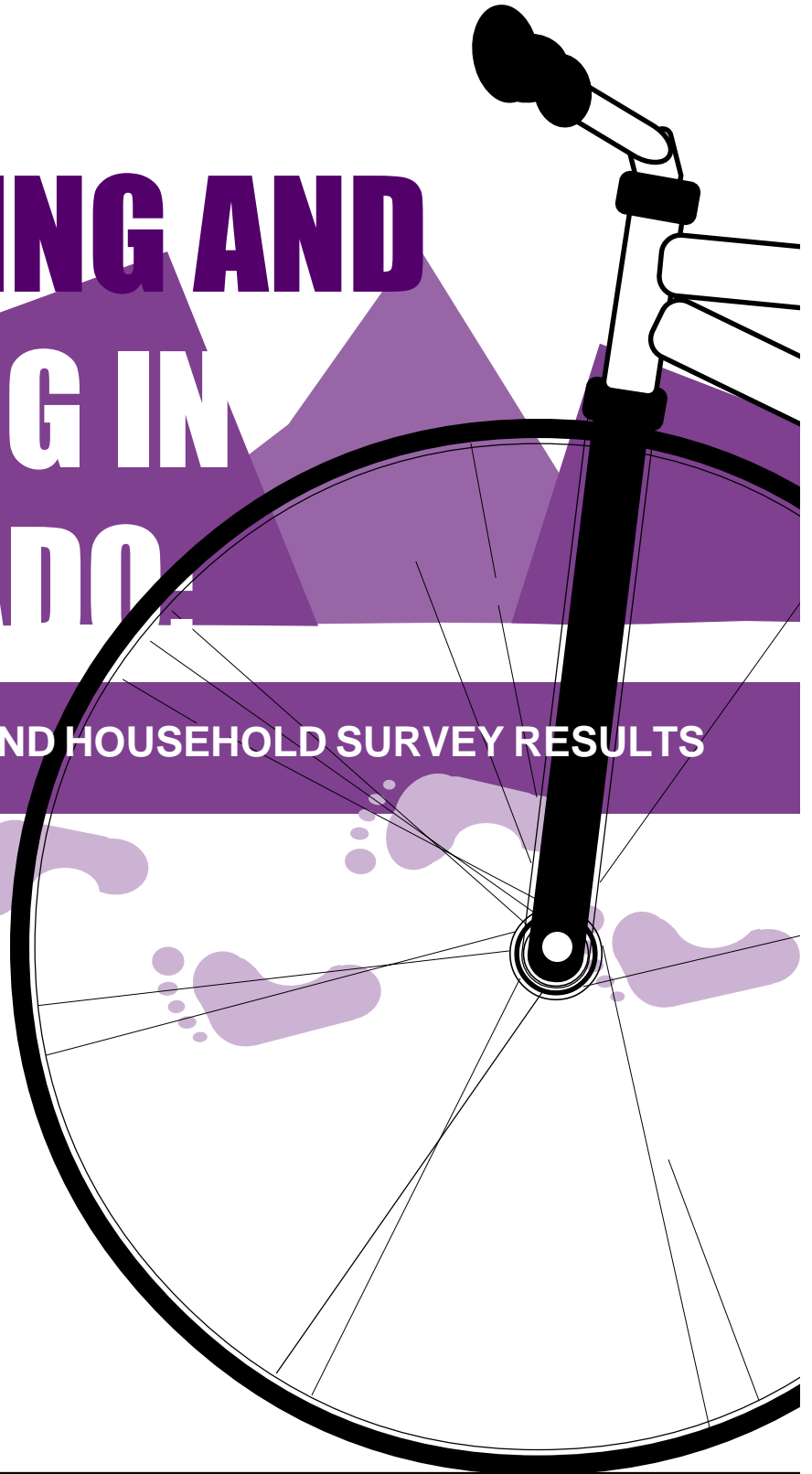


# **BICYCLING AND WALKING IN COLORADO**

**ECONOMIC IMPACT AND HOUSEHOLD SURVEY RESULTS**



**TECHNICAL REPORT**



**TECHNICAL REPORT**

**Bicycling and Walking in Colorado:  
Economic Impact and  
Household Survey Results**

**Technical Report**  
April 2000

*Commissioned by:*  
**The Colorado Department of Transportation  
Bicycle/Pedestrian Program**

*Survey and Analysis Conducted by:*  
**The Center for Research on Economic and Social Policy (CRESP)  
of the University of Colorado at Denver**



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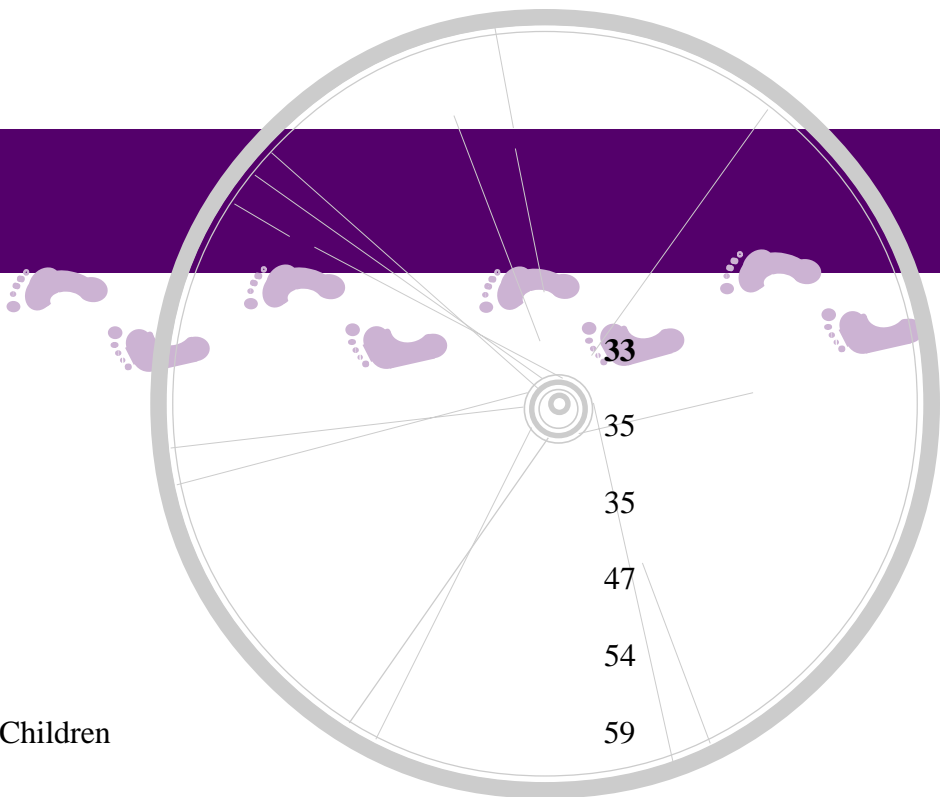
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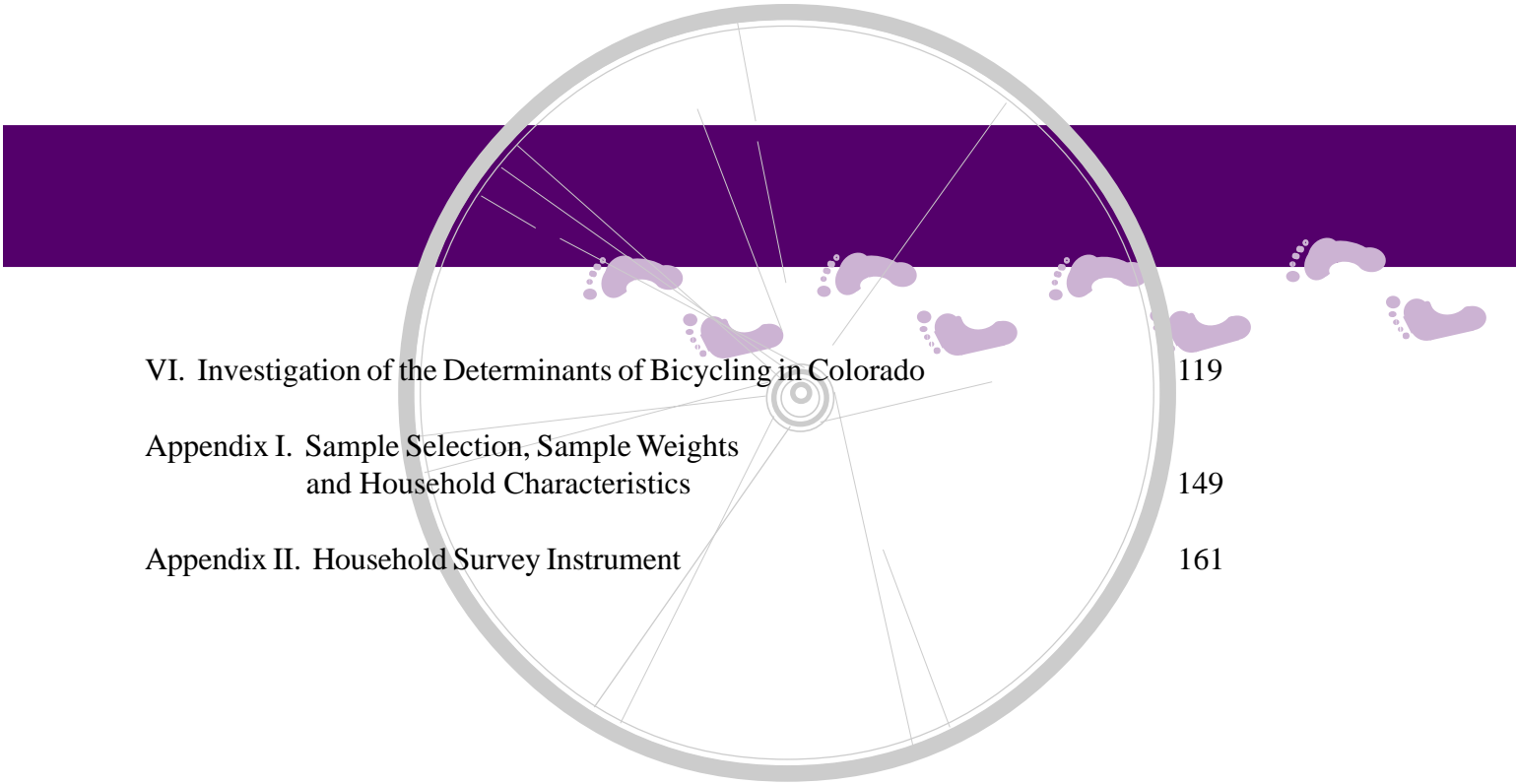
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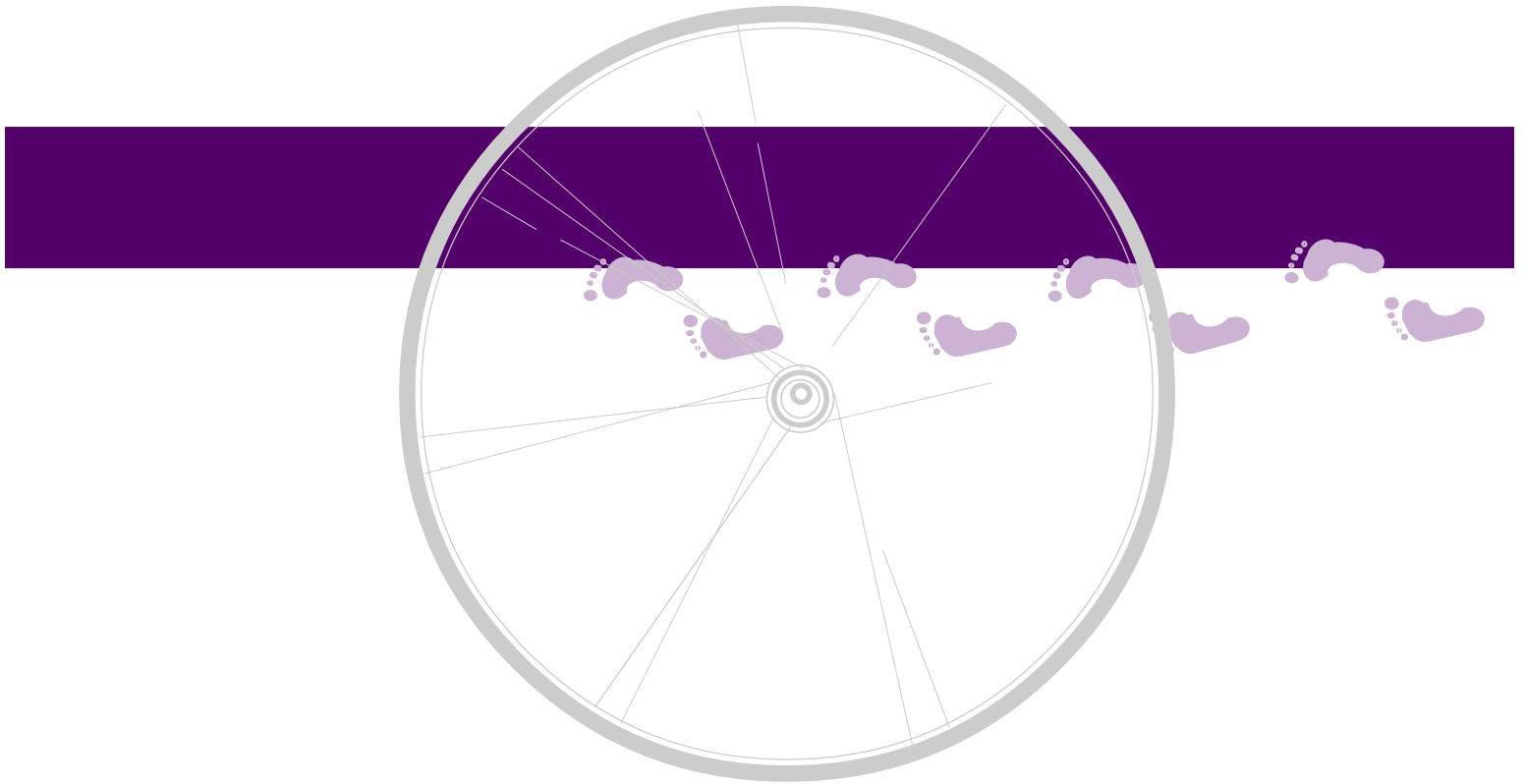
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# INTRODUCTION



This report provides statistical information regarding the economic impact of bicycling in Colorado, and documents bicycling behaviors and attitudes of residents of Colorado. This information can be used to inform policymakers of the importance of bicycling both economically and as a mode of transportation and means of recreation for Colorado residents. Analysis of these data can also provide insight into the factors that prevent Coloradoans from bicycling, and improvements that can be made to facilitate bicycling as a means of transportation.

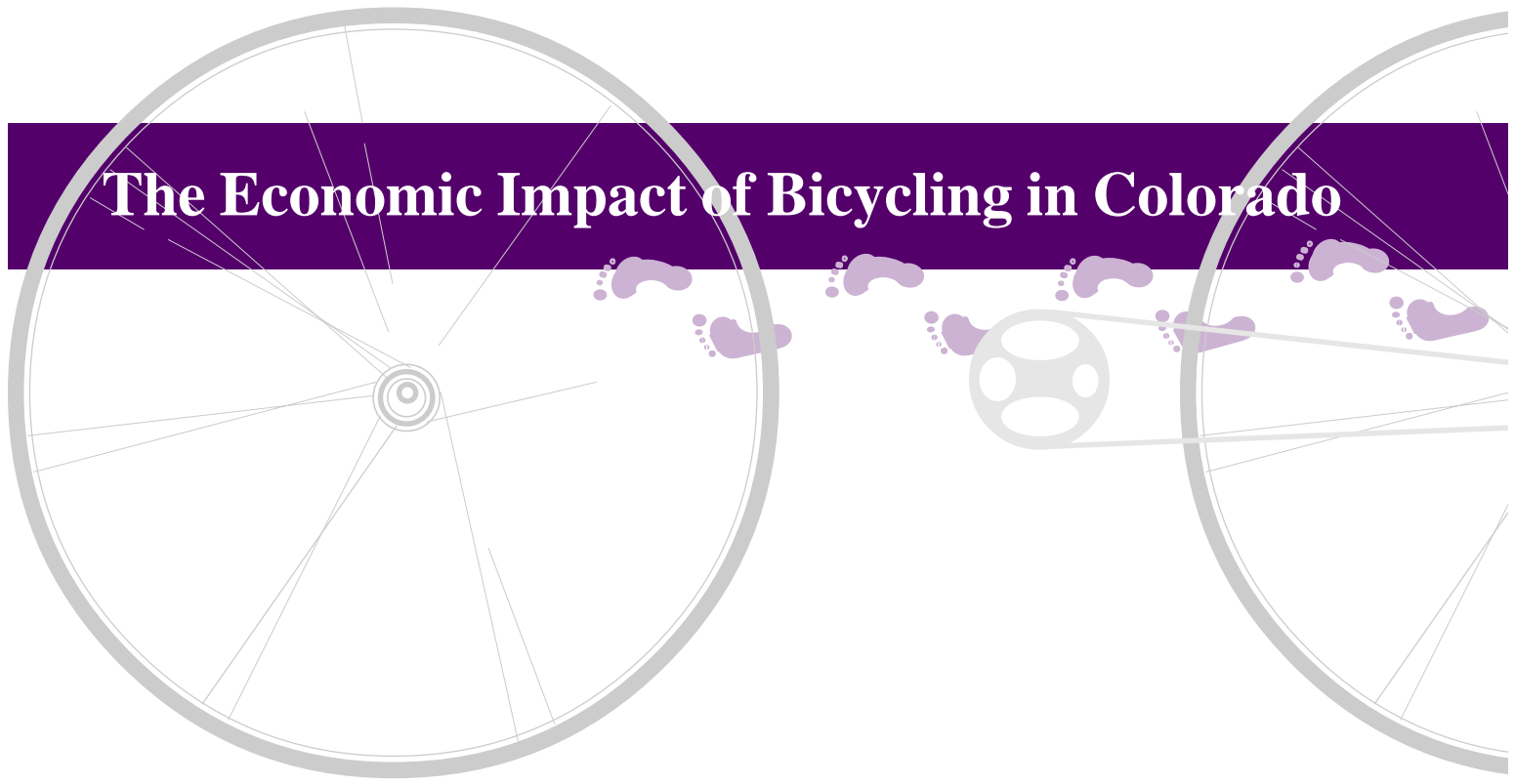
Beginning in the Fall 1998, the Colorado Department of Transportation (CDOT) contracted with the Center for Research in Economic and Social Policy (CRESP) at the University of Colorado – Denver, to conduct phone and mail surveys of bicycle manufacturers, retail bicycle shops, and ski resort operators in Colorado. This information is used to summarize the impact of bicycling on the Colorado economy in the form of production, sales, jobs, income and tax revenue. In March 1999, CDOT and CRESP sent nearly 40,000 surveys to randomly selected Colorado households (see Appendix I of the technical report for details regarding sample selection and weighting procedures). The nearly 6,000 completed surveys provide a wide range of information regarding bicycling behavior, attitudes and preferences. (The survey instrument is included as Appendix II of the technical report.)

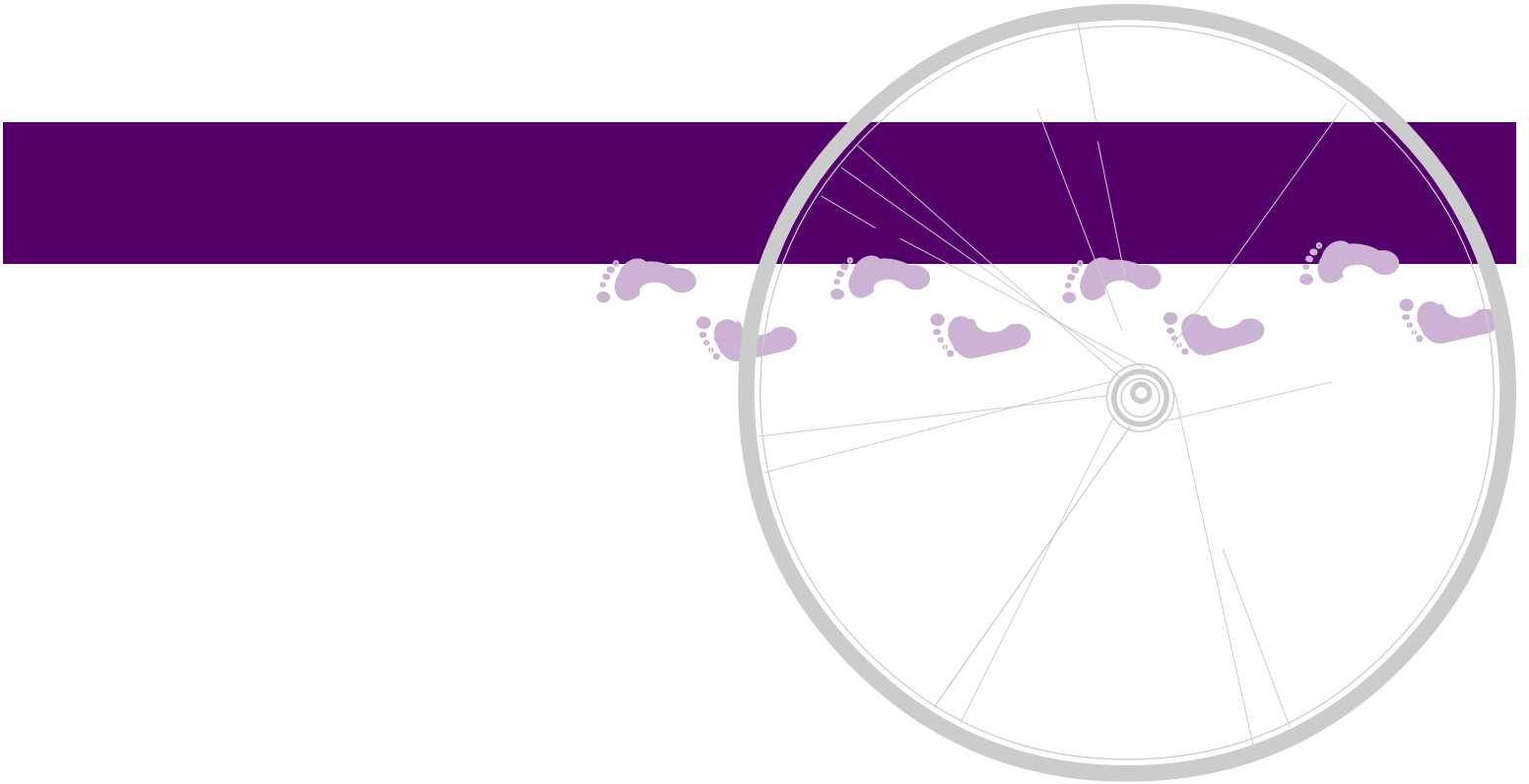


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# The Economic Impact of Bicycling in Colorado







## I. Bicycle-Related Manufacturing in Colorado

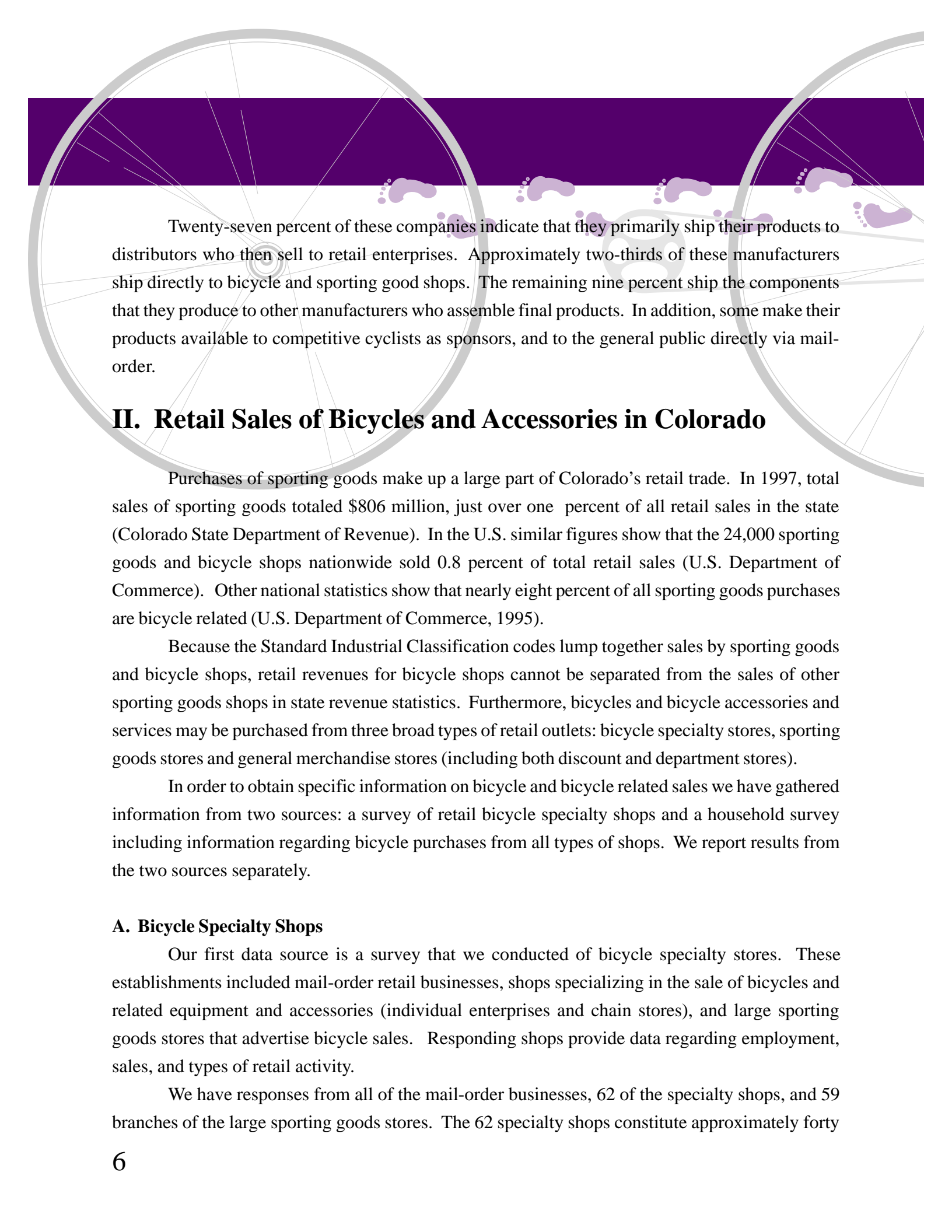
This section summarizes the economic impact of bicycle-related manufacturing and assembling activities of companies located in Colorado. Nearly thirty companies engage in the manufacturing or assembly of bicycles or bicycle-related accessories and clothing. Some of the companies operate exclusively in Colorado; some are branches of organizations that are headquartered elsewhere. We surveyed owners or managers of the six largest manufacturers and forty percent of the remaining companies (eight). Estimates of total statewide employment, payroll and revenue are constructed from these data.

### A. Manufacturing Survey Results

The companies that were surveyed had been located in Colorado on average just over 8 years. The oldest companies had been in the state for 12 years. The reasons that respondents gave for choosing Colorado as the location for their company fell into two categories. Fifty-eight percent indicated that their company had located in the state because the owners were already Colorado residents. The remaining 42 percent stated that it was the characteristics of the community that prompted their decision. These respondents cited “the proximity to bicycle customers,” “the great cycling community” and the “athletic lifestyle” of Colorado residents as the primary reasons for their location decision. In fact one company representative indicated that the decision to relocate its corporate headquarters from another state was made specifically because of the image of Colorado as a cycling community.

Bicycle product manufacturing companies in Colorado report total annual revenue of \$822.5 million. Although 45 percent of these companies produce other products in addition to bicycles (typically other sporting equipment or clothing), \$762.7 million, or 93 percent of the total revenues are attributed to the production and distribution of bicycles and bicycle-related products.

In total, the bicycle-related manufacturing and assembling companies employed 552 full-time-equivalent employees at their Colorado sites. The annual payroll for these employees totals \$19.5 million. The average annual pay per full-time equivalent (FTE) job is \$35,326, although this figure is difficult to interpret since the employees include both assemblers and management (and perhaps owners). Since 93 percent of total revenues are attributable to bicycle activities, the production and distribution of bicycles in the state adds 513 FTE jobs and a payroll of \$18.1 million to the state economy.



Twenty-seven percent of these companies indicate that they primarily ship their products to distributors who then sell to retail enterprises. Approximately two-thirds of these manufacturers ship directly to bicycle and sporting good shops. The remaining nine percent ship the components that they produce to other manufacturers who assemble final products. In addition, some make their products available to competitive cyclists as sponsors, and to the general public directly via mail-order.

## **II. Retail Sales of Bicycles and Accessories in Colorado**

Purchases of sporting goods make up a large part of Colorado's retail trade. In 1997, total sales of sporting goods totaled \$806 million, just over one percent of all retail sales in the state (Colorado State Department of Revenue). In the U.S. similar figures show that the 24,000 sporting goods and bicycle shops nationwide sold 0.8 percent of total retail sales (U.S. Department of Commerce). Other national statistics show that nearly eight percent of all sporting goods purchases are bicycle related (U.S. Department of Commerce, 1995).

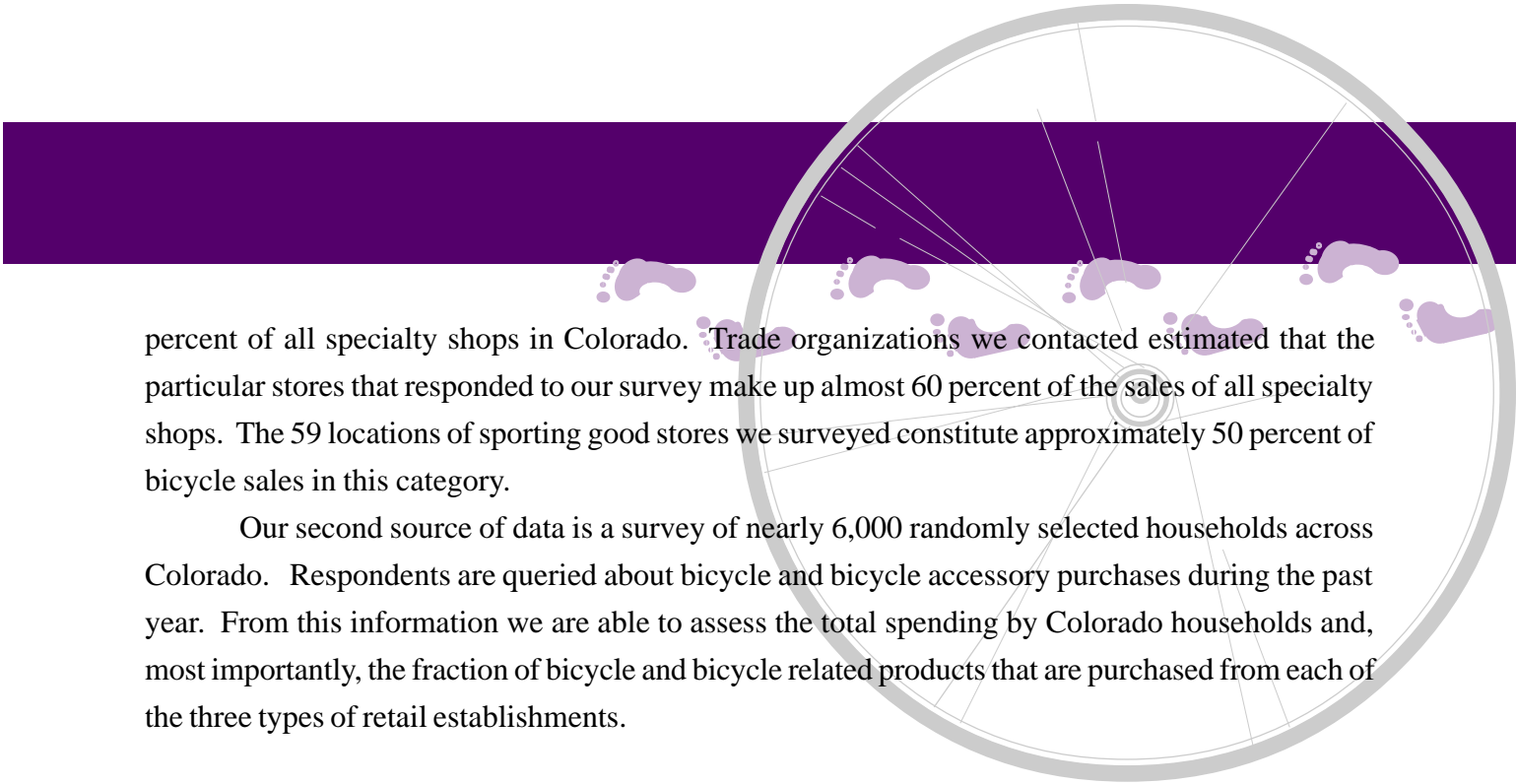
Because the Standard Industrial Classification codes lump together sales by sporting goods and bicycle shops, retail revenues for bicycle shops cannot be separated from the sales of other sporting goods shops in state revenue statistics. Furthermore, bicycles and bicycle accessories and services may be purchased from three broad types of retail outlets: bicycle specialty stores, sporting goods stores and general merchandise stores (including both discount and department stores).

In order to obtain specific information on bicycle and bicycle related sales we have gathered information from two sources: a survey of retail bicycle specialty shops and a household survey including information regarding bicycle purchases from all types of shops. We report results from the two sources separately.

### **A. Bicycle Specialty Shops**

Our first data source is a survey that we conducted of bicycle specialty stores. These establishments included mail-order retail businesses, shops specializing in the sale of bicycles and related equipment and accessories (individual enterprises and chain stores), and large sporting goods stores that advertise bicycle sales. Responding shops provide data regarding employment, sales, and types of retail activity.

We have responses from all of the mail-order businesses, 62 of the specialty shops, and 59 branches of the large sporting goods stores. The 62 specialty shops constitute approximately forty



percent of all specialty shops in Colorado. Trade organizations we contacted estimated that the particular stores that responded to our survey make up almost 60 percent of the sales of all specialty shops. The 59 locations of sporting good stores we surveyed constitute approximately 50 percent of bicycle sales in this category.

Our second source of data is a survey of nearly 6,000 randomly selected households across Colorado. Respondents are queried about bicycle and bicycle accessory purchases during the past year. From this information we are able to assess the total spending by Colorado households and, most importantly, the fraction of bicycle and bicycle related products that are purchased from each of the three types of retail establishments.

### **Bicycle Specialty Shops in Colorado**

Retail bicycle outlets in Colorado engage in a variety of activities, from selling bicycles and bicycling equipment to repairing and renting bicycles to selling other types of sporting goods. All of the mail order businesses sell bicycles, accessories and repair bicycles, but do not sell other sporting goods, and do not rent bicycles. The large sporting goods stores engage in all these activities, but not in every location. The proportion of specialty bicycle shops engaging in the various activities is listed below:

**Table 1 Type of Retail Activities Among Bicycle Specialty Shops**

| Retail Activity                             | Percent of Stores |
|---|-------------------|
| Selling New Bicycles                        | 96.8              |
| Selling Bicycle Accessories and/or Clothing | 100.0             |
| Repairing Bicycles                          | 98.4              |
| Renting Bicycles                            | 40.3              |
| Selling Non-Bicycle Sporting Goods          | 75.8              |

As Table 1 demonstrates, all specialty retail stores sell bicycle accessories. Ninety-seven percent sell new bicycles and 98 percent provide repair services. Forty percent provide rental bicycles for customers and just over three-quarters sell other types of sporting equipment.

Despite the fact that the majority of retail bicycle businesses sell other types of sporting equipment, bicycle revenue (all retail categories except “non-bicycle” sporting goods) accounts for most of their total revenue. The bicycle-related share of total revenues varies by type of shop and

location. Shops located in resort areas often combine bicycle retail activity in the summer with ski retail activity in the winter. General sporting goods shops and shops in mountain resort locations reported large fractions of their revenues came from non bicycle-related sources. Table 2 summarizes the proportion of revenues gained from bicycle accessory and bicycle sales and services by type of business.

**Table 2 Percent of Revenue from Bicycle Sales by Type of Specialty Shop**

| Type of Specialty Shop            | Percent of Revenue from Bicycle-Related Products |
|-----------------------------------|--|
| Mail Order Bicycle Retailers      | 100  |
| General Sporting Good Stores      | 7  |
| Bicycle Specialty Shops           | 83   |
| Bicycle Shops in Mountain Resorts | 67   |
| Bicycle Shops                     | 97   |
| Bicycle and Ski Shops             | 32   |

Since only a fraction of most stores' activities can be attributed to bicycles and bicycle related items, we calculate revenue, employment and payroll measures by adjusting each shop's report by the fraction of total sales that are bicycle related.

### **Sales and Revenue at Bicycle Specialty Shops**

In this section we estimate total bicycle related retail activity in the state by adding activity from mail-order shops and the prorated estimates of retail activity and employment by specialty shops.<sup>1</sup> The total 1998 revenue of all mail order and bicycle specialty shops in Colorado was \$90 million. Deducting sales of non-bicycle-related products, we obtain an estimate of total annual bicycle-related revenues of \$80 million.

Of this total, \$1 million resulted from 33,000 days of bicycle rental. This implies that the average rental price was \$32 per day. The remaining revenue is generated from the sale and repair of bicycles, and the sale of bicycle-related goods. Specialty bicycle shops and mail order outlets in Colorado sold approximately 50,000 bicycles in 1998.

<sup>1</sup>We multiply our survey totals by a factor of 1.67 to reflect statewide industry totals. The general sporting goods shops meeting our survey criteria are combined with household survey responses and included in the sporting goods section below.



## **Employment at Bicycle Specialty Shops**

Shops in our survey provided information regarding the amount of full-time and part-time employment for both the summer and winter seasons.<sup>2</sup> These retail shops also indicated the proportion of all revenue from bicycle-related products, which is used to prorate total employment to reflect the portion of all employment that is due to bicycle-related retail activity. This calculation indicates that 448 full-time equivalent (FTE) workers are employed as a result of bicycle-related retail sales at these shops. The total payroll for these workers is \$11 million. This suggests that the average full time worker in retail bicycle sales earns just over \$25,000 annually.

## **B. Retail Sales of Bicycles From Other Retail Outlets**

We conducted a survey of nearly 6,000 randomly selected Colorado households. Respondents were queried about their purchases of bicycles, bicycle accessories and expenditures on repairs during the last 12 months. Results indicate that expenditures by Colorado households totaled just over \$200 million dollars statewide. Of this total, \$120 million was spent on the purchase of bicycles, nearly \$25 million was reportedly spent on repair and maintenance, and the remaining \$55 million was spent on bicycling accessories.

Respondents were asked to indicate the source of their bicycle purchases from among the following options: general sporting goods stores and bicycle specialty shops, department stores, discount stores, toy stores, mail order or from friends. Among those who purchased bicycles, Table 3 reports the distribution of bicycle purchases from each source by percentage of bicycles bought and by percentage of dollars spent. The average price of a bicycle purchased from each source is reported in column three.

Coloradoans are most likely to purchase a bicycle from sporting goods and bicycle specialty shops. Nearly half of all bicycles are purchased from these shops. The average price of these bicycles is higher than those purchased from other sources (\$619), therefore sporting goods and bicycle specialty shops account for 79 percent of total expenditures on bicycles. Discount stores and department stores combined sold nearly 30 percent of all bicycles bought by Colorado households, but the average price of bicycles from these outlets is significantly lower (\$95 and \$120 per bicycle, respectively), and as a result they received only 8 percent of the total dollars spent on bicycles. Small proportions of bicycles are purchased from toy stores (9 percent of bicycles sold, 2 percent of expenditures) and mail order sources (1 percent of bicycles representing 3.5 percent of expenditures).

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<sup>2</sup>For our calculations, we assume that two part-time employees are the equivalent of one full-time employee, and that summer employment levels are maintained for four months of the year and winter employment levels are maintained the remaining eight months.

Five percent of bicycles are purchased from friends, at an average price of \$172 per bicycle (not including any bicycles received from a friend at no cost). The remaining 4 percent of bicycles were purchased from other sources including more informal purchases such as from classified advertisements, garage sales, and second-hand stores.

**Table 3 Distribution of Bicycle Purchases by Type of Retail Outlet**

| Type of Retail Outlet                                  | Fraction of Bicycles Sold | Fraction of Bicycle Expenditures | Average Bicycle Price |
|--|---------------------------|----------------------------------|-----------------------|
| General Sporting Good Store/<br>Bicycle Specialty Shop | 49.8%                     | 79.0%                            | \$619                 |
| Discount Store   | 16.6%                     | 4.0%                             | \$95                  |
| Department Store                                       | 13.2%                     | 4.1%                             | \$120                 |
| Toy Store  | 9.4%                      | 1.9%                             | \$79                  |
| Mail Order   | 1.4%                      | 3.5%                             | \$987                 |
| Friend   | 5.3%                      | 2.3%                             | \$172                 |
| Other  | 4.4%                      | 5.1%                             | \$448                 |

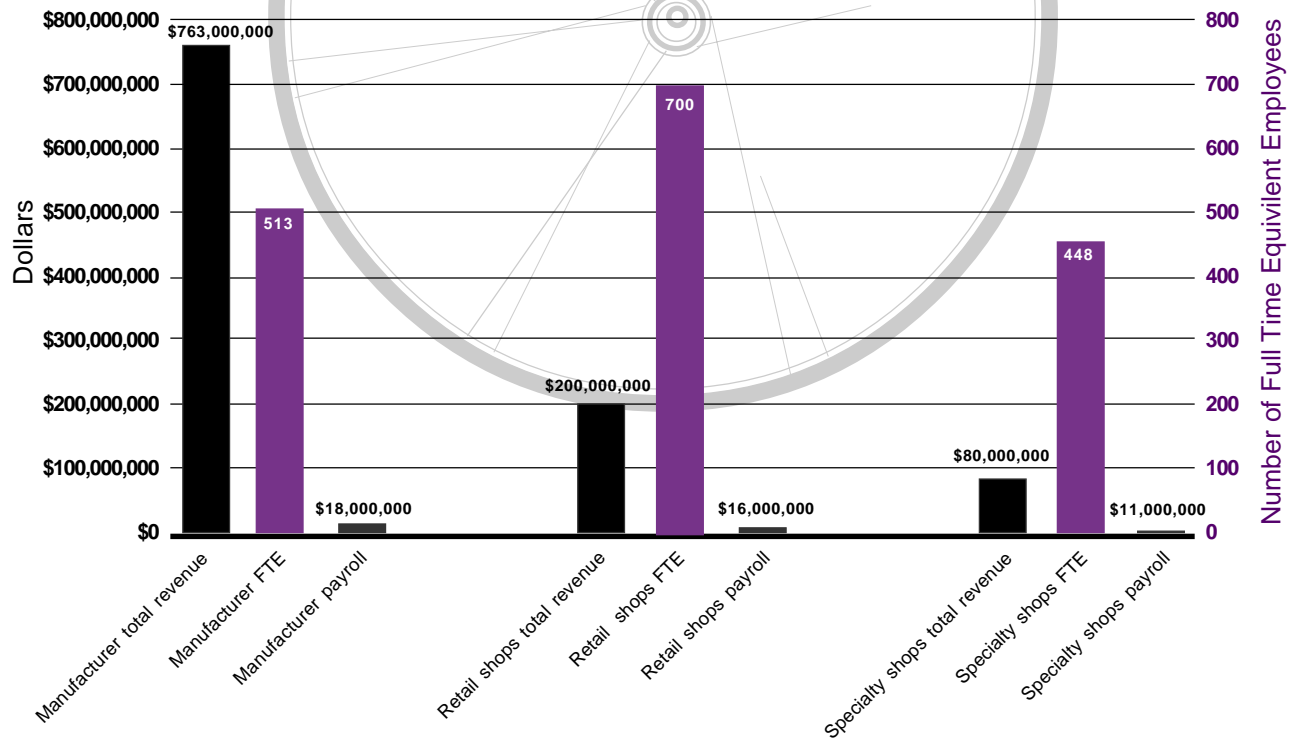
These expenditures contribute to the Colorado economy by creating jobs and income. We assume that expenditures at stores other than bicycle specialty shops generate employment at the average rate for all retail shops in Colorado. Given this, we estimate that the \$200 million of bicycle-related retail and product sales generates 700 FTE jobs with an annual payroll of \$16 million.

### **Summary of the Economic Impact of Bicycle Manufacturing and Retail Sales**

Figure 1 summarizes the annual revenue, and employment and payroll from the manufacturing and retail sales of bicycles and bicycle-related products in Colorado. Bicycle manufacturers in Colorado report \$763 million in revenue and employ 513 FTE at a payroll of \$18 million. Total retail sales in the state are \$200 million annually, supporting the employment of 700 FTE earning \$16 million. Of this total, bicycle specialty shops account for \$80 million in revenue, 448 FTE and \$11 million in payroll. \$200 million in retail bicycle sales is slightly higher than the total retail sales of motorcycles in Colorado, and about 20% less than total retail sales of recreational vehicles in the state.



**Figure 1. Economic Impact of Bicycle Manufacturing and Retail Sales**




### III. Bicycle-Related Tourism

Tourism is an important industry in Colorado and outdoor activities play an important role in choosing Colorado as a tourism destination. In this section we detail bicycle-related tourism in the ski areas, vacations taken by Colorado residents, and the activities of companies that conduct bicycle tours in Colorado.

#### A. The Economic Impact of Bicycling in Colorado Ski Resorts

The ski areas have become some of the most lucrative tourist attractions in the state, accounting for over one-third of overnight tourist spending in Colorado (Longwoods, 1998). To accommodate the visitors generated by this sport, many mountain areas in Colorado have invested in ski lifts, mountain maintenance, lodging, restaurants, and facilities for entertainment and other visitor activities. Heavily utilized during the ski season, these facilities were unused or underused in warm-weather months; and many resort towns have responded by promoting summer activities. Currently, a wide range of activities is available in the high country. Visitors can fish and kayak in the rivers, play golf



and tennis, take a ride in a hot-air balloon, and attend rodeos and music festivals in addition to mountain biking. A report available from Colorado Ski Country U.S.A. identifies the summer recreational activities provided in many of Colorado's resort towns. As the most frequently mentioned recreational activity available (along with fishing and golfing), ninety percent of the resorts surveyed by Colorado Ski Country U.S.A. indicated that visitors could engage in mountain biking in the summer. However, retail facilities are not always available to support these activities. The same report indicates that there are no bicycle rental shops in 20 percent of the resorts and only slightly over half of the resorts allow bicycles on their lifts.

In this section we detail the impact of bicycling activities on the economic circumstances of ski resorts in Colorado during the 1998 summer season. To gather this information we conducted phone interviews with the Chambers of Commerce, visitor centers and resort management personnel at thirteen major ski resorts in Colorado. In addition, we conducted a survey of retail shops in these resort towns. To ensure confidentiality of responding resorts, we report only summary statistics regarding the length of the bicycling season, total summer visitors, number of visitors who specifically engaged in bicycling during their visit, bicycle rental activity and revenue generated by bicycles on the ski lifts, employment related to bicycling, advertising to promote bicycling in these resorts and summer bicycling events.

The "summer season" in these resorts typically spans the months from May to October. The length of the bicycling season varies, however, since wet soil conditions prohibit the use of bicycles on mountain trails. Most resorts report a bicycling season of 100 - 120 days. Of the thirteen resorts that we surveyed regarding summer bicycle activity, nine run their ski lifts in the summer and allow bicycles on the lifts for use on the mountains.<sup>3</sup> These nine resorts actively maintain trails on the mountains and some make rental bikes available at the lifts and with hotel packages. In addition, the resorts that encourage bicycling devote employee time and financial resources to advertise this recreational opportunity both within Colorado and in other states and countries. The following estimates are reported for the nine resort towns we surveyed that actively promote bicycling. Additional estimates of informal mountain bike riding among state residents will be incorporated from the household survey.

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<sup>3</sup>Two resorts indicated that they could not allow bikes on the mountain during summer 1998 because of necessary maintenance work to improve the bicycling trails. Because they had engaged in the promotion of summer bicycling in the past and are expanding for the future, we included information averaged from their 1996 and 1997 summer seasons in our summary statistics.



## Summer Tourism and Visitor Expenditures

**All Tourists.** The resort towns report a total of 1.38 million tourists visiting during the summer season.<sup>4</sup> Those resorts that could distinguish in-state from out-of-state visitors report a surprisingly consistent estimate that 70 percent of all visitors at these resort towns are from out-of-state. The individual percentages vary from 68 percent to 72 percent.<sup>5</sup>

**Tourists Engaged in Bicycling.** Based on estimates by resort personnel and visitor surveys conducted at some resorts, approximately 699,000 of these visitors engaged in biking during their resort vacation. In other words, just over 50 percent of all summer visitors to Colorado ski resorts that promoted bicycling participated in bicycling activities.

In order to assess the economic impact of these visitors in terms of spending, one must know the percentage of tourists who stay overnight versus those that visit for one day only. Data compiled from resorts on the breakdown of overnight and day visitors indicate that 419,000 of these visitors stayed overnight, and the remaining 280,000 were day visitors. The total number of nights spent at resorts by those engaged in bicycling is 955,400. The typical number of nights spent by overnight visitors varied from 2 nights on average at some resorts to nearly 5 nights at others.

These visitors contribute to the resort economies by their spending on lodging, meals and a variety of shopping and entertainment purchases. In order to capture this spending we employ estimates of average tourist expenditures in Colorado. We use information from two sources that allow us to calculate lower-bound and upper-bound estimates of tourist spending by those who participate in bicycling in these resorts.

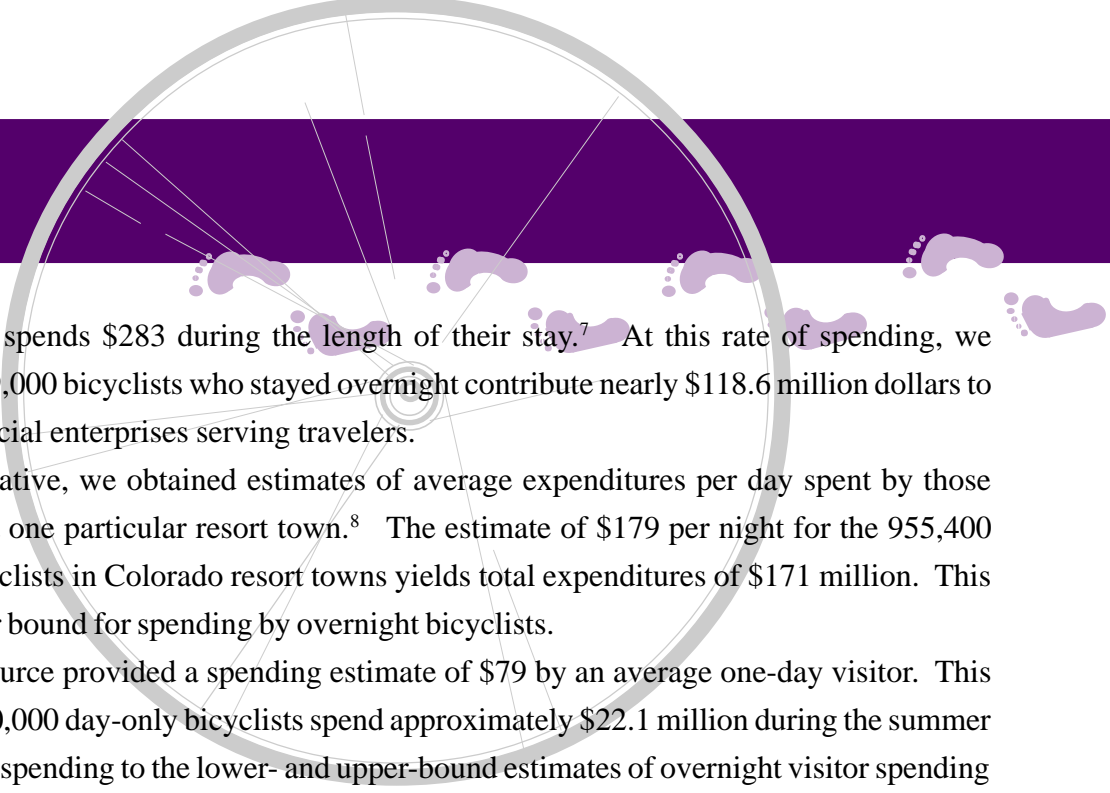
The lower-bound calculation of spending by overnight visitors to Colorado is obtained from two reports prepared for the state of Colorado, which indicate that in 1997, 25.1 million overnight visitors to Colorado spent an estimated \$7.1 billion during their trip.<sup>6</sup> On average, an overnight

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<sup>4</sup>This is an underestimate because many of the respondents relied heavily on occupancy information obtained from hotels and other rental accommodations.

<sup>5</sup>The estimates of out-of-state visitors come from our surveys of individuals at the resorts who have collected this information, and in one case from a study that was conducted for the Aspen Resort Chamber by Leisure Trends Group (February, 1998).

<sup>6</sup> Travel and Tourism in Colorado: A Report on the 1997 Travel Year is a report prepared for the Colorado Tourism Board and the Colorado Travel and Tourism Authority by Longwoods International. Colorado Travel Impacts: 1997 was prepared by Dean Runyan and Associates, 1998.



visitor in Colorado spends \$283 during the length of their stay.<sup>7</sup> At this rate of spending, we estimate that the 419,000 bicyclists who stayed overnight contribute nearly \$118.6 million dollars to the various commercial enterprises serving travelers.

As an alternative, we obtained estimates of average expenditures per day spent by those staying overnight at one particular resort town.<sup>8</sup> The estimate of \$179 per night for the 955,400 nights spent by bicyclists in Colorado resort towns yields total expenditures of \$171 million. This represents our upper bound for spending by overnight bicyclists.

The same source provided a spending estimate of \$79 by an average one-day visitor. This suggests that the 280,000 day-only bicyclists spend approximately \$22.1 million during the summer season. Adding this spending to the lower- and upper-bound estimates of overnight visitor spending suggests that bicycling tourists spend between \$140.7 million and \$193.1 million at Colorado resorts.

**Tourists in Resorts Primarily Because of Bicycling.** To assess the magnitude of the revenues created solely by the availability of biking, one must calculate the number of tourists who would not have visited Colorado mountain resorts, if there were no bicycling opportunities. A survey of tourism in Aspen and a separate survey of tourism state-wide both indicate that golfing and mountain bicycling are of equal importance to visitors of Colorado.<sup>9</sup> Furthermore, 20 percent of visitors to Aspen indicated that outdoor activities were the primary reason for their trip. An additional 24 percent stated that the opportunities for outdoor activities were very important in their choice of destination. A survey of tourists in Winter Park indicated that 25 percent of visitors stated that mountain biking was the primary reason for their visit.<sup>10</sup> We estimate that approximately 276,400 of these visitors would have altered their vacation decisions, were bicycling not available.

Of the 276,400 tourists coming to resorts primarily for bicycling, our survey results suggest that 110,700 visitors bicycled at the resorts for one day only and the remaining 165,700 stayed

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<sup>7</sup>This estimate reflects an average of those staying in hotels and other commercial lodging and those staying with relatives or in campgrounds. This estimate also includes individuals staying overnight in Colorado on business, but predominantly reflects expenditures by vacationers. We expect that expenditures are higher for those staying in mountain resorts, but rather than make an adjustment to this average, we use it as our lower-bound estimate.

<sup>8</sup>This resort conducted an extensive survey of its visitors. Their estimate, which is used here as our upper bound, is more heavily weighted toward those staying in commercial hotels and hence represents an upper-bound estimate.

<sup>9</sup>Leisure Trends Group, 1998. Aspen Chamber Resort Association Summer Visitor Study.

<sup>10</sup>Hill and Tashiro Marketing and Advertising Inc., 1998. Grand County Tourism Board Lodging Research: Occupancy and Average Daily Rate 1992-1997.



overnight a total of 377,500 nights. Using the spending averages detailed above, these visitors spent between \$55.6 million and \$76.3 million at Colorado resorts.

**Tourist Summary.** In summary, we identify 699,000 visitors who traveled to Colorado mountain resorts in 1998 and participated in bicycling activities. Approximately 70 percent of these bicyclists came to resort towns from out-of-state. Tourists who engaged in bicycling during their vacation at a Colorado resort spent between \$141 and \$193 million dollars. Of the 699,000 who bicycled during their stay, 276,400 were attracted primarily by the availability of bicycling. Our estimates of the total vacation expenditures by these bicyclists range from nearly \$56 million dollars to just over \$76 million dollars. These estimates reflect direct expenditures only and are underestimates of the true economic impact to the degree that direct expenditures have multiplier effects.<sup>11</sup>

### **Bicycle-Related Employment**

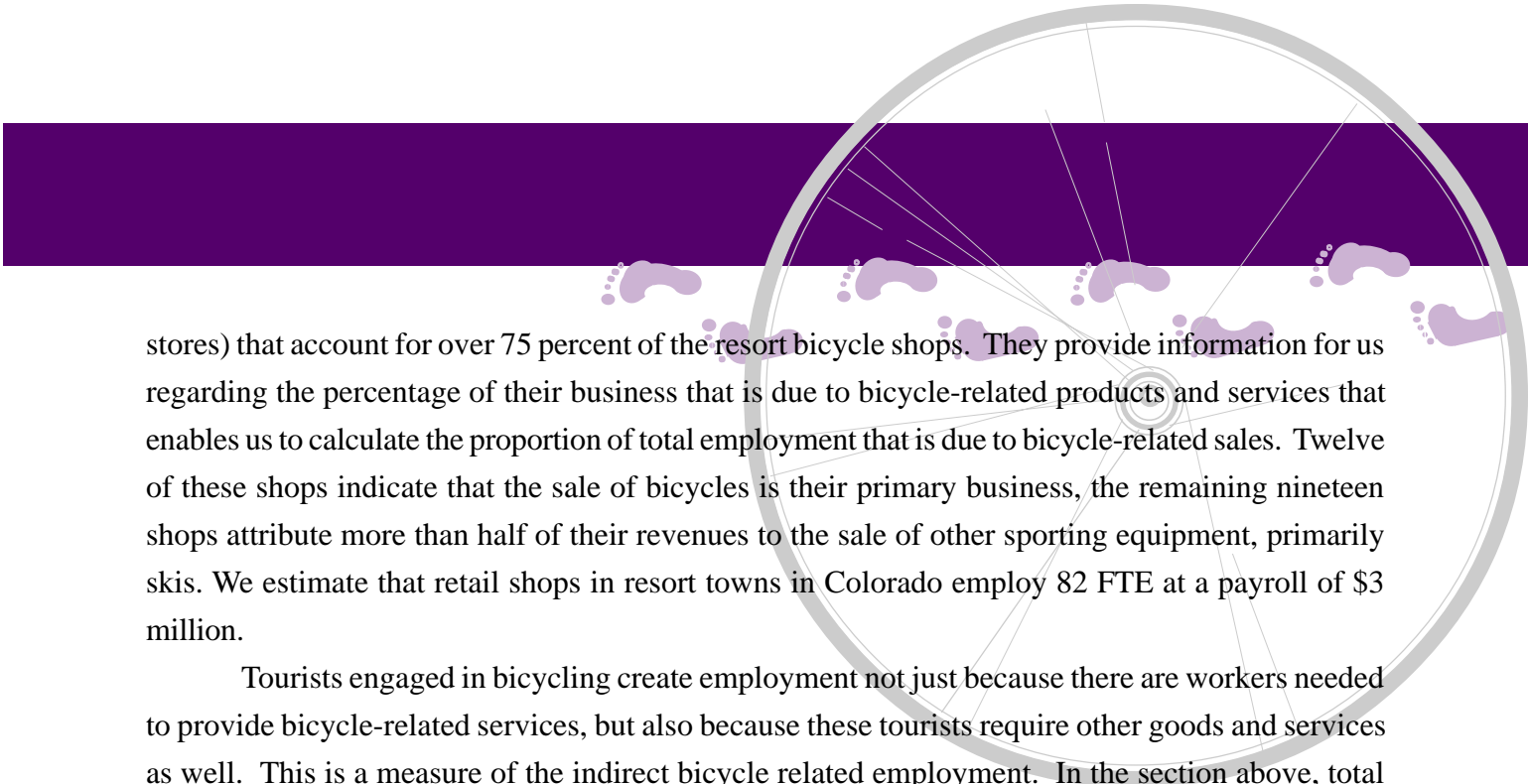
The presence of bicycling in resort towns in Colorado creates job opportunities for Colorado residents. These jobs can be grouped into two categories: direct bicycle-related employment and indirect bicycle-related employment. Direct bicycle-related employment consists of those individuals who provide bicycle rental, sales and repairs, those who operate the lifts for bicycle riders, those who are employed to organize bicycle events, and those who are employed to deal directly in other ways with bicycle riders in resort towns. Responses from resort ownership, chambers of commerce, event organizers and retail bicycle establishments provide the employment and payroll information summarized here.<sup>12</sup> The nine resorts reporting bicycle activity indicate that 65 full-time summer employees (21.6 full-year FTE) are engaged in providing direct bicycle-related services to visitors. Payroll for these employees during the summer season when they provide these services is \$531,000. Therefore, on average, each full-time-equivalent employee is paid \$8,200 for his/her work during the summer season. Many of these workers are part-time employees who also work at the resort during ski season. Some are full-time salaried employees whose time spent on bicycling is calculated as a pro-rated portion of their annual salary.

Retail bicycle shops located in the resorts also provide direct bicycle-related employment. We surveyed 31 shops in the resort areas (both specialty shops and locations of chain sporting goods

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<sup>11</sup>We do not attempt to estimate the impact that these expenditures have on the spending of resort residents whose income is increased through these expenditures. We do, however, acknowledge that these tourist expenditures create job opportunities for Colorado residents in resort towns. This issue is addressed in our employment estimates.

<sup>12</sup>Again, these are underestimates of direct bicycle-related employment and payroll effects because the retail shop and event sponsor interviews are incomplete.



stores) that account for over 75 percent of the resort bicycle shops. They provide information for us regarding the percentage of their business that is due to bicycle-related products and services that enables us to calculate the proportion of total employment that is due to bicycle-related sales. Twelve of these shops indicate that the sale of bicycles is their primary business, the remaining nineteen shops attribute more than half of their revenues to the sale of other sporting equipment, primarily skis. We estimate that retail shops in resort towns in Colorado employ 82 FTE at a payroll of \$3 million.

Tourists engaged in bicycling create employment not just because there are workers needed to provide bicycle-related services, but also because these tourists require other goods and services as well. This is a measure of the indirect bicycle related employment. In the section above, total spending by tourists engaged in bicycling was estimated to fall between \$141 million and \$193 million each summer. To convert these expenditures into indirect-bicycle-related employment, we rely on estimates of the employment created by tourism expenditures reported in *Colorado Travel Impacts* (Dean Runyan Associates, 1998). They estimate that each \$100,000 of visitor expenditures at Colorado mountain resorts create \$23,600 of income for 1.49 full-year employees.

The midpoint of the lower- and upper-bound expenditure estimates is \$167 million. Using the employment and payroll multipliers above, these expenditures would support the employment of 2,488 year round or 7,465 summer-only workers earning a total of approximately \$39.4 million.

### **Bicycle Rentals, Sales and Lift Activities**

Nine of the thirteen responding resort locations provided visitors with bicycles access to lifts running during the summer season.<sup>13</sup> These resorts constructed and maintained trails, and operated the lifts during the summer season. All but one of these nine resorts also had rental bicycles available on the mountain or in town. Resorts that reported lift operations indicated that the lifts typically ran 80-100 days during the summer season. Access to the mountain, especially for bicycle riders was restricted when wet soil caused an increase risk of trail damage or poor riding conditions.

Prices for lift tickets varied, from the two resorts offering rides up the mountain (with or without a bicycle) at no charge, to the highest priced summer lift ticket of \$11. Among those that charged, the average ticket price was \$8. Totals for the six resort areas that provided information on lift activity indicate that 98,000 bicycle riders rode the lifts and rode their bikes on the mountains. Lift ticket sales for these riders generated \$637,070 in revenue for those who charged.

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<sup>13</sup>These numbers include one resort that indicated that its lift ran only a couple of times during the entire summer by arrangement with groups of riders.





## **Bicycle Advertising by Ski Resorts**

Most of the resorts have recognized the importance of encouraging summer visitors and have large advertising budgets to attract these tourists. Estimates of total advertising expenditures to promote the availability of recreational and competitive bicycling opportunities at the ski resorts have been obtained through interviews with personnel from the resort ownership, Chambers of Commerce and event sponsors. Responses were obtained from seven of the nine resorts that provide organized bicycling opportunities.<sup>14</sup> Total expenditures on advertising that specifically promoted bicycling were \$316,000 for the 1998 summer season. Average spending on the promotion of bicycling per resort is slightly less than \$40,000 per summer season. This includes one resort that reported no expenditures in 1998 but indicated that they were developing a campaign and budget for future years.

These expenditures included the purchase of radio, television and print advertising both within and outside of Colorado. Obviously most of this advertising did not feature bicycling exclusively, but the estimates were prorated to reflect the importance of bicycling as part of the advertisement. Other projects included the printing of maps and brochures highlighting trails and lift availability.

## **Ski Area Summary**


Providing tourists with opportunities for bicycling in the Colorado high country generates revenues for ski resorts and towns and creates jobs and income for Colorado mountain residents. Our current estimates suggest that 699,000 people visit resort towns and engage in bicycling during their stay. Slightly over half of these, 276,400, visited a resort for the primary purpose of bicycling. Seventy-percent of these tourists come from out-of-state and, on average, 60 percent of all visitors stay one or more nights at these resorts.

To encourage tourists, many resorts actively promoted the bicycling opportunities available during their summer seasons. Expenditures made by resorts and chambers of commerce for advertising and informational materials devoted to bicycling totaled \$316,000 for the 1998 summer season.

These activities create employment at the firms engaged in the direct provision of bicycle-related goods and services in the resort towns. Direct employment estimates indicate that 103 full-time employees worked to promote bicycling at resorts and towns and at retail shops. The total

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<sup>14</sup>These totals are very complete estimates of advertising expenditures to encourage bicycling as a recreational pursuit during vacation, except that two resorts did not provide this information. In addition, some data are as yet unavailable from event sponsors regarding advertising and promotion expenditures for races, camps and events. These numbers will be added in the final report.



payroll for these employees was \$3.5 million. In addition to the employment resulting from the direct provision of bicycling activities, additional employment opportunities are created if bicycling attracts tourists to the area. Expenditures by the 699,000 visitors engaged in bicycling ranged from \$141 million to just over \$193 million last summer. These expenditures created employment at lodging establishments, restaurants, retail shops and other tourist related businesses. On average, nearly 7,500 full-time summer jobs are created by these expenditures, generating nearly \$40 million of income.

Although the degree to which resorts we surveyed actively promote summer bicycling through advertising, scheduling bicycling events, running lifts and maintaining bicycle trails varies substantially among Colorado ski resorts, it is safe to say that the focus on bicycle-related tourism is increasing. Resorts that already actively promote bicycling plan to maintain or increase their expenditures, and many that have not actively pursued the cycling tourists in the past are making plans to begin in the near future.

## **B. Bicycle-Related Vacation Spending by Colorado Residents**

To capture bicycle-related vacation spending in areas other than ski resorts, we surveyed Colorado households to gather information on any vacations they may take (both in-state and outside of Colorado) that are related to bicycling. Nearly 10 percent of Colorado households indicated that they had taken a bicycle-related vacation within Colorado in the past 12 months. Among those households who did, the typical household spent \$360 per vacation. Spending on bicycle-related vacations within Colorado totaled \$48 million dollars over the past 12 months. (It should be noted that these expenditures include those that Coloradoans make on bicycle-related vacations at the ski resorts.)

These vacation expenditures also generate jobs for Colorado employees. Specifically, \$48 million of vacation spending creates 755 FTE jobs for workers who supply goods and services for vacationers. These 755 employees earn approximately \$10 million in income as a result of these expenditures. Some of these are employees in Colorado ski areas and so are also counted in the employment estimates in the previous section.

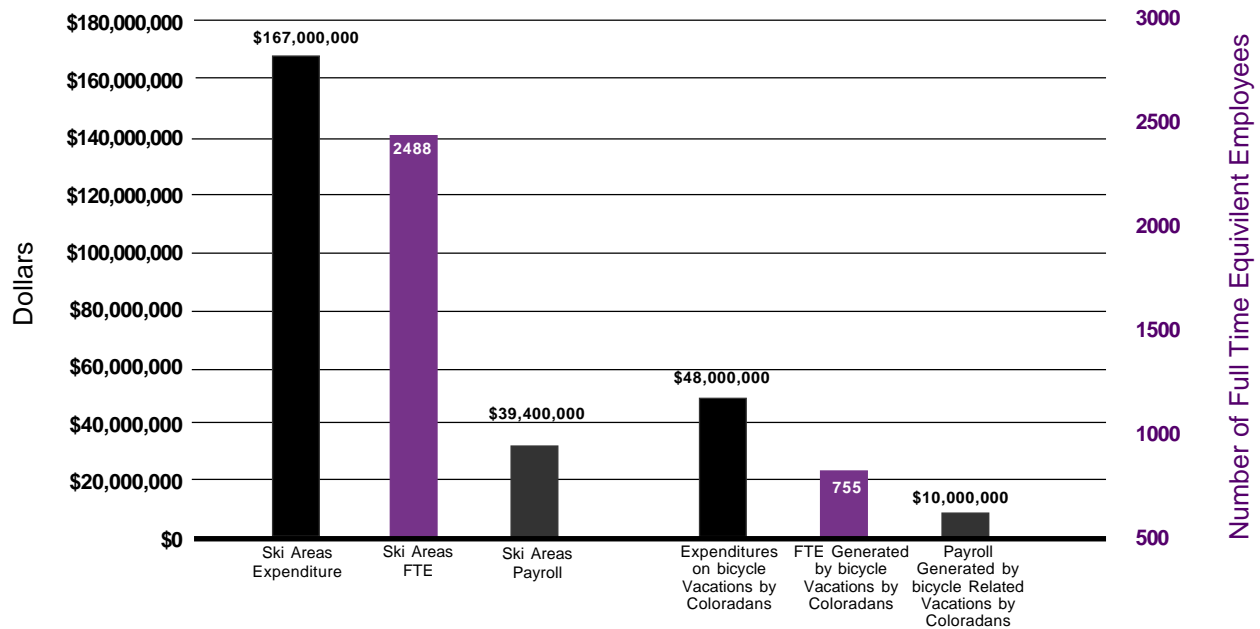
Though not providing a direct impact on the Colorado economy, our survey also provides information on bicycle-related vacations that Colorado residents take outside the state. Just under 5 percent of Colorado households indicated that they had taken an out-of-state bicycle trip and on average spent \$950 per trip.



## Summary: The Economic Impact of Bicycle-Related Vacations

Summer vacationers in Colorado often bike in the high country. Nearly \$167 million is spent by vacationers who bicycle in Colorado ski areas. This spending creates over \$39 million in income for 2,488 FTE employees, both in the retail bicycle or bicycle service industries and in industries that provide general services to tourists. Nearly 70 percent of the visitors to these mountain towns are from out of state. Total vacation spending by Coloradoans is \$48 million per year. This supports 755 FTE at a payroll of \$10 million. There is some bicycle-related tourism that is not included in our calculations. Specifically, out-of-state tourists who bicycle, but do not visit Colorado ski areas are not part of our vacation estimates.

**Figure 2. Economic Impact of Bicycle Related Vacations**



## C. Bicycle Tours in Colorado

We located nearly 20 companies that offer bicycle tour packages in Colorado. The fraction of their business that is devoted to the sale of bicycle tours varies from ten percent to 100 percent. The bicycle tours offered by these companies range in length from 2 hours to ten or more days. In total, 3,400 riders participated in the tours in 1999 accounting for 5,300 tour days. On average, approximately 50 percent of the participants come from out-of-state to bicycle in Colorado. The typical price for a tour was just over \$100 per day. These prices often included meals, lodging, and a guide. Total revenue generated for bicycle tours in Colorado was \$640,000. The employment at these companies that is attributable to biking is about 55 FTE. One of the companies is run largely with volunteers.



## IV. Bicycle Races and Events in Colorado

Bicyclists in Colorado engage in a variety of organized activities from road and track racing to charity and club rides. These events are detailed in this section. The data were gathered from phone interviews with officials from the Bicycle Racing Association of Colorado, the National Off-Road Cycling Association, the Velodrome facility in Colorado Springs, representatives from bicycle clubs in Colorado and the sponsors/organizers of charity and non-charity organized rides.

### A. Road and Track Racing

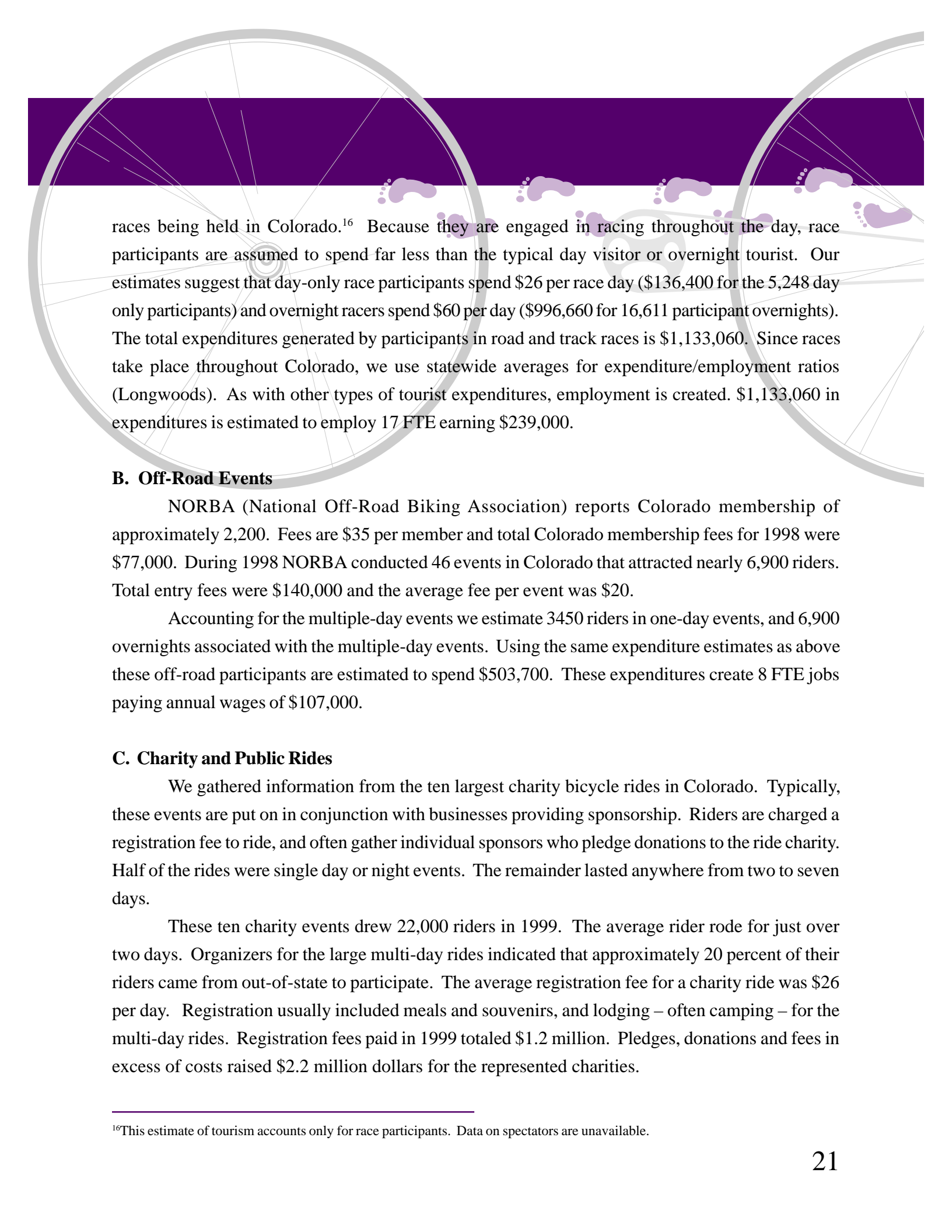
Participants in bicycle road and track races in Colorado are typically members of the United States Cycling Federation (USCF) and the Bicycle Racing Association of Colorado (BRAC). Annual membership in these associations is \$35. There are approximately 2,000 Colorado members, paying a total of \$70,000 in membership fees in 1998. These organizations report 34 road and track races held in Colorado (often jointly sanctioned and cooperatively sponsored in conjunction with the NCAA) during 1998<sup>15</sup>. In total these 34 events took place on 58 days. Ten of these races were multiple-day events, ranging from two to six days in length.

The average number of participants per race-day was 352, ranging from a high of 2,500 to a low of 76, for a total of 11,969 riders. 5,248 riders rode in the single-day events, and 6,721 riders rode in multiple day events. Entry fees for these events ranged from \$10 to \$75 depending on the event. The average entry fee was \$17.86, and the total amount paid in fees was just under \$207,000.

The presence of the race provides some direct race-related employment, though the number of jobs created is minimal. Each race employs between 2 and 9 paid race officials per race day. In total this represents 158 officials for an average of 1.71 days per race (276 total official workdays). On average, officials are paid a flat daily rate of approximately \$50 plus mileage expenses. Total payments to race officials for all 34 races were \$15,170.

To assess the economic impact of attracting riders to these races in terms of indirect expenditures and employment, we adjust spending and employment estimates of typical tourists to reflect the spending of those engaged in racing. Association officials estimate that approximately 10 percent of racers come to Colorado from out-of-state to participate in these races. Assuming that all multiple day racers, and 10 percent of all single-day race participants stay overnight at the location of the race yields an estimate that 16,611 overnight stays are attributable to road and track

<sup>15</sup>Some of these races are track races at the Velodrome facility in Colorado Springs. We were unable to get any statistics on Velodrome track usage from the operators. Therefore, all track activity that is not sanctioned by BRAC and USCF is not included in these estimates.



racers being held in Colorado.<sup>16</sup> Because they are engaged in racing throughout the day, race participants are assumed to spend far less than the typical day visitor or overnight tourist. Our estimates suggest that day-only race participants spend \$26 per race day (\$136,400 for the 5,248 day only participants) and overnight racers spend \$60 per day (\$996,660 for 16,611 participant overnights). The total expenditures generated by participants in road and track races is \$1,133,060. Since races take place throughout Colorado, we use statewide averages for expenditure/employment ratios (Longwoods). As with other types of tourist expenditures, employment is created. \$1,133,060 in expenditures is estimated to employ 17 FTE earning \$239,000.

## **B. Off-Road Events**

NORBA (National Off-Road Biking Association) reports Colorado membership of approximately 2,200. Fees are \$35 per member and total Colorado membership fees for 1998 were \$77,000. During 1998 NORBA conducted 46 events in Colorado that attracted nearly 6,900 riders. Total entry fees were \$140,000 and the average fee per event was \$20.

Accounting for the multiple-day events we estimate 3450 riders in one-day events, and 6,900 overnights associated with the multiple-day events. Using the same expenditure estimates as above these off-road participants are estimated to spend \$503,700. These expenditures create 8 FTE jobs paying annual wages of \$107,000.

## **C. Charity and Public Rides**

We gathered information from the ten largest charity bicycle rides in Colorado. Typically, these events are put on in conjunction with businesses providing sponsorship. Riders are charged a registration fee to ride, and often gather individual sponsors who pledge donations to the ride charity. Half of the rides were single day or night events. The remainder lasted anywhere from two to seven days.

These ten charity events drew 22,000 riders in 1999. The average rider rode for just over two days. Organizers for the large multi-day rides indicated that approximately 20 percent of their riders came from out-of-state to participate. The average registration fee for a charity ride was \$26 per day. Registration usually included meals and souvenirs, and lodging – often camping – for the multi-day rides. Registration fees paid in 1999 totaled \$1.2 million. Pledges, donations and fees in excess of costs raised \$2.2 million dollars for the represented charities.

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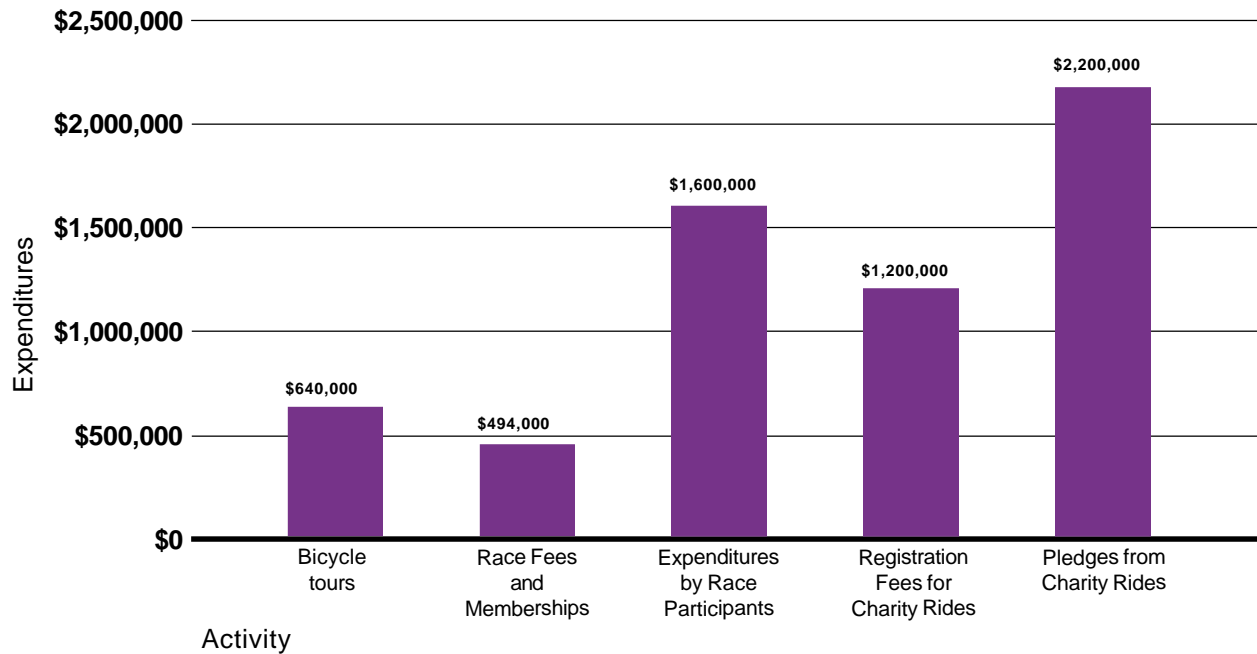
<sup>16</sup>This estimate of tourism accounts only for race participants. Data on spectators are unavailable.

The employment effect of these events is negligible. Approximately 65 workers were paid to organize these ten events. However, an additional 1,500 volunteers donated their time to make these rides successful.

### Summary of the Economic Impact of Bicycle Events

Figure 3 illustrates the revenues generated by bicycle tours, races and charity rides that take place in Colorado. Riders in organized tours paid \$640,000 to ride in Colorado in 1999. Off-road and track racing combined generated nearly \$500,000 in membership and race fees. Participants in these races spent an additional \$1.6 million for food lodging and other expenditures. \$1.2 million in registration fees were paid for participation in charity rides which generated over \$2 million in pledges.

**Figure 3. Expenditures on Various Bicycle Activities**



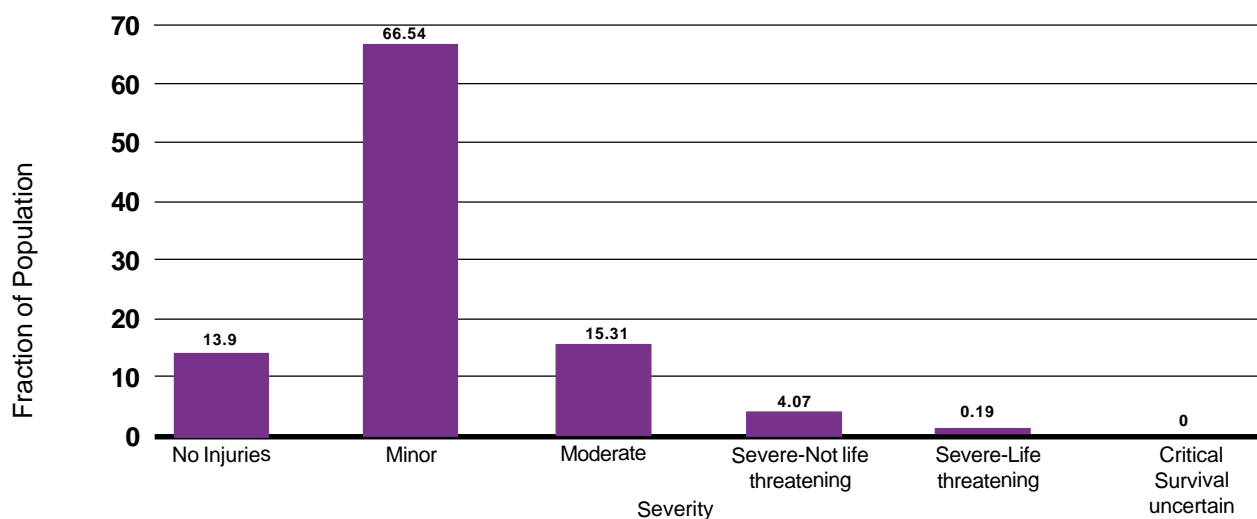
## V. Costs of Bicycle Crashes

While bicycles positively impact the Colorado economy in the many ways discussed above, there are some negative aspects of bicycling. In this section we document the prevalence of bicycle crashes and the expenses incurred. Our household survey respondents were asked about crashes that they have been involved in while riding a bicycle.

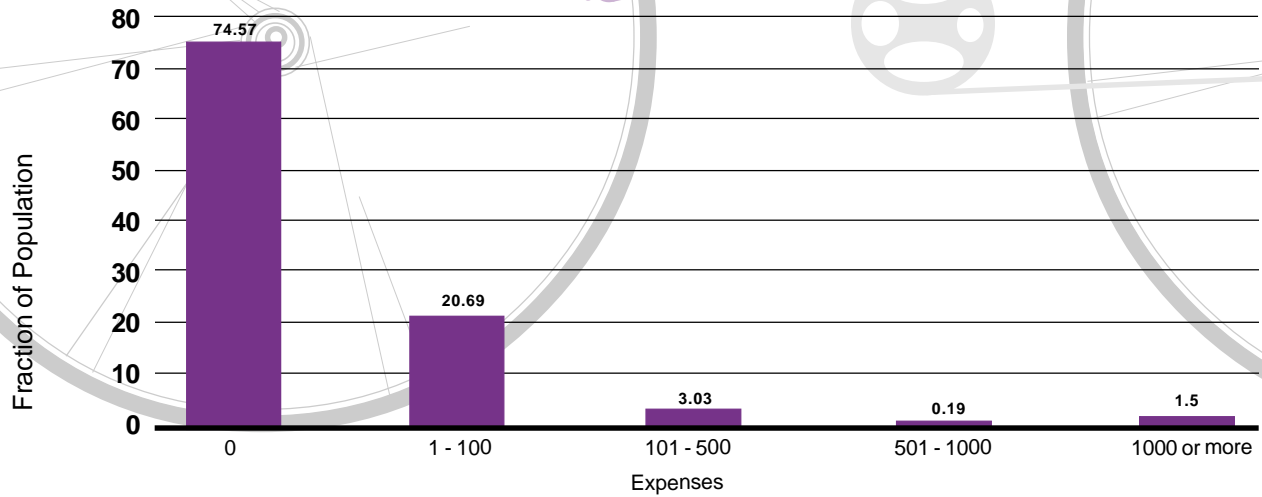
### Crashes on Unpaved Trails

Nearly half (46.47 %) of all Colorado bicycle riders report ever having had a crash on an unpaved trail, and many riders (27%) have experienced more than one in the last twelve months. Though many Coloradoans have experienced a crash on an unpaved trail, the consequences typically are not severe. As shown in Figure 4, less than five percent indicated that their crash resulted in severe or worse injuries. Fourteen percent indicated that they received no injuries at all, and 66.5 percent reported only minor injuries. These reports are reinforced when we look at the expenses involved in a bicycle crash on an unpaved trail reported in Figure 5. Three-quarters of the riders who were involved in this type of crash incurred no expenses as a result. Only 5 percent incurred expenses of greater than \$100. The average amount spent per crash was \$51.

**Figure 4. Severity of Injury in Last Bicycle Crash on an Unpaved Trail**



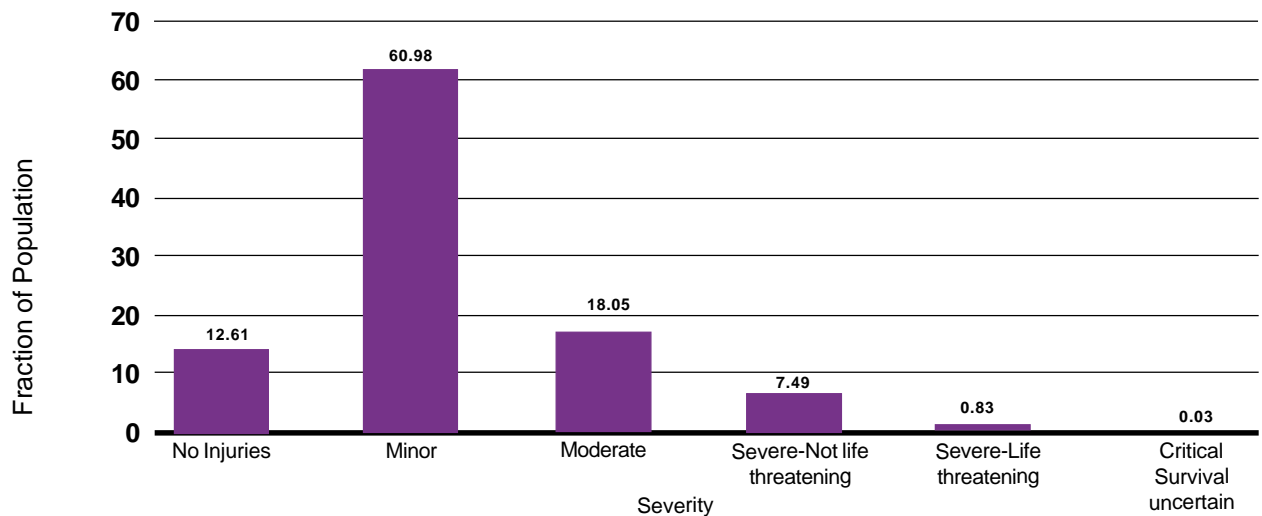
**Figure 5. Total Expenses Incurred in Most Recent Bicycle Crash on Unpaved Trail**



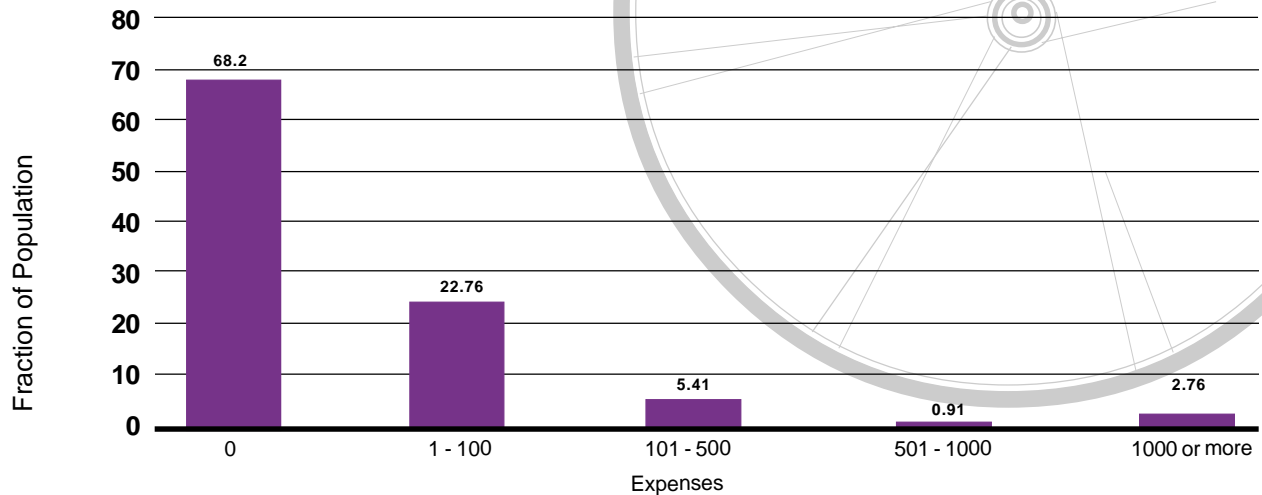
**Crashes on Paved Roads and Trails**

Respondents were asked similar questions to those just above regarding crashes that occurred on a paved road or trail. Almost exactly half (49.98%) of respondents who ride bicycles reported that they had ever crashed on a paved road or trail. Within the last 12 months, 28 percent have experienced such a crash, with 10 percent involved in more than one crash. As detailed in Figure 6, most of these crashes were not serious, 73 percent resulted in either no injuries or only minor injuries. Less than one percent resulted in life-threatening or worse injuries. The average expense of the crash, among those involved in a crash on a paved surface was \$123. As shown in Figure 7, however, 68 percent incurred no expenses, while 2.76 percent incurred expenses that exceeded \$1,000.

**Figure 6. Severity of Injury in Last Bicycle Crash on a Paved Trail/Path**



**Figure 7. Total Expenses Incurred in Most Recent Bicycle Crash on Paved Trail/Path**



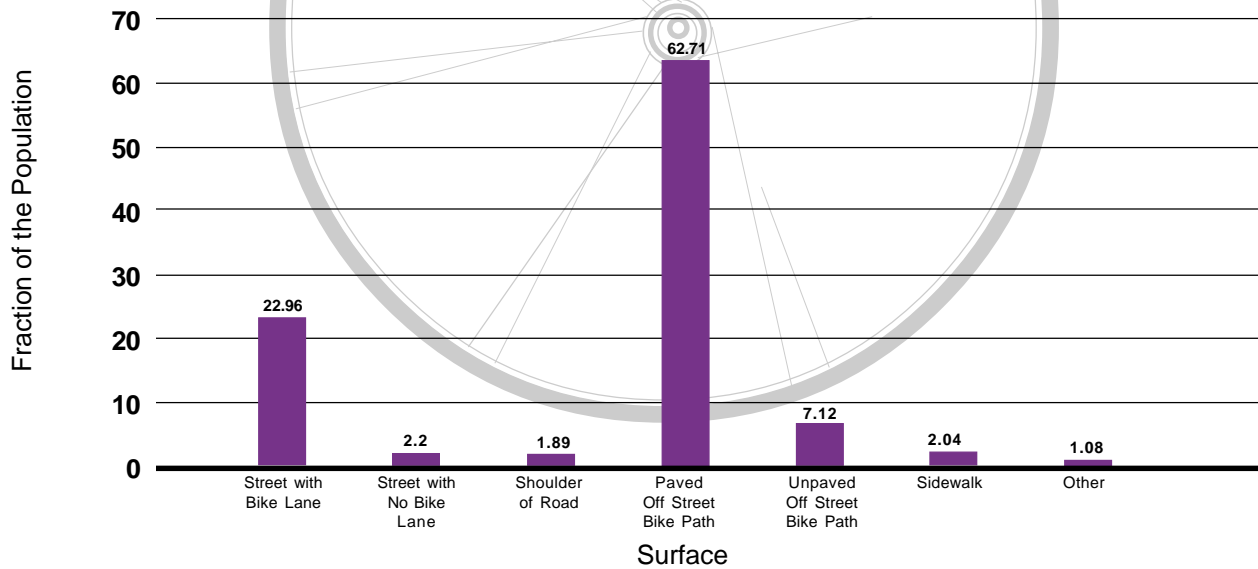
## VI. Preferences Regarding Bicycling

We used our household survey to inquire about individuals' preferences as they pertain to bicycling. Respondents were asked about their satisfaction with existing facilities and conditions for bicycling, as well as their desire for increased funding and preferences for funding sources.

### A. Preferred Surfaces for Bicycling

When asked about the riding surfaces they most preferred, bicyclists in Colorado left no doubt: paved off-street bicycle paths. Especially for transportation purposes, survey respondents overwhelmingly preferred this surface. As illustrated in Figure 5, nearly two-thirds (62.7 percent) of Colorado bicyclists prefer to ride on an off-street bike path when they are riding to work, school or for a utility trip. Just under 23 percent prefer riding on the street with a bike lane. An unpaved off-street bike path was the choice of slightly over 7 percent of bike riders, and only a few indicated that they preferred to ride on a street with no bike lane, the shoulder of a road or a sidewalk.

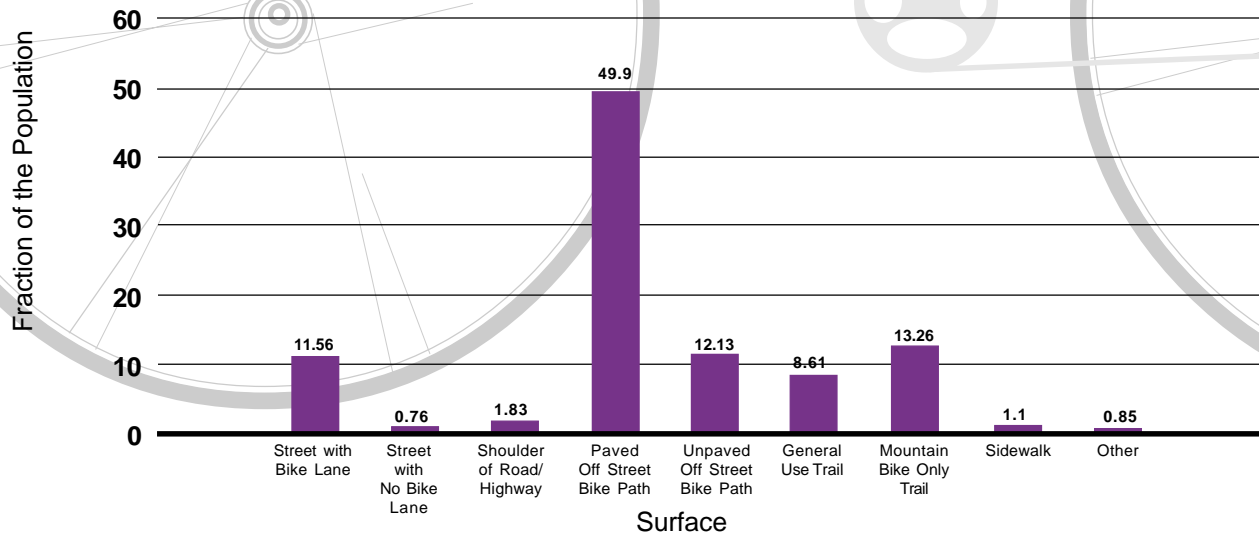
**Figure 8. Preferred Surface for Work, School or Utility Trip**



Respondents were asked about the surface they preferred when riding for recreation and exercise, and the results are slightly different (Figure 9). Although the most popular surface was again paved off-street bike paths, other surfaces were viewed more favorably when riding for recreation. Almost half of the bicyclists (49.9 percent) indicated that they preferred paved bike paths. Thirteen percent preferred riding on a mountain bike only trail, 12 percent preferred an unpaved off-street bike path and 12 percent most enjoyed riding on a street with a bike lane. A general use trail was preferred by 9 percent of the respondents. Less than 2 percent each indicated that they preferred to ride for recreational purposes on a street, road shoulder or sidewalk.



**Figure 9. Preferred Surface for Recreation or Exercise Trip**



## B. Satisfaction with Bicycling in Colorado

Respondents were asked to rate the degree of satisfaction with 15 different aspects of their bicycling experiences within Colorado. These aspects include the courtesy of others, bicycle parking, and the physical condition of the surfaces on which they ride. They were to indicate their satisfaction on a scale from one to five, with five representing “very satisfied” and one representing “not satisfied.”

Table 4 indicates the fraction of respondents indicating either the highest or lowest level of satisfaction with each aspect of bicycling. The features that generated the highest frequency of negative responses were: the courtesy of motorists, debris on the roads, conditions at road intersections and the condition and width of road shoulders. Nearly 30 percent were dissatisfied with the width of road shoulders, and many are also not satisfied with the condition of the road shoulders. Only 1.8 percent indicated they were very satisfied with the condition of road shoulder surfaces, while 19.4 indicated that they were not satisfied.

**Table 4 Satisfaction with Aspects of Bicycling in Colorado**

|  | Percent Very Satisfied | Percent Somewhat Satisfied | Percent Somewhat Unsatisfied | Percent Not Satisfied |
|--|------------------------|----------------------------|------------------------------|-----------------------|
| Bicycle Parking at Work                  | 12%                    | 9%                         | 7%                           | 11%                   |
| Bicycle Parking at School                | 8%                     | 8%                         | 4%                           | 4%                    |
| Bicycle Parking at Other Locations       | 3%                     | 9%                         | 22%                          | 13%                   |
| Courtesy of Motorists                    | 1%                     | 7%                         | 28%                          | 28%                   |
| Courtesy of Other Cyclists               | 12%                    | 12%                        | 12%                          | 5%                    |
| Courtesy of Walkers, Runners and Skaters | 7%                     | 7%                         | 12%                          | 6%                    |
| Crossings at Road Intersections          | 2%                     | 2%                         | 25%                          | 13%                   |
| Railroad Crossings                       | 5%                     | 15%                        | 11%                          | 7%                    |
| Debris on Roads/Paths                    | 4%                     | 19%                        | 22%                          | 13%                   |
| Speed Bumps and Drainage Grates on Roads | 3%                     | 15%                        | 19%                          | 10%                   |
| Road Surface Conditions                  | 3%                     | 18%                        | 22%                          | 10%                   |
| Bike Path Surface Conditions             | 12%                    | 37%                        | 9%                           | 3%                    |
| Road Shoulder Surface Conditions         | 2%                     | 7%                         | 33%                          | 19%                   |
| Road Shoulder Widths                     | 1%                     | 6%                         | 33%                          | 29%                   |
| Signs/Travel Markers                     | 4%                     | 19%                        | 18%                          | 11%                   |

For the most part, bicyclists are satisfied with the parking availability at work and school. Nearly 12 percent indicated that they were very satisfied with parking at work and 8.3 were very satisfied with the parking at school. Only 11 and 4 percent indicated they were not satisfied with parking at work and school, respectively. Bicyclists in Colorado are very dissatisfied with the courtesy of motorists. While less than 1 percent of riders rate their satisfaction with the courtesy of motorists in the highest category, more than one-fourth (28 percent) selects the lowest category. Bicyclists rate favorably the courtesy of walkers, runners and skaters, and especially the courtesy of other bicycle riders.

Bicyclists are also more dissatisfied than satisfied with crossings at road intersections. Thirteen percent indicate that they are not satisfied and only 2 percent indicate that they are very satisfied. Similar dissatisfaction is reported with regard to debris littering roads and paths used by bicyclists and the conditions of road surfaces in general.

There are a few things that bicyclists are satisfied with. In addition to the courtesy of bicyclists and walkers, runners and skaters mentioned earlier, respondents indicated that they are very satisfied with the conditions of existing bike paths. Forty-eight percent of bicyclists placed their satisfaction with the condition of bike path surfaces in the highest two categories (12 percent were “very satisfied”). Less than 4 percent chose the two lowest categories.

### C. Preferences Regarding Bicycle-Related Public Expenditures

Respondents in Colorado households were asked if they would like to see improvements of conditions to encourage bicycling as a means of transportation. An overwhelming majority (79 percent) indicated that they would like to see such expenditures. Respondents then indicated their preferred funding method(s). Respondents could select from among the options presented in Table 5, and could select as many sources as they liked. Twelve percent did not indicate any preference. Clearly, the use of new taxes is not an attractive funding source: only 6 percent indicated that they would like to use this funding option. The majority of survey respondents preferred to reallocate funds from other transportation projects. There was some support for using fees for trails and path use and bicycle registration and licensing revenue.

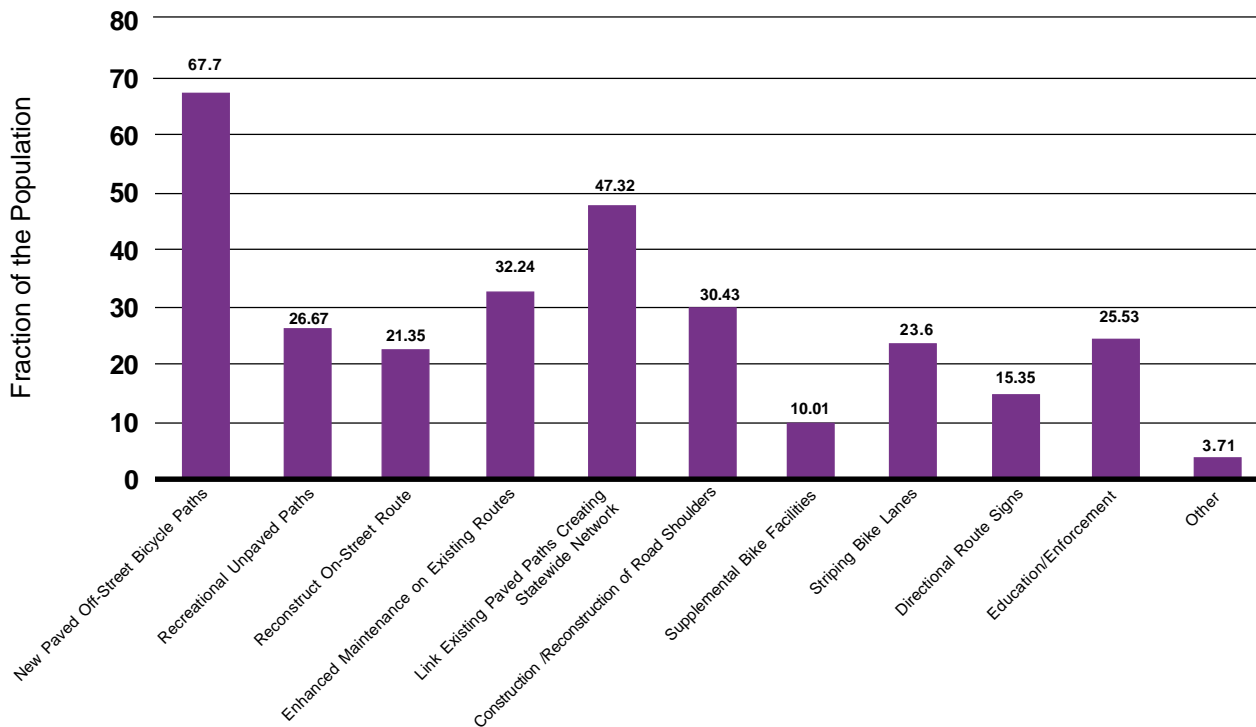
**Table 5 Preferred Funding Sources for Improvement of Bicycling Conditions**

| Funding Source   | Percent of Households |
|--|-----------------------|
| New Tax  | 6.2%                  |
| User Fees for Trails and Paths   | 20.9%                 |
| Bicycle Registration and Licensing Fees  | 35.5%                 |
| Reallocating Funds from Other Transportation Projects  | 51.3%                 |
| Note: Percentages sum to more than 100% since respondents can select more than one funding source. |                       |

Respondents who bicycle in Colorado were also asked about how they would allocate \$100 among various uses to improve their bicycling experiences if they were traveling to work or for a utility trip. The questions listed ten possible uses for the money, and if the \$100 were simply split equally between the ten possible uses, each would receive \$10. Figure 10 illustrates the projects most frequently mentioned by survey respondents and Figure 8 illustrates the amount of money they would chose to allocate to each project. (It should be noted that the question did not ask if they would like to see any money spent on improving bicycling, but rather, if \$100 were to be spent,

where they would like to see the improvements.) Not surprisingly, given the fact that most bicycle riders indicated that they preferred riding on paved off-street bike paths, the most popular expenditure was to create new paved off-street bicycle paths. Figure 10 indicates that just over two-thirds of the bike riders (68 percent) would choose to allocate some money for this use, and from Figure 11 we can tell that they would choose to spend \$36 out of the \$100 for the creation of new paved paths. The second most frequently mentioned project was to link existing paved paths. Forty-seven percent of respondents also chose this project. The average desired expenditure was \$18 of the \$100. Other projects receiving support include spending to create recreational unpaved paths (27%), better maintain existing routes and construct and improve road shoulders (30%). Bicyclists supported smaller expenditures on education and enforcement (\$6.13), reconstructing on-street routes (\$5.24) and striping bike lanes (\$4.70).

**Figure 10. Public Bicycling Expenditure Preference**



**Figure 11. Desired Spending of Public Bicycling Expenditure Out of \$100**

