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1995 Boulder Mountain Parks User Study

Boulder Mountain Parks User Study, 1995
OSMP Studies 4274

Study



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1995 Boulder Mountain Parks User Study

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1995 Boulder Mountain Parks User Study

Study Background

The Boulder Mountain Parks study was conducted to estimate the number of visitors using the Boulder Mountain Parks system, and ascertain their behaviors and opinions regarding Mountain Parks. Although this report will use the name "Mountain Parks", only the mountain backdrop portion of the Parks were included in this study.

A representative sample of Boulder Mountain Parks users was counted and surveyed over two two-week periods; one observation period occurred in the summer and one in the fall. Ten Mountain Parks access points which were chosen to represent the 4,711 acres of the mountain backdrop portion of Mountain Parks, varying by activity type (e.g., climbing, hiking, picnicking) and volume of usage. During each season, each access point was observed for a three hour shift each morning (8:00-11:00), afternoon (1:00-4:00) and evening (5:00-8:00), on both weekdays and weekends. (A map is provided in Appendix IV which shows the location of both sampled and non-sampled access points within the mountain backdrop area of Boulder Mountain Parks.)

Observation at each access point consisted of one research volunteer¹ counting every person and dog entering Mountain Parks, and a second trained research assistant surveying a random selection of those entering the Parks². Approximately 6,213 Mountain Parks users were counted during the observation periods and 1,560 were selected for the survey. Of those selected to complete the survey, 1,315 did; a response rate of 84%. Survey results were statistically weighted to represent the proportion of users by type of usage (e.g., climbing, backwoods hiking, etc.). (For more information on the study methods, please see Appendix IV.)

Key Findings

Mountain Parks Usage

- It is estimated that approximately 1,260,378 users visited Boulder Mountain Parks in 1995. This translates to about 268 users per acre.
- About 600,180 parties are estimated to have visited Mountain Parks in 1995. The average party size of those visiting Mountain Parks was 2.1 persons per group.
- Thirteen percent of the parties using Mountain Parks were accompanied by dogs. It is estimated that 151,245 dogs used Mountain Parks areas in 1995.

¹ Mountain Parks volunteers were used to count the number of visitors to reduce the cost of the study.

² The research assistants used systematic sampling to determine who to select to survey. Systematic sampling is used by counting every Nth person after an interview is complete to ensure that every user has an equal probability of being selected.

1995 Boulder Mountain Parks User Study

Mountain Parks Usage

Estimates of Mountain Parks Use

A primary purpose of this user study was to estimate how many people per year access Boulder Mountain Parks. This information is critical for park planning, resource allocation and preservation of natural resources.

Estimation of Parks use is complex given the large number of access points into the system, coupled with the variation in usage by time of day, weather and season. The expense of monitoring the Parks throughout the year, at all times of the day, is financially implausible; thus a representative sample of access points was monitored during two seasons, at various times of the day. The number of users observed at access points was combined with ranger knowledge and spot observations at other points to extrapolate usage estimates to all of the Parks. (Further details on the usage extrapolation is detailed in Appendix I). Figure 1.1 lists the average seasonal and annual number of visitors of Boulder Mountain Parks.

Season	Usage Estimate
Winter	166,024
Spring	282,059
Summer	504,818
Fall	307,476
TOTAL	1,260,378

It is estimated that about 1.26 million people visited Boulder Mountain Parks in 1995. Summer was the peak season with an estimated one half of a million visits.

Usage information for the sampled individual access areas is presented in Figure 1.3. (Specific counts by season, time of day and day of week are provided in Appendix I.) The size of each party using the Parks, and information on whether the parties used the trail were also recorded and are displayed in the table for sampled sites, and estimated for each type of access area. (A map is provided in Appendix IV which shows the location of both sampled and non-sampled access points within the mountain backdrop area of Boulder Mountain Parks.)

Figure 1.3. Usage of Boulder Mountain Parks by Access Point				
Access Point	Average Weekly Summer Count	Average Weekly Fall Count	Average Number of People per Party	Percent of Parties "On Trail" (Where Applicable)⁷
Climbing Areas	2,013	1,553	1.8	99.1%
Crown Rock	1,080	736	1.8	99.1%
Chautauqua	7,929	5,667	2.0	96.9%
Bluebell	5,883	3,991	2.0	96.9%
NBS Mesa	902	1,002	1.3	99.2%
Lower Skunk	280	457	1.3	99.2%
Mesa Trail	1,707	1,350	1.5	100.0%
Bear Mountain Emergency Access Road	531	389	1.5	100.0%
Red Rocks	2,462	1,922	1.8	96.1%
Settler's Park	1,182	911	1.8	96.1%
Flagstaff	22,143	10,824	2.3	93.5%
Panorama Point	4,409	1,804	2.4	74.7%
Flagstaff Summit	7,154	2,214	2.3	99.4%
Baird Park/Gregory Canyon	2,604	1,883	2.1	99.6%
Backcountry Areas	1,676	1,334	1.8	99.3%
Fern Canyon	231	132	1.9	98.6%
Shadow Canyon	202	112	1.7	100.0%
OVERALL	38,832	23,652	2.1	96.3%

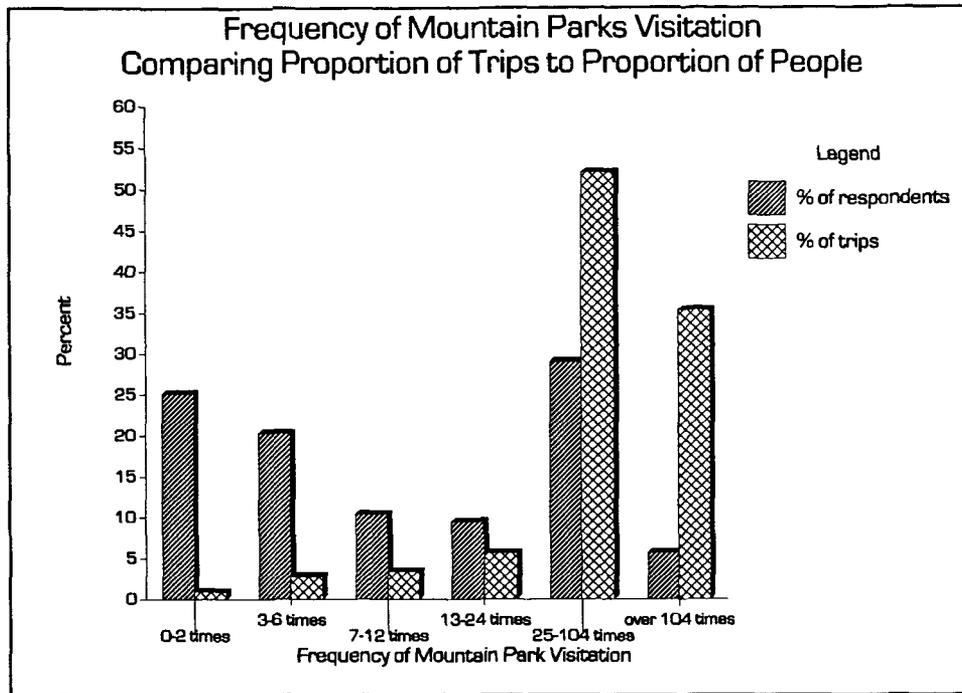
⁷ In some areas or in some instances, it was not appropriate to note whether or not the party was on or off the trail, as parties remained in a parking lot or street area.

Use of the Parks by dogs varied by access point. Dogs accompanied visitors most frequently at the NBS Mesa, where almost one out of every three visitors was walking a dog. One in five visitor parties were accompanied by dogs at the backcountry, Red Rocks and Chautauqua access points.

Figure 1.5. Dog Use on Boulder Mountain Parks by Access Point	
Access Point	Percent of Parties Accompanied by One or More Dogs
Climbing Crown Rock	7% 7%
Chautauqua Bluebell	17% 17%
NBS Mesa Lower Skunk	30% 30%
Mesa Trail Bear Mountain Emergency Access Road	9% 9%
Red Rocks Settler's Park	20% 20%
Flagstaff Panorama Point Flagstaff Summit Baird Park/Gregory Canyon	8% 4% 3% 22%
Backcountry Fern Canyon Shadow Canyon	21% 14% 28%
OVERALL	13%

Frequency of use varied by individual. The relationship of number of visits to number of users is demonstrated in Figure 2.2. One-third of the high end users account for about 90% of the trips made into Mountain Parks.

Figure 2.2.



The amount of time people spent in the Parks per visit was also ascertained. A majority (58%) of the people planned to stay one to three hours at the Parks during their visit on the day surveyed.

Amount of Time User Planned to Spend in the Parks on the Day of Interview	Percent of Users Surveyed
less than 30 minutes	10.3
30 to 59 minutes	18.6
1 to 3 hours	58.6
more than 3 hours	12.5
TOTAL	100.0

User Ratings of Mountain Parks

Users were asked to rate specific characteristics of Mountain Parks, and the overall quality of their experience in the Parks. All questions were asked on a scale with "1" indicating "very good" and "5" indicating "very bad".¹⁰ The overall quality of the visitor experience in the Mountain Parks was rated very high; 96% of visitors gave the Parks a positive rating.

Figure 2.5.

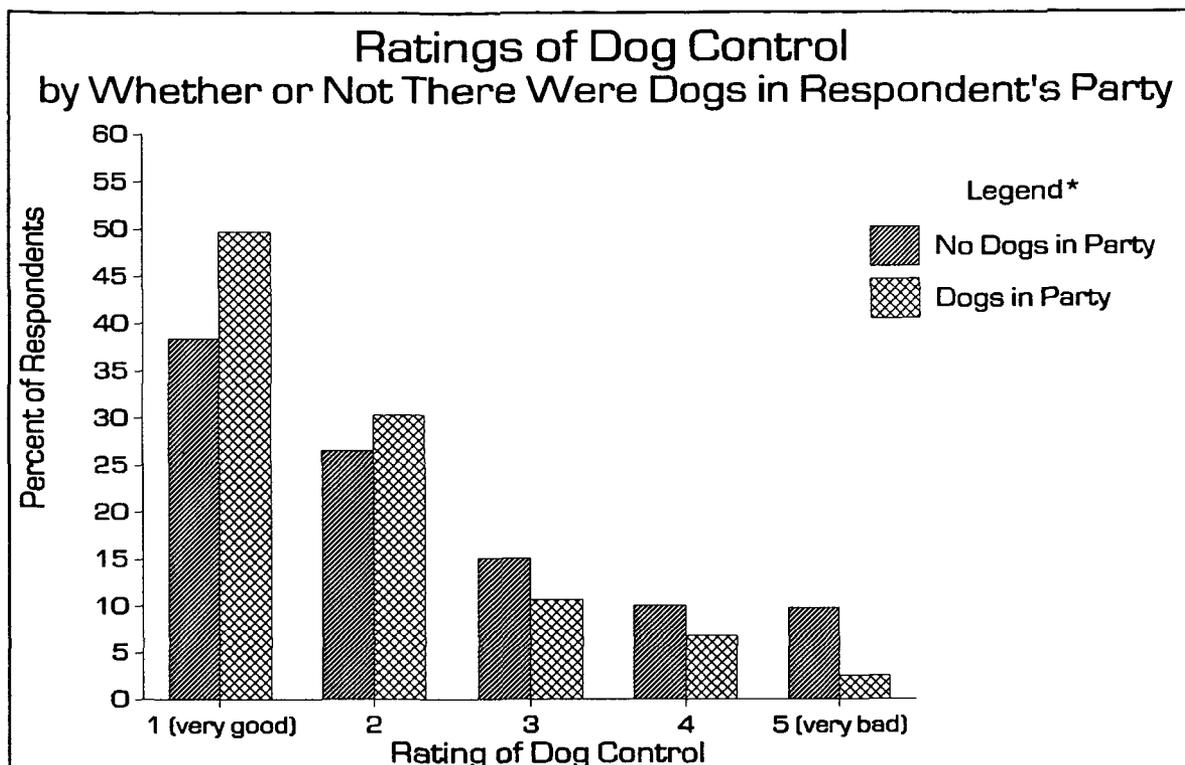


¹⁰

In the figure, words were substituted for the scale points "2", "3", and "4" for the sake of clarity, but these words were not actually used by interviewers administering the questionnaire.

Ratings of dog control were compared for visitors who had dogs within their party versus those who did not (Figure 2.7). As might be expected, users accompanied by dogs rated voice and sight control of dogs significantly more positively than those without dogs.

Figure 2.7.



* Differences in ratings between respondents with dogs and without dogs are statistically significant.

Mountain Parks Mission

Mountain Parks mission statement addresses balancing the natural environment with recreational opportunities. Users were asked to rate if there exists a good balance between the two, or if the emphasis is too great on either side. A large majority of Parks users (87%) thought Mountain Parks was maintaining the proper balance. Of those believing the focus was out of balance, 11% felt that recreation was stressed too heavily, while only 2% felt the environment received too much of a focus.

Figure 2.10. Balance of Preservation and Recreation Use	
Balance of Preservation of Natural Environment Versus Recreation Use	Percent of Users Surveyed
too much on natural environment	2.2
just about right	86.9
too much on recreational opportunities	10.8
TOTAL	100.0

With regard to preservation of the natural environment and recreational enjoyment, Parks users were asked to rate the number of people in the Parks. Over 70% believed the number of visitors was "about the right amount", 26% felt there were too many, and 2% felt there were too few visitors.

Figure 2.11. Crowding in the Parks	
Rating of Number of People in the Parks	Percent of Users Surveyed
too few	1.8
about the right amount	71.9
too many	26.3
TOTAL	100.0

Users were asked if there were certain activities that they believed should be allowed in Boulder Mountain Parks (Figure 2.13). Again, "none" was the most frequent response with more than 85% desiring no new additions.

Figure 2.13. Activities and Facilities to Add to Mountain Parks	
Activity/Facility	Percent of Users Surveyed
nothing/none mentioned	86.4
mountain biking	10.0
dog use	3.1
bolting ¹¹	1.0

When asked what activities should be restricted in Mountain Parks, almost two-thirds did not suggest any. Those with an opinion suggested restricting activities such as mountain biking, dogs, and horseback riding (Figure 2.14). Many of the other activities mentioned by surveyed users are already prohibited.

Figure 2.14. Activities and Facilities to Restrict in Mountain Parks	
Activity/Facility	Percent of Users Surveyed
nothing/none mentioned	65.0
mountain bikes	14.7
dogs	6.6
motorized vehicles	5.9
horses/horseback riding	4.1
smoking	3.7
drinking alcohol	2.6
fires	2.5
guns/hunting	2.1
camping	2.0

¹¹ "Bolting" is a climbing term referring to using bolts forced into rock cracks for climbing ropes.

Sociodemographics of Users

Parks visitors were asked whether they were students at the University of Colorado, and their age. Gender was noted by research staff. The profile of these users can be compared to Boulder's general population:

- About 15% of users were University of Colorado students compared to 21% in the general population (Figure 2.17).
- The Parks attracted more people in their twenties and thirties, than those over 55 years of age (Figure 2.18).
- Males tended to use the parks slightly more frequently than females (Figure 2.18).

Figure 2.17. Student Status		
Student Status	Percent of Users Surveyed	Percent of Boulder Residents
yes	14.3	21.4
no	85.7	78.6
TOTAL	100.0	100.0

Appendix I. Breakdown of Usage Estimates; Explanations of How Final Usage Estimates Were Derived

This study estimated the number of visitors for the mountain backdrop portion of the Boulder Mountain Parks. Estimates derived from this study apply only to this area; total usage estimates for the entire Mountain Parks system would be greater. Visitation estimates were derived from taking data from several sources. The primary source was the count data collected by Mountain Parks staff and volunteers during observation periods. These data were supplemented with data from Flagstaff vehicle counts, more informal observations by Mountain Parks staff, and information based on the experience of Mountain Parks staff.

In order to derive final usage estimates, several factors had to be considered. First, usage during non-sampled hours needed to be estimated. Second, usage at non-sampled sites needed to be estimated. Finally, the total estimates needed to be adjusted to account for seasonal variation, especially during the winter and spring periods, when no tracking was done.

The tables¹² in this Appendix lay out all the pieces of the equation. The notes explain how the different pieces were computed, and how they all fit together to calculate the final visitation estimate.

Estimating an Average Weekday Day and Weekend Day Count for the Fall and Summer

The first four tables, Tables I.1 through I.4 beginning on the next page, display a combination of actual count data and estimates for intervals between counts used to calculate average weekday day and weekend day use estimates. The columns on these four tables are identical, with the data for the appropriate interval displayed.

The data are arranged by site grouped into the various access types as described by Mountain Parks staff.

Columns A and B contain the frequency of use designations (as determined by Mountain Parks staff based on their experience and some independent observations) and whether or not the sites were included in the sampling. The use designations were high (H), moderate high (MH), moderate (M), and low (L). Sites which were included in the observations are marked with a "y", those not included are marked with an "n".

Columns D, F, and H display the number of people counted during sampled observation periods for each sampled site. For the non-sampled sites, the average of sampled sites with the same frequency of use designation were used.

Columns E and G contain estimates for the intervals between survey periods. The mean hourly visitation rate of the periods immediately before and immediately following were used to calculate use during these intervals.

¹² Numbers in the tables were rounded, and thus may not add exactly.

Table I.1: Summer Weekday Day Total

	A use	B counted	C 6am- 8am	D 8am- 11am	E 11am- 1pm	F 1pm- 4pm	G 4pm- 5pm	H 5pm- 8pm	I 8pm- 6am	J weekday total
Climbing Areas										
Crown Rock	M	y	0	23	32	50	21	26	0	153
Dome/Elephant Buttress	L	n	0	8	7	7	3	5	0	31
Upper Crown Rock	L	n	0	8	7	7	3	5	0	31
Contact Corner	L	n	0	8	7	7	3	5	0	31
Chautauqua										
Bluebell	H	y	86	129	120	103	65	183	0	685
Kinnikinik	L	n	5	8	7	7	3	5	0	36
Mariposa	L	n	5	8	7	7	3	5	0	36
Enchanted Mesa	M	n	37	55	47	32	12	5	0	188
NBS Mesa										
Lower Skunk	L	y	0	2	4	9	5	14	0	35
NBS from NIST	L	n	0	8	7	7	3	5	0	31
NBS North	L	n	0	8	7	7	3	5	0	31
Mesa Trail										
Bear Mtn Em. Access	L	y	0	20	19	17	6	1	0	63
NCAR/Mesa Trail	M	n	0	55	47	32	12	5	0	151
Red Rocks										
Settler's Park	M	y	12	35	31	24	15	43	0	160
Foothills Centennial	M	n	18	55	47	32	12	5	0	169
Flagstaff										
Panorama Point	MH	y	19	56	70	97	69	222	107	639
Flagstaff Summit	H	y	23	68	84	118	70	182	109	653
Baird Park	M	y	36	107	78	21	13	38	59	353
Halfway House	L	n	3	8	7	7	3	5	7	40
Flagstaff Trail	L	n	3	8	7	7	3	5	7	40
Realization Point	M	n	18	55	47	32	12	5	34	203
Cathedral	L	n	3	8	7	7	3	5	7	40
Lost Gulch	MH	n	19	56	70	97	69	222	107	639
Long Canyon	L	n	3	8	7	7	3	5	7	40
Misc Pull Offs	L	n	3	8	7	7	3	5	7	40
Backcountry Areas										
Fern Canyon	L	y	0	3	2	1	1	2	0	9
Shadow Canyon	L	y	0	6	4	0	1	4	0	15
Green Mtn W Ridge	L	n	0	8	7	7	3	5	0	31
Eldorado East	L	n	0	8	7	7	3	5	0	31
Eldorado West	L	n	0	8	7	7	3	5	0	31
Bear Canyon	L	n	0	8	7	7	3	5	0	31
TOTAL			290	850	824	771	431	1,045	448	4,660

Table I.3: Fall Weekday Day Total

	A use	B counted	C 6am- 8am	D 8am- 11am	E 11am- 1pm	F 1pm- 4pm	G 4pm- 5pm	H 5pm- 8pm	I 8pm- 6am	J weekday total
Climbing Areas										
Crown Rock	M	y	0	5	14	31	16	33	0	99
Dome/Elephant Buttress	L	n	0	5	6	9	4	7	0	31
Upper Crown Rock	L	n	0	5	6	9	4	7	0	31
Contact Corner	L	n	0	5	6	9	4	7	0	31
Chautauqua										
Bluebell	H	y	40	60	58	55	53	206	0	471
Kinnikinnik	L	n	3	5	6	9	4	7	0	35
Mariposa	L	n	3	5	6	9	4	7	0	35
Enchanted Mesa	M	n	17	25	24	23	13	30	0	132
NBS Mesa										
Lower Skunk	L	y	0	6	10	17	10	25	0	68
NBS from NIST	L	n	0	5	6	9	4	7	0	31
NBS North	L	n	0	5	6	9	4	7	0	31
Mesa Trail										
Bear Mtn Em. Access	L	y	0	11	13	18	6	0	0	47
NCAR/Mesa Trail	M	n	0	25	24	23	13	30	0	115
Red Rocks										
Settler's Park	M	y	9	26	23	17	9	22	0	106
Foothills Centennial	M	n	8	25	24	23	13	30	0	124
Flagstaff										
Panorama Point	MH	y	7	22	31	50	24	41	55	230
Flagstaff Summit	H	y	11	34	44	63	23	13	59	246
Baird Park	M	y	15	44	37	22	13	35	51	216
Halfway House	L	n	2	5	6	9	4	7	10	43
Flagstaff Trail	L	n	2	5	6	9	4	7	10	43
Realization Point	M	n	8	25	24	23	13	30	39	162
Cathedral	L	n	2	5	6	9	4	7	10	43
Lost Gulch	MH	n	7	22	31	50	22	30	51	213
Long Canyon	L	n	2	5	6	9	4	7	10	43
Misc Pull Offs	L	n	2	5	6	9	4	7	10	43
Backcountry Areas										
Fern Canyon	L	y	0	2	2	2	1	2	0	9
Shadow Canyon	L	y	0	0	0	1	0	0	0	2
Green Mtn W Ridge	L	n	0	5	6	9	4	7	0	31
Eldorado East	L	n	0	5	6	9	4	7	0	31
Eldorado West	L	n	0	5	6	9	4	7	0	31
Bear Canyon	L	n	0	5	6	9	4	7	0	31
TOTAL			136	406	460	568	295	636	305	2,808

Estimating Summer and Fall Seasonal Use

Table I.5 on the next page contains the Mountain Parks usage estimates for the summer and fall seasons. Columns A and B are the same as in Tables I.1 through I.4.

Columns K and M contain weekly estimates, calculated by adding 5 weekdays plus 2 weekends for each site and season.

Column L and N show the seasonal estimates, computed by multiplying the weekly estimate by 13, for 13 weeks in a season.

Calculation of Total Usage Estimates; Accounting for Seasonal Variation

The final step was to adjust the data for seasonal variation. Only two seasons were sampled: summer and fall. Two external sources were available to make adjustments to the observed data to estimate visitation during the non-sampled seasons: winter and spring. These sources were visitation estimates from an Open Space Visitation Project completed during 1992-1993, and vehicle counts on Flagstaff done throughout the year.

As shown in Table I.6 on page 29, estimates from the two sources did not differ greatly in the variation seen between summer and winter and spring counts. However, the Open Space information (*Column R*) shows equal visitation during summer and fall, compared with the observed count data from Mountain Parks (*Column Q*) and the Flagstaff vehicle counts (*Columns O and P*), which show that fall use is about half of the summer use. Thus, since the vehicle count data agreed with observed total Parks estimates for the summer to fall variation, and the estimates of seasonal variation between winter, spring and summer were similar for both the vehicle counts and Open Space data, the proportions from the vehicle count data were used to calculate final annual use estimates of Mountain Parks usage, as shown in Table I.7 (which is the same as Table 1.1)

Table I.6: Total Annual Usage Estimate

Season	Seasonal Proportions							
	O Flagstaff "tube" counts 1994			P Flagstaff "tube" counts 1995	Q Survey counts	R Open Space Counts for "Mountain Zones"		
	four seasons	summer/ spring	summer/ fall	spring/ summer	summer/ fall	four seasons	summer /fall	summer /spring
	Winter	14.3					13.6	
Spring	32.7	49.3		42.6		28.4		50.2
Summer	33.6	50.7	63.5	57.4	62.1	28.2	48.7	49.8
Fall	19.3		36.5		37.9	29.7	51.3	
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table I.7: Total Mountain Parks Annual Visitation Estimate

Season	Usage Estimate
Winter	166,024
Spring	282,059
Summer	504,818
Fall	307,476
TOTAL	1,260,378

Table II.1: User Activities at Parks by Access Site

Activity	Percent of Users Engaged in Activity									
	Crown Rock	Bluebell	Lower Skunk	Bear Mtn Em. Rd.	Settler's Park	Panorama Point	Flagstaff Summit	Baird Park	Fern Canyon	Shadow Canyon
walking/hiking	29.4	81.4	67.2	73.7	80.6	24.9	31.2	84.4	93.3	90.6
scenic driving/viewing	6.8	6.3	0.0	0.0	6.4	68.3	38.1	1.5	1.4	2.4
climbing	72.9	4.7	0.0	2.7	7.7	1.6	0.5	13.1	2.9	0.0
exercising pet	1.6	13.5	17.4	6.1	11.1	1.4	0.9	4.7	0.0	0.0
jogging	0.8	3.1	33.5	32.0	7.8	2.3	3.5	3.7	3.8	8.4
photography	2.2	5.7	0.8	0.0	4.5	11.7	6.6	3.7	4.3	0.0
picnicking	3.0	4.3	0.0	0.0	2.6	4.4	9.5	0.4	1.4	4.9
biking	2.0	0.0	2.9	0.0	1.9	7.0	11.8	0.4	0.0	0.0
nature study/appreciation	1.2	5.5	2.5	5.0	3.8	3.0	3.1	2.7	8.6	3.9
social gathering	0.8	0.4	0.0	0.0	2.6	2.0	15.4	0.0	2.9	0.0
mediation/contemplation	0.6	1.8	0.0	1.4	2.6	2.1	2.4	4.8	1.4	0.0
horse riding	0.0	0.4	0.0	0.0	0.0	0.7	0.9	0.0	0.0	0.0
other	2.8	8.0	3.1	4.8	7.8	4.0	5.8	6.0	0.0	4.9

Note: Percentages for each site may add to more than 100%, as users could list more than one activity in which they planned to participate. Statistical tests of differences in proportions cannot be applied to these types of data.

Table II.3: Ratings of Number of People and Ranger Coverage by Access Site

	Percent of Users Surveyed									
	Crown Rock	Bluebell	Lower Skunk	Bear Mtn Em. Rd.	Settler's Park	Panorama Point	Flagstaff Summit	Baird Park	Fern Canyon	Shadow Canyon
Rating of Number of People in the Parks*										
too few	2.8	1.1	0.0	1.4	0.7	1.3	6.5	0.0	0.0	1.5
about the right amount	61.2	72.6	77.7	64.3	73.4	78.0	70.0	70.6	62.0	77.0
too many	36.1	26.3	22.3	34.3	25.9	20.7	23.5	29.4	38.0	21.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rating of Ranger Coverage in Mountain Parks										
too little	9.0	26.3	20.0	10.0	17.4	21.7	24.0	15.8	28.4	16.9
about the right amount	88.1	72.6	80.0	90.0	80.2	76.3	73.9	79.8	66.1	81.3
too much	2.9	1.1	0.0	0.0	2.5	2.0	2.1	4.3	5.5	1.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* At least one difference in ratings between access sites is statistically significant.

Table II.5: Mode Used to Get to Mountain Parks by Access Point

Mode*	Percent of Users Surveyed									
	Crown Rock	Bluebell	Lower Skunk	Bear Mtn Em. Rd.	Settler's Park	Panorama Point	Flagstaff Summit	Baird Park	Fern Canyon	Shadow Canyon
carpool	60.8	51.2	12.4	34.7	41.3	71.0	67.0	69.7	59.1	40.5
drive alone	32.0	26.2	12.9	39.7	11.6	16.0	14.2	19.0	28.2	42.8
walk	1.4	17.4	68.5	23.3	37.5	6.5	3.8	5.6	3.9	16.7
bike	5.7	4.3	6.2	2.2	9.6	6.5	12.9	5.7	8.8	0.0
bus	0.0	0.8	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* At at least one site, differences in travel mode used to get to Mountain Parks are statistically significant.

Travel Mode Used to Get to Mountain Parks

- Females walked to Mountain Parks more than males; males biked more. (See Table III.5.)
- Students walked or biked more than non-students.
- Boulder residents biked and walked more than non-residents. Those with dogs walked more. (This may be because they were "exercising their pet", and coming from the neighborhoods).
- More frequent visitors walked and biked more often than less frequent visitors.

Table III.2. Mean Ratings of Aspects of Mountain Parks by Access Site

Aspect	Mean Rating (1=very good, 5=very bad)									
	Gender		Student Status		City of Residence		Any Dogs in Party		Visited Mountain Parks	
	Male	Female	yes	no	Boulder	not Boulder	no	yes	0-3 times	more than 3 times
natural condition of the park	1.7	1.7	1.7	1.7	1.8	1.7	1.7	1.7	1.7	1.8
condition of trails	1.7	1.7	1.6	1.7	1.7	1.7	1.7*	1.6*	1.6	1.8
condition of developed facilities	1.9	1.8	1.7	1.9	1.8	1.9	1.9	1.8	1.9	1.7
visitors keeping dogs on leash/under control	2.2	2.1	1.9*	2.2*	2.2	2.1	2.3*	1.8*	1.8*	2.3*
location and availability of sign information	1.7	1.8	1.6	1.8	1.7	1.8	1.8*	1.6*	1.7	1.8
quality of information on recreation opportunities, hazards and regulations	1.8	1.7	1.8	1.8	1.8	1.8	1.8*	1.6*	1.8	1.8
environmental education programs	2.2	2.1	2.4	2.1	2.2	2.2	2.2	2.1	2.2	2.1
overall quality of visitor experience	1.4*	1.3*	1.2*	1.4*	1.3	1.4	1.4*	1.2*	1.4*	1.3*

* Differences in ratings between subgroups are statistically significant.

Table III.4. Five Year Comparisons of Various Aspects of Mountain Parks by Subgroup

	Percent of Users Surveyed									
	Gender		Student Status		City of Residence		Any Dogs in Party		Visited Mountain Parks	
	Male	Female	yes	no	Boulder	not Boulder	no	yes	0-3 times	more than 3 times
natural condition of the parks										
better	16.0	21.2	16.2	18.3	14.8*	23.5*	18.4	16.3	26.5*	15.5*
about the same	56.9	48.7	53.3	53.6	55.1*	51.2*	54.1	51.1	53.7*	52.6*
worse	27.1	30.3	30.5	28.1	30.2*	25.3*	27.5	32.6	19.8*	31.9*
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
condition of trails and facilities										
better	44.8	44.2	49.4	44.0	42.8*	46.3*	43.3	48.9	46.2	44.4
about the same	42.1	41.0	36.5	42.2	39.9*	44.8*	42.8	36.6	45.4	40.5
worse	13.1	14.8	14.1	13.8	17.3*	8.9*	13.9	14.5	8.4	15.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
overall quality of the visitor experience										
better	20.5	19.9	21.9	20.1	15.8*	27.5*	20.8	17.9	21.2	18.4
about the same	64.5	62.5	58.9	64.4	65.5*	60.6*	62.9	67.7	68.6	63.3
worse	15.0	17.6	19.2	15.5	18.7*	11.9*	16.3	14.5	10.2	18.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Differences in ratings between subgroups are statistically significant.

Appendix IV. Methodology

The Boulder Mountain Parks study was conducted to estimate the number of visitors using the Boulder Mountain Parks system, and ascertain their behaviors and opinions regarding Mountain Parks.

Site Selection

Due to budget and time constraints, not all access points to Mountain Parks could be tracked. Thus, ten access points within Mountain Parks were chosen as representative of the mountain backdrop portion of the Mountain Parks system. These sites were selected based on characteristics such as frequency of visitations, type of use, and location. The table on the next page delineates all of the access points within Mountain Parks, and their use and frequency designation. The map following the table displays where these sites are located within Mountain Parks.

Data Collection

Data were collected during two time periods, to represent summer and fall usage. The first data collection period was in July, and the second in September and October. Each site was monitored for a total of 18 hours, 3 hours each during a morning (8:00 am - 11:00 am), afternoon (1:00 pm - 4:00 pm) and evening (5:00 pm - 8:00 pm) shift on both a weekday and a weekend. Specific shifts for each site were randomly distributed during each data collection period.

Data collection consisted of two parts. First, a "tracker", usually a Mountain Parks staff person or volunteer, enumerated each party that entered Mountain Parks, recording the number of people and number of dogs in the party. Secondly, research clerks from CPPA conducted interviews with randomly selected individuals¹³. Research clerks also recorded information on those refusing, including such things as activity the person was engaged in and number of people in party. Copies of the survey instrument and other tracking forms are included in Appendix V.

The tracking data were used in combination with data from other sources to estimate total Mountain Parks visitation. See Appendix I for details on how final usage estimates were derived.

¹³ Systematic sampling was used to approximate a random selection procedures. Systematic sampling consists of asking every Nth person entering the park to complete the survey. In this manner, research staff systematically choose survey respondents rather than allowing them to choose those who appear more friendly, less busy, etc.

Table IV.3

Use Type and Site	Frequency Designation	Included in Sample?	Unweighted Proportion of People Surveyed	Weighted Proportion of People Surveyed
Climbing Areas Crown Rock Dome/Elephant Rock Upper Crown Contact Corner	moderate low low low	yes no no no	10.8%	5.7%
Chautauqua Bluebell Kinnikinnik Mariposa Enchanted Mesa	high low low moderate	yes no no no	15.1%	21.8%
NBS Mesa Lower Skunk NBS Trail from NIST NBS North	low low low	yes no no	6.2%	3.0%
Mesa Trail Bear Mtn Em. Rd. NCAR/Mesa Trail	low moderate	yes no	6.9%	4.9%
Red Rocks Settler's Park Foothills Centennial	moderate moderate	yes no	11.8%	7.0%
Flagstaff Panorama Point Flagstaff Summit Baird Park Halfway House Flagstaff Trail Realization Point Cathedral Lost Gulch Long Canyon Miscellaneous Pull Offs	moderate high moderate low low moderate low moderate high low low	yes yes yes no no no no no no no	40.5%	52.7%
Backcountry Areas Fern Canyon Shadow Canyon Green Mtn W Ridge Eldorado East Eldorado West Bear Canyon	low low low low low low	yes yes no no no no	8.6%	4.8%

11. Other than today, how would you rate ranger coverage of Mountain Parks? Would you say there is . . .

- too little
- just the right amount, or
- too much

12. The City of Boulder Mountain Parks tries to balance preservation of the natural environment with recreational use. Given your experience with Boulder Mountain Parks, do you think the emphasis is too great on the side of the natural environment, too great on the side of recreational opportunities or just about right?

- too much on natural environment
- just about right
- too much on recreational opportunities

13. Are there certain activities that you think should be restricted or prohibited in Mountain Parks?

- no
- yes → what activities?

14. Are there certain activities that you think are currently restricted or prohibited on that should be allowed more freely in Mountain Parks?

- no
- yes → what activities?

The following questions will be used to classify responses. Again, your responses are confidential, and will be reported in group form only.

15. Are you a student at the University of Colorado, Boulder campus?

- yes
- no

16. Which category contains your age?

- | | |
|-----------------------------------|--------------------------------|
| <input type="checkbox"/> under 16 | <input type="checkbox"/> 35-44 |
| <input type="checkbox"/> 16-17 | <input type="checkbox"/> 45-54 |
| <input type="checkbox"/> 18-24 | <input type="checkbox"/> 55-64 |
| <input type="checkbox"/> 25-34 | <input type="checkbox"/> 65 + |

Thank you, that's all of my questions!!!

To be completed by interviewer:

A. Sex:

- Male
- Female

B. Time: _____:_____

(am/pm)

C. Weather:

- sunny, dry
- sunny, wet
- cloudy, dry
- cloudy, wet
- rainy
- snow

D. Number of people in group: _____

E. Number of dogs in group: _____

F. Date: _____ / _____ / 95

G. Day:

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

H. Area:

- Bear Mountain Emergency Road/Mesa Junction
- Fern Canyon
- Flagstaff Summit
- Crown Rock
- Gregory Canyon/Baird Park
- Panorama Point
- Bluebell
- Shadow Canyon
- Settler's Park
- Lower Skunk