



Trail Use Data Results

A counter at the head of the main trail leaving the Nature Center counted individuals entering and leaving the trail for most days from the period of Dec 2007 through Nov 2008. In addition to counting the individuals, the counter also records the time of day and date each time it is triggered. Thus the counter data are useful in understanding trail use patterns, specifically seasonal, day of week, and time of day trends. For these purposes (as elsewhere in this analysis), summer season is defined as May through September, while winter season includes October through April.

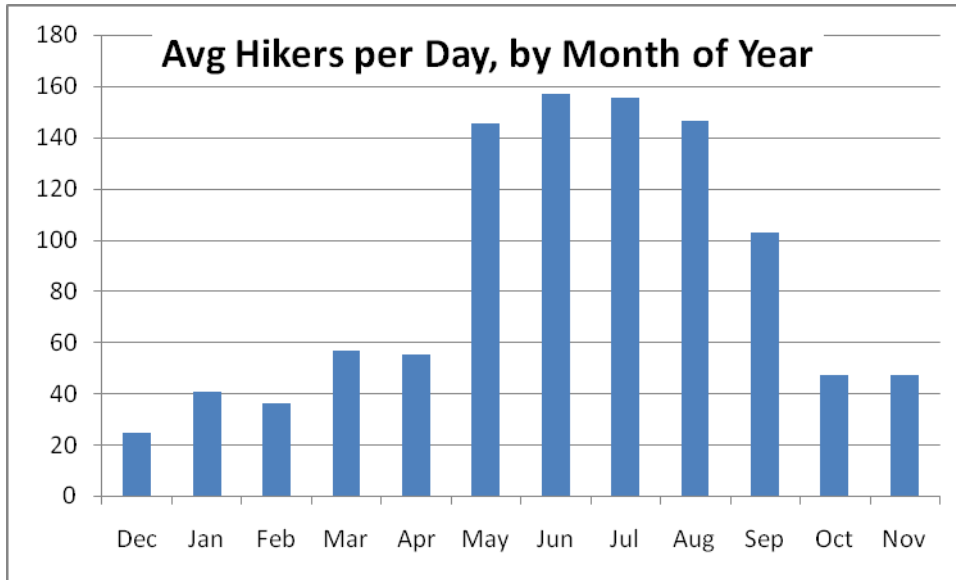
The trail use counter does have some limitations. Persons walking side by side will likely trigger the counter only once, thus under-representing the true number of hikers. Direction of travel (beginning or ending hike) is not discernable; for this analysis we have divided the total by two, assuming all persons using the trails will pass by the counter twice. A small proportion of persons will return from their hike via the nearby service road and fail to trigger the counter twice. Backpackers entering or exiting at different trailheads will also trigger the counter only once. These limitations suggest that numbers presented here are an undercount of the true number of hikers using the trails near the nature center.

An additional consideration is days for which counter data exists varies by month and season. For this reason in the figures and tables where applicable we have reported average trail use per day, adjusting for the number of days of data available for a given unit of comparison. Two months in particular, Dec 2007 and Jul 2008, saw limited data collection (collected for less than 50% of the days). The counter malfunctioned during July, resulting in reduced data collected. Similarly, December 2007 marked the initial use of the counter, and a complete month was not recorded. Use is likely to vary within December somewhat as many holidays and vacations occur more towards the end of the month. Our data are from the beginning of the month, and may not be representative of December trail use in general. July is typically a heavy use month, but there is little reason to believe much trail use variation exists within the month (except perhaps due to weather). We suspect that our daily average results presented for July are therefore representative of trail use in July.

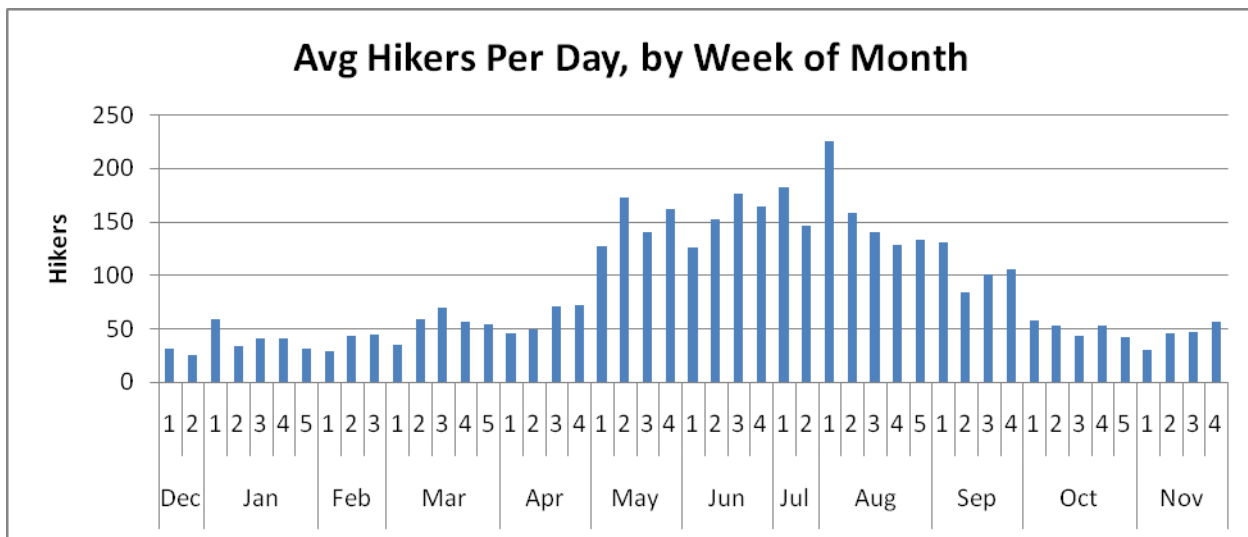
Proportion of Days Trail Use Data Collected, by Month

Month	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Prop of month recorded	42%	100%	66%	100%	97%	100%	100%	42%	100%	80%	94%	100%

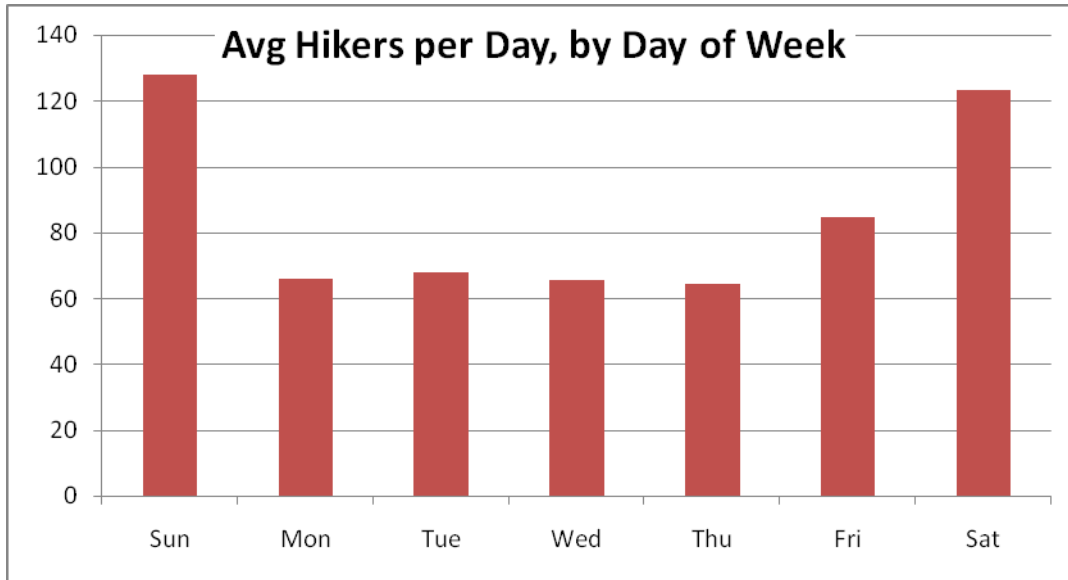
The number of days of recorded trail use by season is summer 129, winter 182, for a total of 311 days of trail use data. For all seven weekdays we have either 44 or 45 days of recorded trail use data, implying consistency in day of week data collected.



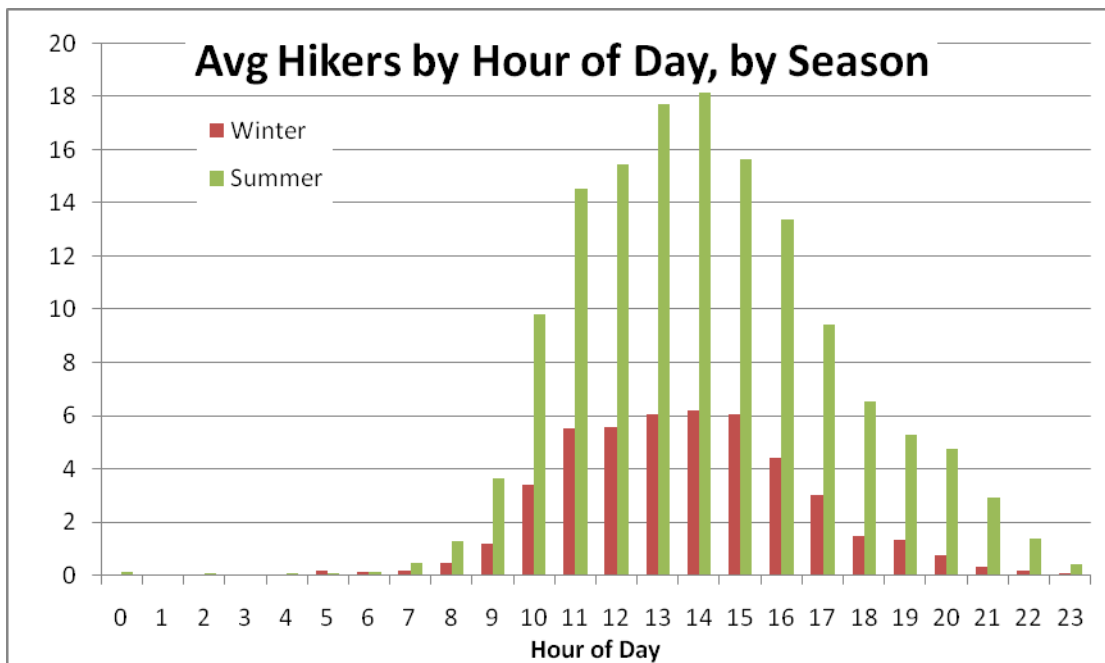
Average hikers per day unsurprisingly differs by month of the year. As the above figure indicates, there are more than 140 trail users/day on average during May – August, and 17% of the days have 150 or more trail users (data not shown). These monthly averages obscure variations by day and week (which are likely weather dependent as well). For example, the following graph showing how the number of hikers per day varies by the week of year. It’s possible that May usage is still ramping up at the beginning of May, and likely influenced by the Memorial Day weekend in the last week in May. Also note that for some months, data is missing for some weeks..



Large variations exist as well by day of week, with more trail use on Saturdays and Sundays:

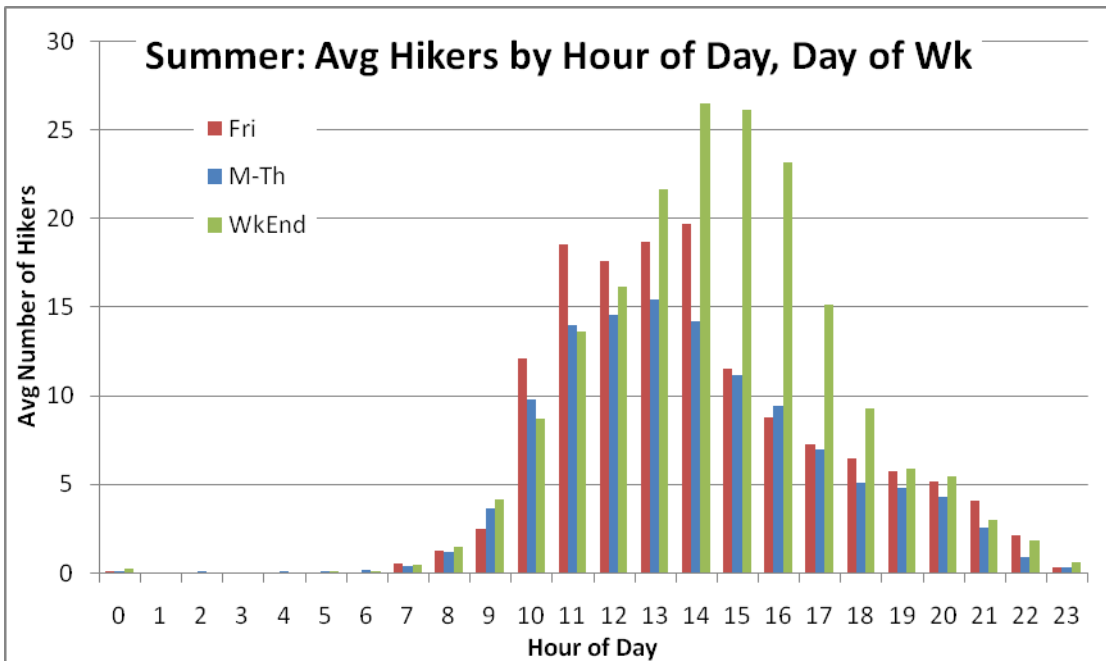
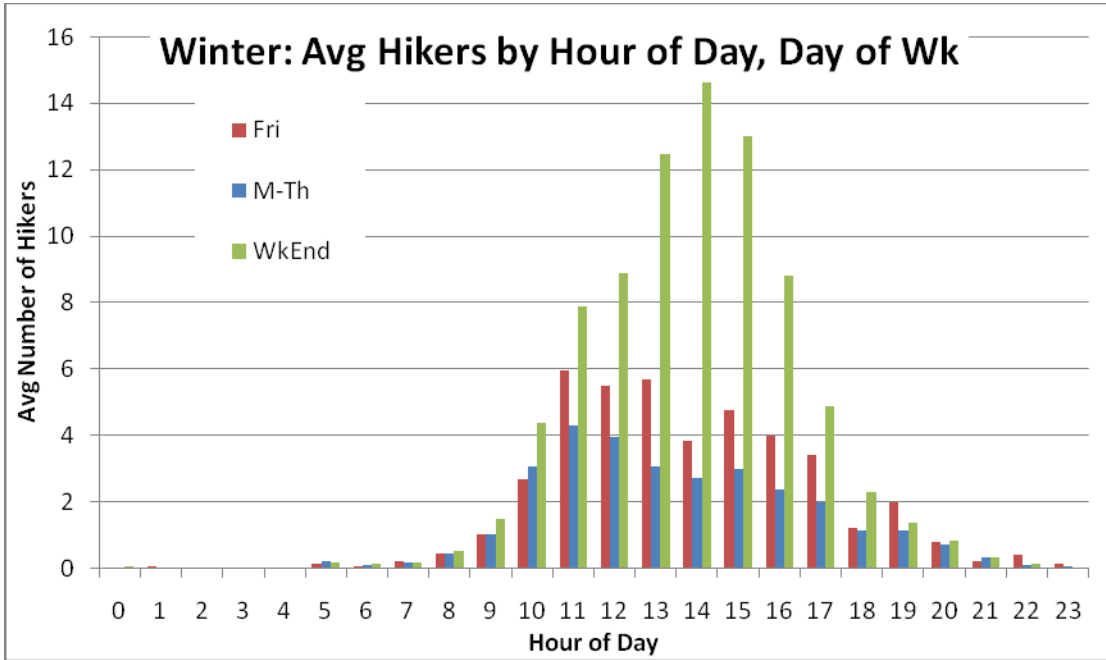


The time of day which persons trigger the counter varies as well, of course. While many more trail users trigger the counter in the summer than winter, the time of use is shifted also shifted to later in the day during the summer. Average summer use at 6 or 7 PM equals average winter use at peak times during the day (early afternoon).



Time of day when the trails are used also depends somewhat on the day of week. On the weekend trail use peaks in mid afternoon, while during the week it is more likely to peak close to noon or early afternoon. In addition in the winter there are greater differences in usage between weekdays and weekends (and to a small degree weekdays and Fridays) than in the summer: weekend use surges in the winter compared to weekday use

(though still dwarfed by summer usage). Tourists (most frequently arriving in summer) are less sensitive to day-of-week visiting, and likely smooth out differences in day of week effect during the summer months.



Vehicle Usage

On the road prior to the entrance to the Nature Center parking lot is a counter that counts each car coming and going from this dead-end location. In addition to recording the number of vehicles, the time of day and the date when the counter is triggered is also noted. These data can be used to approximate the number of cars likely to require parking at the Nature Center parking lot, which has a capacity of about 65 spaces. The captured counter data do not distinguish the type of vehicle, be it motorcycle (which take up fewer parking spaces per vehicle) or likely more frequently RV's (which utilize multiple parking spaces for each vehicle). Nor do the data captured indicate if the vehicle is arriving or leaving. Because each vehicle is counted twice by the counter, we have divided totals by two in this analysis; each "event" represents arrival and departure of one vehicle.

As is the case with the trail user counter, data for the vehicle counter are not entirely complete for all days of the year (though somewhat more complete than the trail user data). No data exist for December, and for 3 or 4 other days throughout the year: data are available for 331 days of 2008.

Because approximately 12 houses lie beyond the Nature Center, on average perhaps 20 -30 vehicle trips per day can be attributed to use by these residents. Note that the majority of resident vehicle arrivals and departures are likely to occur earlier in the morning and later in the afternoon. As we shall demonstrate below, peak vehicular traffic (and thus peak usage of Nature Center parking spaces) typically occurs near early or mid afternoon. We suggest therefore that the bias introduced by these residents' vehicle trips on estimates of peak parking usage at the Nature Center is minimal.

Additional assumptions must be made in order to estimate the number of vehicles likely to be parked at the Nature Center at any particular date and time. Knowing that a car passed the counter does not indicate how soon after the car then departed. Clearly if each car arriving remained only 2 minutes, then parking capacity is much greater than if each car arriving remains all day (e.g. 2 minutes per car arriving uniformly over an hour would allow 2 parking spaces to accommodate 60 vehicle visits per hour. If each car instead remained 2 hours, 2 parking spaces would accommodate only an average of one vehicle visit per hour). Fortunately we have an indication of likely length of visit time from survey data collected from visitors to the Nature Center throughout the year. Sixty-five percent of respondents replied that they spent 2-4 hours at the Nature Center and environs, while just 15% replied they spent 1 hour or less. While these survey respondents are not necessarily representative of all visitors to the Nature Center, and responses are in fact likely biased towards visitors who are more likely to linger, in light of the long estimated visit times reported, an average of three hours visit time for each park visitor does not seem unreasonable. For the purposes of assessing parking capacity, examining vehicle traffic during 3 hour windows should therefore provide a plausible estimate of the number of cars present in the parking lot.

As implied above, vehicle traffic varies dramatically with time of day and day of week (and not surprisingly, is correlated with the trail user data variation examined above). Certainly particular periods throughout the year see very heavy traffic at the Nature Center. The table below highlights this heavy usage by presenting the three-hour windows (and vehicle counts) throughout the year for days when 200 or more vehicles were counted during a three hour period . All of these "heaviest use" days occurred in the summer.

Days/Times of Heaviest Vehicular Traffic (>=200 Vehicles in a 3 Hour Period)

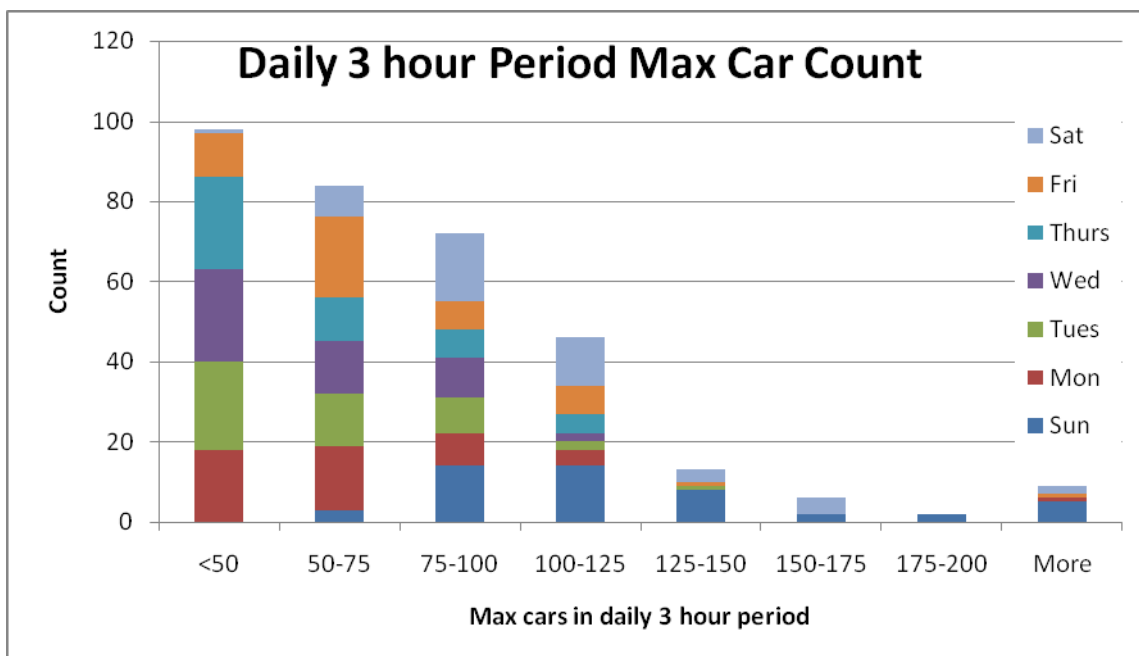
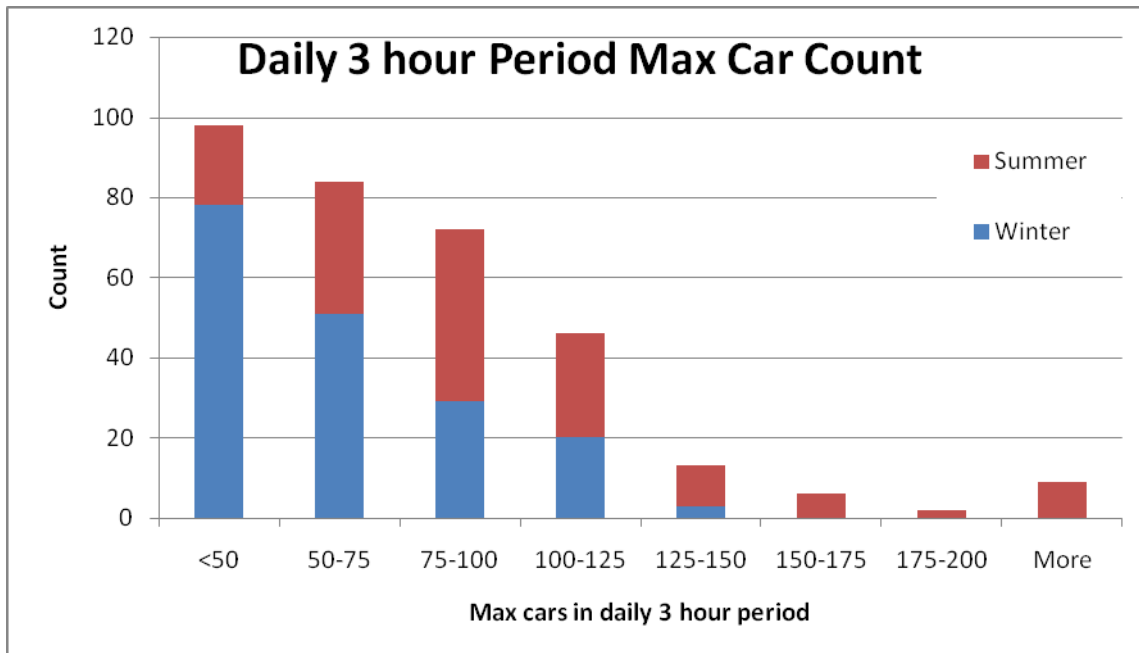
Date of Visit	Total Cars	3 hour period
Saturday, July 19, 2008	386	11-1 PM
Saturday, July 19, 2008	337	10-12 PM
Saturday, July 19, 2008	273	12 -2 PM
Monday, May 26, 2008	248	1-3 PM
Sunday, May 25, 2008	242	1-3 PM
Friday, May 16, 2008	235	12-2 PM
Sunday, May 18, 2008	234	1-3 PM
Sunday, May 25, 2008	229	12-2 PM
Sunday, May 11, 2008	229	1-3 PM
Sunday, May 25, 2008	226	3-5 PM
Saturday, May 10, 2008	221	10-12 PM
Sunday, May 18, 2008	214	12-2 PM
Sunday, July 27, 2008	214	1-3 PM
Sunday, May 11, 2008	207	12-2 PM
Saturday, July 19, 2008	207	1-3 PM
Monday, May 26, 2008	206	3-5 PM
Sunday, July 06, 2008	205	1-3 PM
Sunday, July 27, 2008	205	3-5 PM
Sunday, May 25, 2008	203	4-6 PM
Monday, May 26, 2008	200	12-2 PM

In 139 days of the 331 days recorded (42%), 250 or more vehicles were counted entering the Nature Center area throughout the day. These heavier usage days were more likely to occur on weekends or Fridays (59%) than during the weekdays, as the following table illustrates.

Days with More Than 250 Vehicles Counted, by Day of Week

Day of Week	Number of days with >=250 cars
Sunday	28
Monday	15
Tuesday	15
Wednesday	15
Thursday	12
Friday	23
Saturday	31
Total	139

For all days for which data exists, we identified the 3 hour period during each day having the maximum number of vehicles recorded. Again, these *most often* occurred during the two 3-hour-windows between noon and 4PM, and virtually always occurred sometime between 10AM and 6PM. However there were variations by day of week, and by season. The two following histograms show the number of vehicles in these daily maximum 3 hour periods, categorized by season, and then categorized by day of week.



In 76 of the 330 days of data, that 3 hour maximum count was at 100 or more vehicles. Thus in at least 76 days throughout 11 months of the year an excess of 35 or more vehicles are estimated to have been at the Nature Center (or attempting to be at the Nature Center) than were parking spaces available. Even given potential inaccuracies in assumptions made for these analyses, a conservative estimate suggest that in well over 50 days per year parking capacity is handily exceeded, with perhaps as many as 100 or more days a year experiencing above capacity vehicular traffic.

Although substantially more of the days with data occurred in the winter season rather than summer, the first graph highlights that most of the heavy-vehicle-use (though not all) days occur in the summer. Similarly most of

the heavy-vehicle-use days occur on Sunday, followed by Saturday and Friday. Very rarely are 100 or more vehicles counted in a 3 hour period during Monday-Thursday (with Monday holidays accounting for some of this exception).

Projections for Vehicle/Trail Use in the Future

Projections for future use of the Nature Center facilities is based on estimates of future growth in tourism, of future local population growth, and assumptions that historical use trends are likely to continue into the future. It is necessary to understand the current mix of Nature Center users (tourists, local residents, others) in order estimate future capacity requirements of the Nature Center.

Survey data collected by the Nature Center during 2008 permits an estimate of the impact of tourists (for our purposes defined as non-state-residents visiting the Nature Center) on Nature Center use. Survey results are not necessarily representative of all visitors to the Nature Center, though survey recruitment methods suggest little likelihood of overt bias. It is plausible that tourists were more likely surveyed than local users, given the more relaxed visit and schedule afforded by persons on vacation, although this overrepresentation is likely not dramatic. About 33% of survey respondents were from other parts of the US (less than 2% were international tourists). However in the winter only a 12% of visitors are estimated to be tourists, while in the summer 51% of respondents were tourists.

Tourism data for the state of Alaska indicate that over the last several years tourism has increased at an annual rate of about 6%. However, year to year variation has been substantial (see table below), and the recent downturn in the US economy will likely lessen tourism growth in the next few years. Based on these data we have used a conservative estimate of a constant 2% annual increase in tourist visits for projections in future years.

Tourists Visits to Alaska, by Year

Year	2001	2002	2003	2004	2005	2006
Tourists	1,202,800	1,275,000	1,310,100	1,447,400	1,632,000	1,631,500
Yearly increase		6%	3%	10%	13%	0%

Sources: 2001-2004 data from Alaska Visitor Arrivals studies (conducted by Northern Economics, Inc.)

2005 data based on 2006 visitor/resident ratios obtained for AVSP V (conducted by McDowell Group, Inc.).

<http://www.commerce.state.ak.us/oed/toubus/research.htm#2006>

Survey data also provides information about resident use of the Nature Center. About 93% of resident visitors come from Anchorage and Eagle River/Chugiak (approximately equal proportion from each area). Only about 5% come from the Mat-Su area, and a small number from other parts of Alaska. Utilizing projections of future growth in the Anchorage and Eagle River/Chugiak areas can supply adequately accurate estimates of future growth likely in Nature Center resident users.

The following table presents projected population for the Anchorage/Eagle River/Chugiak regions over the next several years. Alaska has a young population compared to the rest of the US, although as in the rest of the US the population of Alaska is aging. Rather than growth in the general population, it is most applicable to consider growth in the population of likely vehicle and trail users; persons between the ages of 20 to 69 inclusive. The

second set of numbers below indicate a projected increase of slightly more than 4% every 5 years over the next 5-10 years, followed by a decline to close to 2% growth over 5 years in subsequent years.

Anchorage/Eagle River/Chugiak Projected Population Increase, and Percent Growth

Year	2006	2010	2015	2020	2025	2030
Population	282,813	293,323	306,902	322,087	337,706	350,871
% Growth		4.6%	4.6%	4.3%	4.0%	3.5%

Age 20-69 Anchorage/Eagle River/Chugiak Population Projections

Year	2006	2010	2015	2020	2025	2030
Population	181,635	189,510	196,868	200,314	204,731	207,970
% Growth		4.3%	3.9%	1.8%	2.2%	1.6%

Source: Alaska Department of Labor & Workforce Development, Research and Analysis Section, Demographics Unit.

<http://almis.labor.state.ak.us>

Based on the above assumptions of projected growth patterns among both tourists and residents, we can estimate growth in Nature Center vehicle use and trail use in upcoming years. Because projected growth rates differ between tourists and residents, and because the ratio of tourists to residents varies by season, projection of changes of Nature Center use will also vary by season. As summer use is higher, and is more affected by tourists, and because tourism growth is projected to be greater than resident population growth, the disparity between summer use (higher) and winter use (lower) will likely grow in the future.

Estimated Percentage Population Increases

		Proportion of Total Visits: Summer	Proportion of Total Visits: Winter	2010	2015	2020	2025
5-Year Increases	Residents	48%	87%	2.1%	3.9%	1.8%	2.2%
	Tourists	52%	13%	4.0%	10.0%	10.0%	10.0%
Cumulative Increases	Residents			2.1%	6.1%	8.0%	10.4%
	Tourists			4.0%	14.4%	25.8%	38.4%
Combined Cumulative	Winter			2.3%	7.2%	10.3%	14.0%
	Summer			3.1%	10.4%	17.3%	25.0%

Using the estimates from the above table we conservatively estimate 3.1% growth in summer Nature Center use by 2010, and 2.3% growth in winter use by 2010. By 2015 growth above current levels is estimated at 10.4% and 7.2% for summer and winter use respectively. A 25% increase in use is conservatively estimated by summer 2025.

Currently for more than 20% of days the number of vehicles in the most busy 3 hour period during the day exceeds 100 vehicles (and summer only, 55 of 149 days with data collected, or 37% of days), yet only 65 parking spaces are available. If the number of vehicles increases in line with the increased population projections, this situation will worsen. By 2015 we estimate 30% of the days will have a 3 hour period during the day with more than 100 vehicles, and by 2025 that proportion is likely to grow to more than 38%. If we consider only the summer season, when currently 37% of the days have a 3 hour period with more than 100 vehicles, we

anticipate at least 46% of summer days reaching that level by 2015, and by 2025 60% of summer days having a 3 hour period with more than 100 vehicles.

Extremely heavy vehicle days during the summer (3 hour period with 150 or more vehicles) will increase from 11% of summer days to 15% by 2015 and 22% by 2025.

If we estimate that during the summer season 10% of vehicles visiting the Nature Center are RV's, then because these vehicles typically occupy 2 space, we need to increase by 10% the number of spaces required during these peak summer days.

Trail use will increase accordingly as well. Currently 17% of days recorded have 150 or more trail users (and all of these days are in the summer). By 2015 that is expected to increase to 20% of the days and by 2025 27% of days are expected to have more than 150 trail users.

Summary: Both trail use and vehicle traffic are estimated to substantially increase in coming years. We suggest that by measures most relevant to anticipating parking capacity, inadequate or nearly inadequate capacity will grow from about 37% of summer days currently to 60% of summer days by 2025. It is important to remember that these growth estimates are based on conservative projections of population and tourism increases; the likely increases of vehicle traffic and trail use at the Nature Center could quite possibly be much greater.

Based on the above estimates, we can project the number of parking places required to reduce from the current 37% of days with an excess of 35 vehicles in a 3 hour period (currently 100 or more vehicles for 65 spaces) to only 20% of summer days with a 3 hour period with more than 35 vehicles in excess. An extra 20 parking spaces should result in "just" 20% of summer days with a 3 hour period with more than 35 cars in excess of the new 85 spaces. If we further adjust that figure by assuming 7-10% of vehicles are RVs requiring two spaces, than an additional 5-8 spaces are required. Similar calculations can be made to accommodate future projected visitor growth. The following table displays these results:

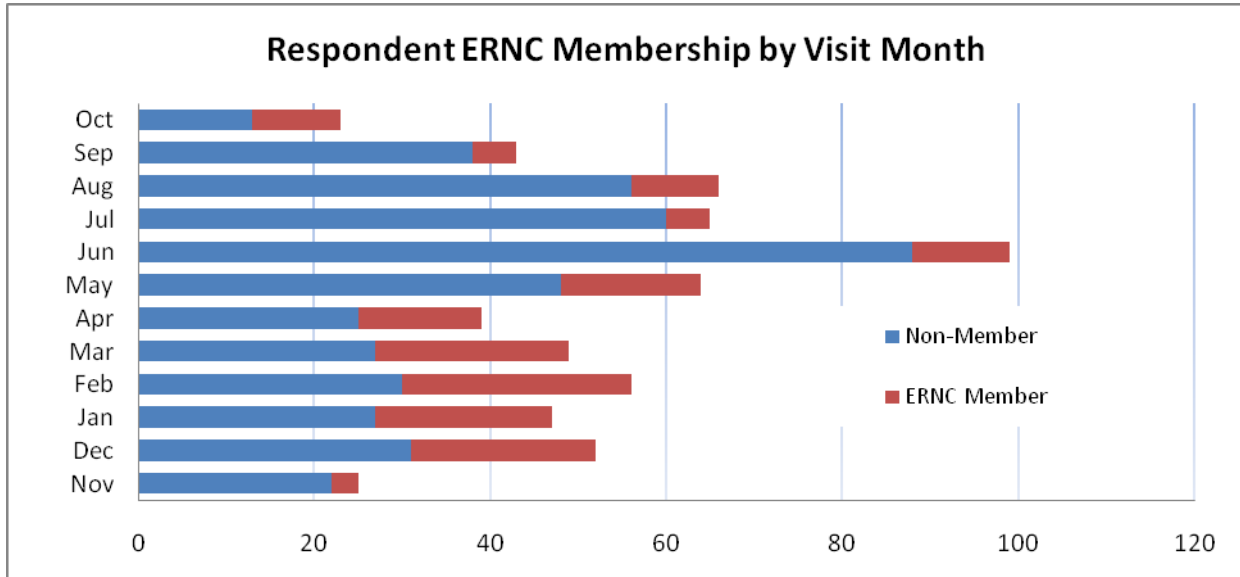
Projected parking spaces required to achieve 80% of summer days with 35 car excess or less during maximum usage 3 hour period

Year	2008	2010	2015	2020	2025
Min vehicles in top 20% of 3 hour period days	120	124	132	141	150
Spaces required for at most 35 vehicle excess on all other days	85	89	97	106	115
Spaces required assuming 8% RVs	92	96	105	114	124

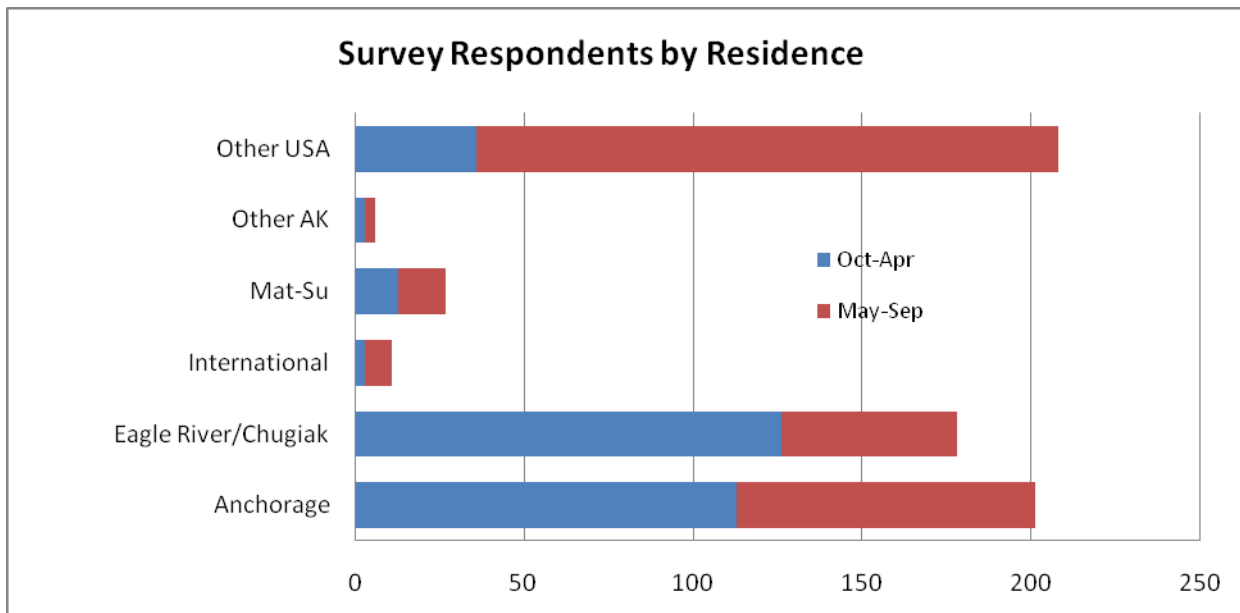
Survey Results

Surveys were conducted from the last week in November 2007 to the last week of November in 2008. A total of 633 surveys were completed. During some periods people were actively recruited by Nature Center volunteers to complete a survey, while the remainder of the time surveys were available via passive recruitment. We do not have information on the quantities of surveys completed categorized by recruitment method.

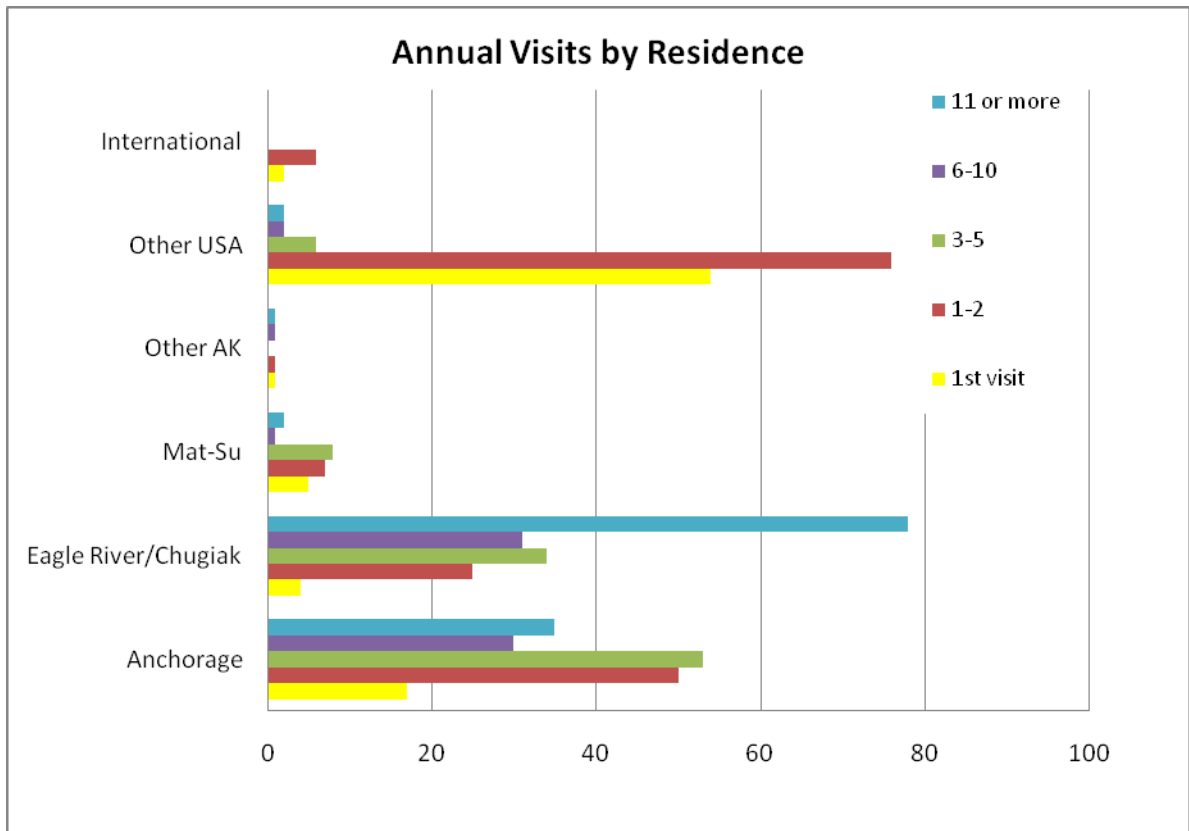
Surveys were most often completed in June, with other summer months seeing more recruitment than the winter months. Respondents were infrequently members of the Nature Center.



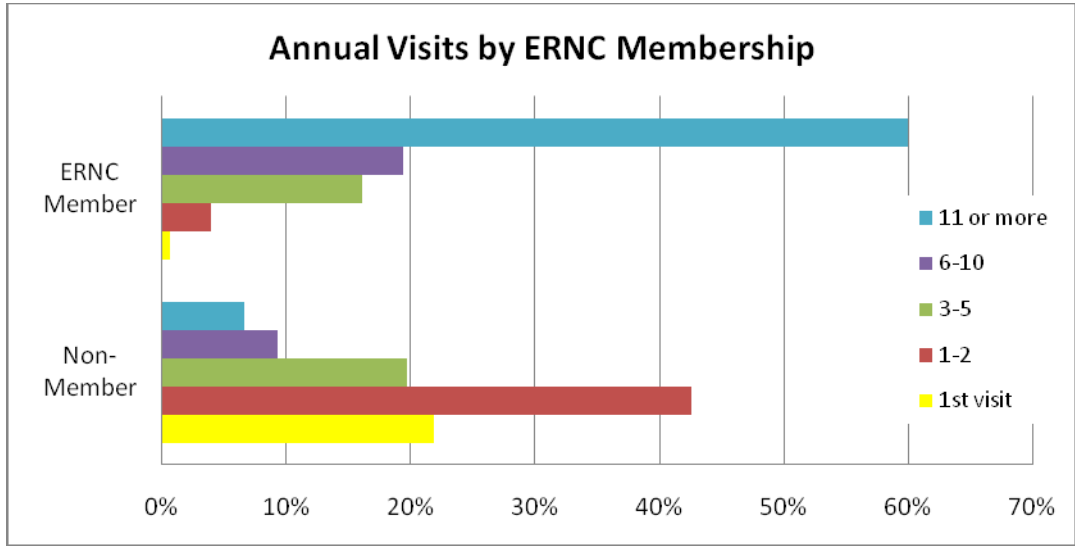
A much lower proportion of surveys were completed by non-Alaska residents during the winter than during the summer, when many more tourists completed a survey. About equal numbers of Anchorage and Chugiak/Eagle River residents responded to a survey, which in turn equaled the number of other tourists from other parts of the US responding. Roughly 2/3 of respondents lived in Anchorage, Eagle River/Chugiak, or Mat-Su.



Not surprisingly tourists were much less likely to visit the Nature Center multiple times; nearly all visited just once or twice. Multiple annual visits were common among Anchorage and Eagle River/Chugiak residents, with Eagle River/Chugiak survey respondents most likely to visit 11 or more times a year.

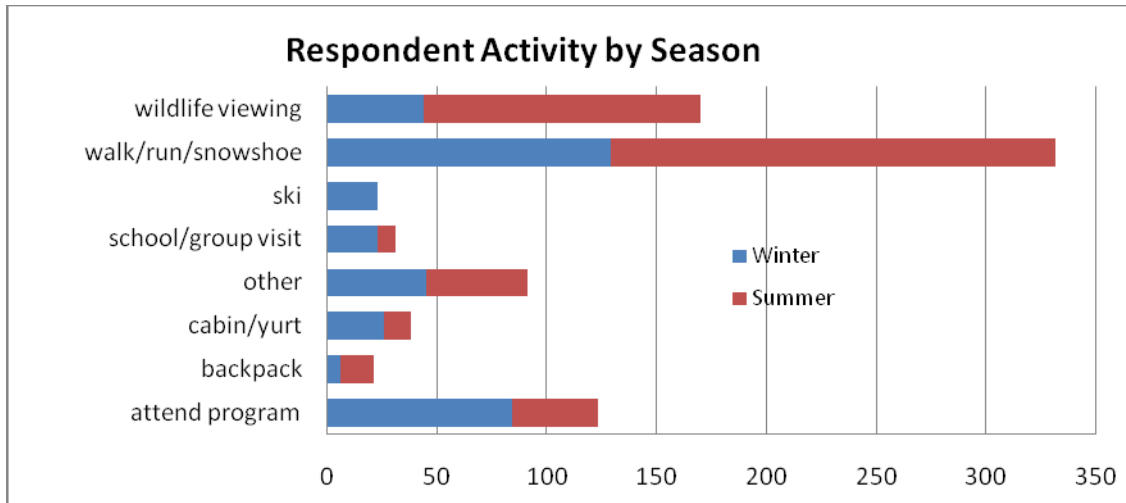


About 60% of respondents who said they were ERNC members visited 11 or more times per year, while only 7% of non-members reported visiting so frequently.

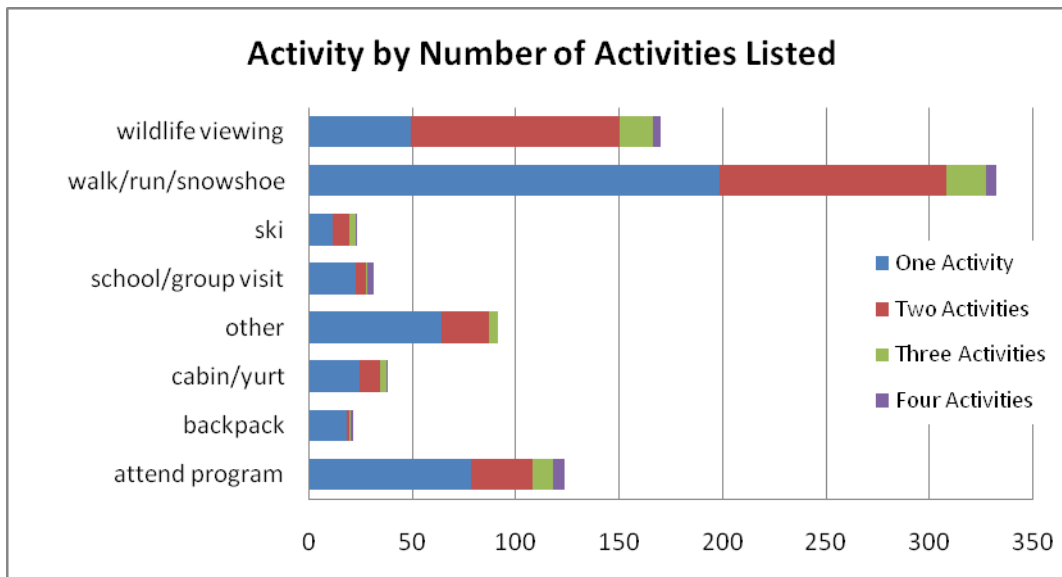


The most common activity in either summer or winter of respondents was walking/running/snowshoeing. During summer months, wildlife viewing was the second most popular activity specified, while in the winter it was attending a program (which was nearly as often listed as walking/running/snowshoeing). Attending

programs was less popular in the summer, both as a percentage of all activities listed by summer respondents and as the total number of respondents attending programs in the summer vs. winter.

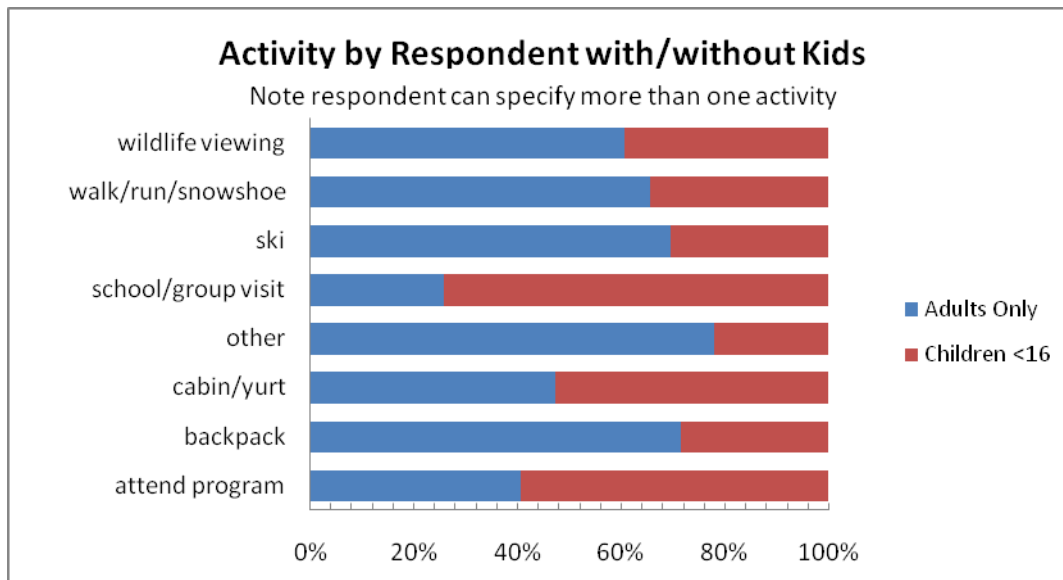


Note that multiple activities could be listed by each respondent, with the average number of activities reported being 1.3 per person. Thus most people who specified wildlife viewing as an activity also listed at least one other if not two or more other activities as well. A similar, though not as extreme pattern was seen by persons listing walk/run/snowshoe as an activity. Persons responding with other activities were much less likely to state multiple activities, as exemplified by those listing backpacking as an activity which was nearly always the only activity listed. Interestingly those listing attending a program as an activity were not so likely to list other activities, in part likely due to the larger proportion attending programs in the winter.

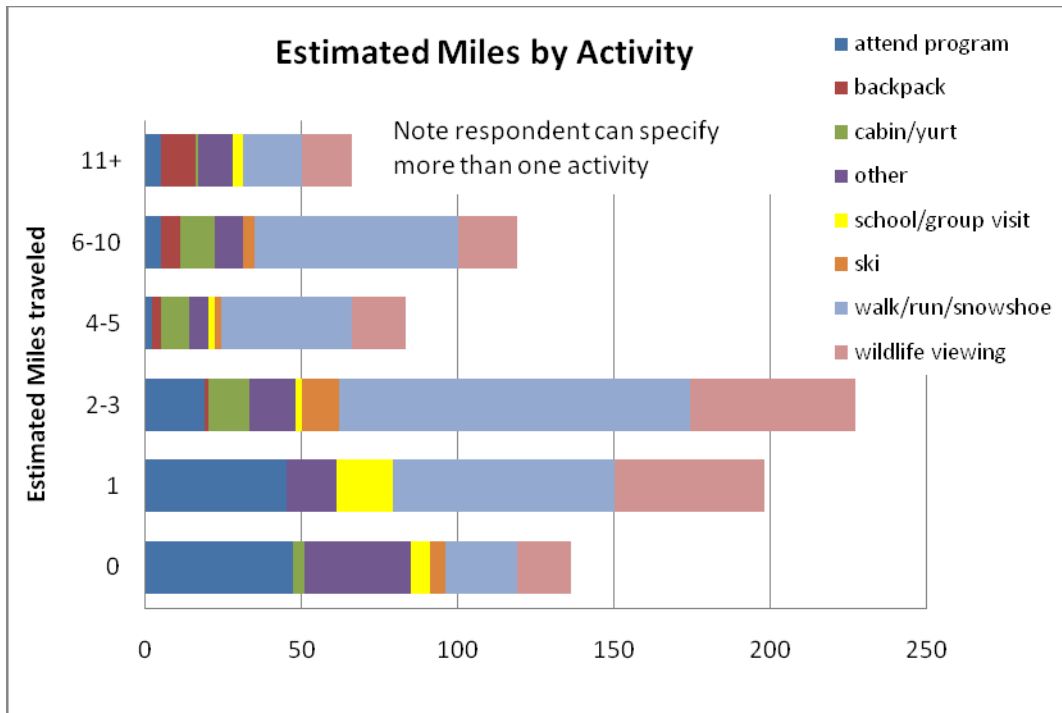


The most common anticipated length of stay was 2 hours, followed closely by 3 hours. 16% of respondents planned to stay less than 2 hours, and 51% planned to stay 3 hours or more. Ten percent of respondents were likely overnight visitors, planning on staying 11 hours or more. Relative lengths of stay did not differ much by

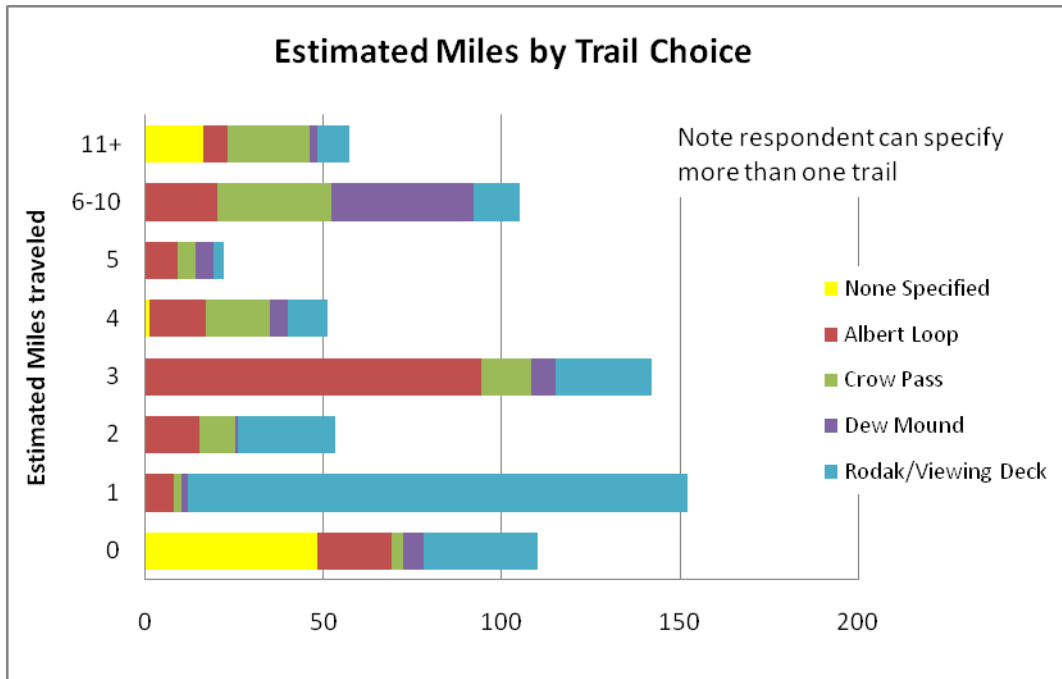
Activities specified by respondents with children <16 in their party differed from those specified by respondents without children. Most popular activities by respondents with children included attending programs (60% listing this activity had children), school/group visit (70% were with children) and cabin/yurt (slightly more than 50% of those listing this activity had children in their party). Skiing, backpacking, and “other” were less frequently listed by respondents with children in their party.



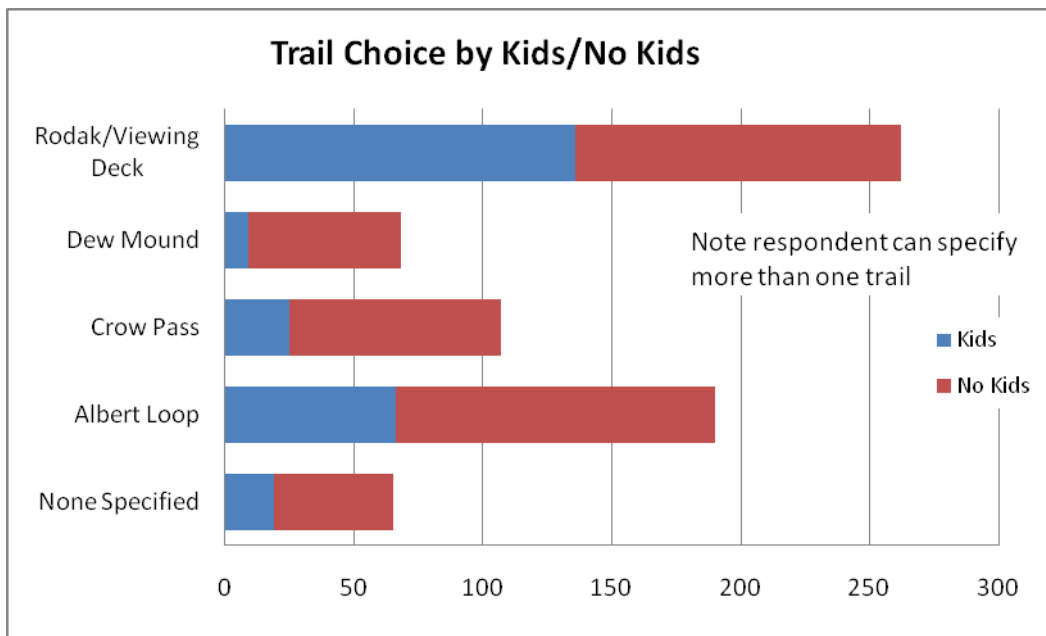
Estimated miles travelled naturally varied by activity as well. The most common response of miles travelled was 2-3 (29% of respondents), yet many respondents travelled fewer miles (38% travelling 0 or 1) and many travelled further (33%). While recalling that respondents could specify more than one activity, those attending programs were most likely to travel 0 or 1 miles, as were school/group visits. Of course backpackers nearly always travelled 4 or more miles, while skiers seldom did.



Trail choice also dictated mileage reported (or vice-versa). Noting that more than one trail could be specified, Rodak/Viewing Deck trail was by far the most popular trail comprising 38% of all trails listed. Albert Loop was listed more than 27% of the time, Crow Pass more than 15% of the time, and Dew Mound just 10% of the time. Note that some of the popularity of the Rodak trail is due to it being listed by respondents traveling further on other trails, as is also clearly the case for the Albert Loop trail. Only slightly more than half of respondents listing Cross Pass trail traveled 6 or more miles. Those using the Dew Mound trail were unlikely to report less than 6 miles traveled.



If the respondent had children under age 16 in their party also influenced the trail choice. Crow Pass and Dew Mound were much less popular by respondents with children, while Rodak/Viewing Deck was of course quite popular, and Albert Loop about half as popular. In contrast, those without children were equally likely to list the Albert Loop and Rodak/Viewing Deck trails.



Student Education Results

The Eagle River Nature Center offers an exciting educational destination close to a major metropolis. The programs, guided walks, classes, and activities offered by the Nature Center are very popular among schools; in 2007 and 2008 nearly 3000 students per year attended programs offered by the Nature Center staff (usually specifically requested by schools). In addition, more than 500 other students (scouts, day-camp students, etc.) were served by the Nature Center in each of the last two years. Finally, about 250 students are served each year by Nature Center staff outreach visits to locations outside of the park.

Class requests for Nature Center activities are seasonally dependent. More than half of the annual utilization by school classes occurs in September and May (with May being most popular). Unfortunately many school class requests are turned down each year due to the limited capacity of the Nature Center facilities. Illustrative of this limitation is the Center's need to rent additional latrines during the two months of heaviest utilization. More problematic is the limitation posed by having just one multipurpose room which must simultaneously house educational classes, host the interpretative displays designed for perusal and enjoyment by all Nature Center visitors, and house the center store, information desk, restrooms, children's corner and wood stove heat source. Inclement weather exacerbates the disruption and conflict resulting from different groups needing to use the same space simultaneously. Center staff report that visitors have been observed to return to their vehicles and forego visiting the Nature Center when encountering the overflowing main lodge area on a busy day.

While Center staff strive to serve as many (varied) groups as possible, demand far exceeds the resources available and requests for educational programs for visiting classes in particular have to be limited. Current facilities can accommodate only two classes in the Nature Center at any one time, while many schools would like to bring more than two classes at a time. Popular dates are quickly filled and interested teachers must settle for less attractive options than guided tours/walks/classes, such as self-guided activities or alternate destinations. A stop-gap measure to address some of these problems has been the construction of the educational yurt. However, as it lacks electricity and is far from the Center it has been able to only partially address these restricted resource problems.

The following excerpt from a naturalist at the Nature Center illustrates many of these issues well:

“The general public can be overwhelmed entering the main lodge when we have 60 students plus all their chaperones (12 or more). And then over lunchtime, there may be double that number mingling in and around the main lodge, as the morning classes are waiting for their bus, and the afternoon classes have already arrived. Another problem is teaching with the level of noise from all the various groups. We typically spend between 15-30 minutes teaching in a classroom setting before heading outside, even in good weather. Bad weather makes the situation worse, as most classes will also be eating their sack lunches at the Nature Center, and we don't make them eat outside in the rain... Another complicating factor can be self-guided groups – no matter how crowded the building is, if it's open, then self-guided groups want to come inside and see exhibits, shop in store, ask questions of front staff, etc, and therefore we cannot keep them out on account of a class in session.

Therefore I think the primary reason for needing classrooms is that we are currently operating in a manner that is less than ideal for *both* the students involved or the general public wanting to visit the center. Separation of teaching and public areas is therefore critical, in my opinion, in order to provide both groups with a better, quality experience.”

Other local locations offering somewhat similar experiences are limited to the Campbell Creek Science Center within the city limits of Anchorage. The Science Center’s offerings and capacities have continued to grow as demand has grown over the last several years, however the Nature Center has been unable to similarly expand to the increasing demand it faces. While the Science Center too is now limited by space constrictions, the Nature Center has been operating at and beyond capacity for many years.

With continuing population growth and increased incorporation of environmental and natural science topics into K-12 education, demand for services offered or possible at the Nature Center are quite likely to increase beyond the current overwhelming demand. Without additional classroom resources, the educational opportunities offered by the Nature Center to students throughout the Anchorage Bowl will necessarily continue to be far below the requested demand. In order to maximize the population served by stretching available resources, the Nature Center must at least marginally diminish the quality of services that are offered to the limited number of students that can be served, as well as adversely affect the Nature Center experience of the general public. Additional classroom space would permit both meeting current and future educational demand, and providing a superior Nature Center experience to students as well as the general public.