwood Canyon) represents a potential future small transit market for commuter service; this could be scheduled, fixed route service, interconnecting with RFTA services in Glenwood Springs. This could be either public or private and would probably be limited to a couple of runs each direction in the morning and afternoon peak hours.

- Local circulator service needs will grow in Aspen/Snowmass and Glenwood Springs, and potential for new service will emerge in other communities. The local commuting market within the Aspen/Snowmass area is projected to grow significantly over the next 20 years, warranting higher levels of service in the future. Growth will also occur in the Glenwood Springs area, where local service also exists, although to a lesser extent, based on projections. Local circulator service may become feasible in other communities if travel volumes reach critical mass. Residents of Aspen/Snowmass express the highest interest in local circulator service, with interest generally decreasing downvalley. A significant share of respondents indicate interest in using local service for commuting for work and to park-n-rides, and for a variety of other purposes (dining/entertainment, shopping, personal care, errands, etc.).

CONCLUSIONS & RECOMMENDATIONS

As we learned in the *1998 Local and Regional Travel Patterns Study*, the communities of the Roaring Fork and Colorado River Valleys continue to make up a dynamic region with travel patterns unique in the intermountain west. There have been a number of changes to the Roaring Fork and Colorado River Valleys since 1998 that affect how, why, when and where people travel in the region. For example:

- The Colorado Department of Transportation invested over $200 million to four-lane State Highway 82 between Basalt and Buttermilk Mountain (construction was close to complete at the time of this study). This highway expansion has made it easier to travel by motor vehicle (especially single-occupant vehicle) between the two communities and between the up valley (Pitkin County/Aspen) and the down valley (Basalt, Carbondale and other points in Garfield County). This expansion of highway capacity could also encourage higher transit ridership, but that effect will not be pronounced unless other service characteristics (especially headways) of the regional bus routes are improved.

- In November of 2000, voters in Eagle and Pitkin counties and in Glenwood Springs approved creation of the Roaring Fork Transportation Authority (RFTA). This provided a direct regional taxing source for bus operations in the Roaring Fork and set the stage for initiation of the "Hogback" service in the Colorado River Valley. However, an economic downturn between 2000 and 2004 reduced the revenues available to RFTA, putting the agency in a position where service increases were either difficult or impossible. In November 2004,

voters in the RFTA communities approved an increase in RFTA's tax rate and voters in New Castle approved entry of that community into the regional authority. (Rifle, Silt and Garfield County have either chose not to vote on whether to enter RFTA or have voted against entry.) The increased tax revenues resulting from the 2004 election, along with the higher tax revenues likely to be associated with the rebounding economy, will enable RFTA to once again consider service improvements. Data in this report suggests that increased transit service almost anywhere in the region will result directly in increased transit ridership. The data also suggests that service increases should include both regional commuter routes and local circulation routes.

- While the economy has been flat in recent years, population and employment have grown since 1998, placing increasing pressure on the Roaring Fork region transportation system.

Despite these changes, this report found the following:

- The live/work patterns of the region continue the trend of workers largely living in communities different from their place of employment. Only 41 percent of residents of the Roaring Fork Valley's cities, towns and Census-designated "places" worked in their hometown in 2000, down from 48 percent in 1990. An additional 31 percent worked in other communities in the same county, and 27 percent worked in a different county. Among all workers residing in the Roaring Fork region (including residents of unincorporated areas), 26 percent commuted across county lines in 2000, up slightly from 23 percent in 1990.
- Over the next 20 years, the percentage of commuters who work in the community where they live will continue to decline for three reasons. First, job growth in the Roaring Fork Valley, especially in Pitkin County, will exceed population growth, thereby increasing the amount of in-commuting. Second, a similar pattern will occur in Glenwood Springs where job growth will exceed population growth. Already, a high percentage of Glenwood's workers live in surrounding unincorporated areas of Garfield County. This trend will continue and accelerate. Finally, job growth throughout much of Garfield County (outside of Glenwood Springs) will be far less than population growth, leading to extensive commuting to the Glenwood Springs and Roaring Fork Valley employment centers.
- The workforce bears a significant cost of commuting, an estimated $6,700 annually in vehicle-related expenses for a typical household, but the cost of housing in the region makes living in the communities with the most jobs prohibitive. Forty-four percent of workers surveyed in the Roaring Fork Valley would move closer to work if they could afford to, while 11 percent say they are looking for work closer to home.
- A relatively high share of Roaring Fork workers commute by bus (7 percent, per 2000 Census), significantly higher than in many urban areas such as Portland (6 percent) and Denver (5 percent). Additionally, riders generally believe the service is of a high quality except for when it comes to bus shelters and frequency. Transit usage is even higher in the upper valley where bus service is more frequent.
- An even higher percentage of Roaring Fork workers carpool or vanpool to work (20 percent). Only 64 percent drive alone, a lower share than in many metro areas (Denver – 79

percent, Portland – 77 percent) and mountain communities (Summit County – 70 percent, Routt County – 73 percent).

- Many workers express an interest in more local circulator bus service, and a surprising number of non-bus riders (35%) said they would use local bus service to commute to work.
- Housing assistance is widespread in the Aspen/Pitkin area (43% of respondents living in the upper valley reported receiving assistance), but is much less common downvalley.
- Population, job and traffic projections for the future create significant challenges including:
  - Almost of doubling of the regional population and subsequent growth in traffic;
  - Job growth continuing to outrun population growth and housing development in Pitkin County, which will increase commuting upvalley; and
  - Expansion of local area commuting in the mid valley (Basalt, El Jebel, Carbondale) and Garfield County in general (which will also see the most increase in population in the Roaring Fork valley).
- The amount of traffic growth expected to occur throughout the study area represents a serious challenge for the counties, cities and towns of this region, as well as for Colorado DOT. Increases in daily traffic over the next twenty years will range from 50% in the upper Roaring Fork Valley to over 80% in parts of the I-70 corridor (and likely higher, based on the job and population projections used in this report). It will not be possible to increase roadway capacity by anywhere near these percentages, nor would such an attempt be good policy, given the side effects of highway expansion. It also will not be possible to increase transit service levels to offset this growth. Significant improvements in transit service will be made and will be beneficial, but they will not be sufficient to offset more than a modest percentage of growing traffic demand.

Given these conditions this report offers the following recommendations for consideration:

- A key strategy that policy-makers in this region should begin to discuss now is how to develop a more complete roadway network to serve anticipated growth. Widening I-70 and other principal arterials sufficiently would be prohibitively expensive. The experience in the upper Roaring Fork with expansion of SH 82 should be instructive. In any event, the relentless widening of major arteries is largely counterproductive anyway. The problem that plagues this region (and most mountain valleys) is the over-reliance on a small number of congested arterials. As traffic volumes between communities in the lower Colorado River Valley increase, the need for local and sub-regional circulation should be met with development of a complete, well-connected roadway network. This will benefit all modes. Continuing to widen the major arterials would benefit only SOV travelers, and even that benefit would be limited.
- The highest traffic capacity per lane is achieved on two- to three-lane facilities. Roadway widening to more than three or four lanes yields rapidly declining capacity per lane. The safest, most efficient road and street networks are those containing a high density of small,

well-connected streets. The suburban street patterns that have appeared throughout much of Eagle and Garfield Counties over the past decade lack collector and connector streets and are poorly-connected. As a result they place too much traffic on a small number of over-used arterials. This negatively affects all modes of travel, including especially bus circulation.

- Creating an adequate, dense grid of collector and connector streets requires two kinds of policies. First, developers must be asked to pay for more than just the local streets within their projects. Secondly, funding sources must be established that enable the three counties to build public roads that can serve as collectors and connectors.

- The counties, cities and towns of this region should begin working aggressively to improve the walking environments within their jurisdictions. Even more urgent, they should ensure that all new development is held to strict pedestrian standards, regardless of the initial rural environment of much of that new development. It is relatively inexpensive to provide infrastructure for pedestrians and bicyclists (compared to auto and transit) and produces other values that are important to community quality of life. For example, national research over the past five years has identified an alarming trend toward inactivity that is tied directly to poor walk environment throughout much of suburban America. Dramatic increases in obesity and in certain related diseases such as childhood onset of Type II diabetes have caused the U.S. Centers for Disease Control to begin a major national campaign to increase awareness on the part of citizens and local elected officials of the epidemic nature of this problem. While parts of Aspen and Glenwood Springs are walkable and certain neighborhoods are even pleasant to walk in, most of the new development occurring in the region is profoundly not pedestrian-oriented. This will discourage and limit access to transit. However, more importantly, it will impact community and individual health and quality of life. Providing safe, well-designed sidewalks and cross-walks is a good first step, but will not be adequate. Mixed land use development patterns, a high density of small, well-connected streets (see above), and good local transit circulation will also be needed.

- The lack of provision for bicycling represents a major missed opportunity in this study area. Even though winter falls hard in this region, traffic is highest in the summer, and almost no bike commuting is occurring. Cities and towns around the Intermountain West have begun to address this problem with good success. The primary unmet need is for safe, long, continuous corridors that make longer bicycle trips feasible. The average length of a bicycle trip in North America is between 2.5 and 5 miles, depending on setting. Communities that have begun developing "spine" facilities have seen increases in bicycle travel. Such trends also bring attractive side effects such as increased property values and increased recreational markets. The counties, cities and towns of this region should begin working together to improve the local and regional provisions for seasonal bicycling.

- Overall, the unique travel patterns of the Roaring Fork and Colorado River Valleys (specifically, high levels of transit ridership and carpooling), which were originally documented in the 1998 study, have remained in this 2004 study. Transit and carpooling percentages could increase further if the region's local governments, in conjunction with the Roaring Fork Transportation Authority, choose to increase the area and frequency of bus service, coordinate carpooling, and encourage transit oriented, pedestrian-friendly development

patterns. These investments would build on current efforts to create a more balanced transportation system and offer people increasing choices about how to spend their time and their transportation money and how to get where they need to go. Such an approach could mitigate some of the impacts of the significant increase in population and jobs projected for the region over the next twenty years.

Survey statistical tables are posted online at www.hmccolorado.org

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