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Natural Resource Stewardship and Science

Denali National Park and Preserve Winter Visitor Use

Winter Visitor Experience Survey and Early Road Opening Collaborative Study

Natural Resource Report NPS/DENA/NRR—2019/1893

ON THE COVER

A visitor snowshoes on trails at the Mountain Vista Rest Area

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Winter Visitor Experience Survey and Early Road Opening Collaborative Study

Natural Resource Report NPS/DENA/NRR—2019/1893

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Executive Summary

Two aspects of Denali National Park and Preserve's (DENA) winter and shoulder season motivated a visitor study of the park in the non-summer months. First, the early road opening (ERO) Denali Plowing Environmental Assessment (EA) requires monitoring the impact of vehicles on the road and at the Mountain Vista parking lot on wildlife, the soundscape, and other natural resources (NPS 2013). Second, DENA has experienced a persistent, annual increase in winter visitors within the past five years. A consistent rise in winter visitation necessitates a better understanding of why people come to the park in winter, their relative mobility in the winter, their needs and expectations, and whether the early road opening has a strong effect in attracting winter visitors. This study intentionally parses factors that drive winter visitation, aims to determine whether the Park is meeting expectations regarding service, and provides park managers with the context needed to determine the accrued costs and benefits of the early road opening and the function of the Winter Visitor Center and staffing. The study bridges 2017 and 2018 winter months in Denali: February – April.

Demographics of Winter Visitors

1) In 2018, 1,591 people visited in February, 3,616 visited in March, and 2,239 visited in April. Compared to 2017, visitation was 17% higher in February, 16% higher in March, and 5% lower in April. Since the first year of the ERO (2014), February, March, and April 2018 visitation increased by 132%, 118%, and 50%, respectively (see Introduction).
2) Winter visitors are young (mean (M) = 33 years old) with an average household income of $94,277. Compared to 2017 winter visitors, 2018 winter visitors were younger (2017: M = 40) and of similar income (M = $94,006).
3) The majority of winter visitors reside in the United States (93%). International Asian visitors make up 3% of Denali's winter visitation, other international visitors account for 3%, and Canadian visitors make up 1%.
4) The greatest percentage of domestic visitors came from the western U.S. (California, Hawaii, Washington, Oregon, Idaho, Montana, Wyoming, Colorado, Utah, and Nevada) (32%) followed by Alaska (28%).
5) Alaskan visitors came primarily from Fairbanks (58%), followed by Anchorage (37%). Only one visitor reported being from Healy. No other Denali Borough residents took the survey. This was a decrease from local participation in the 2017 survey.
6) Mandarin was the native language of 30% of Denali's winter visitors, but the majority of Mandarin-speaking visitors reside in the U.S. (87%)[1].

[1] Note that race, residency and native language are three separate self-reported measures. Visitors can identify as Asian, but reside in the U.S. and speak Mandarin.

Trip Characteristics

7) Eleven percent of sampled winter visitors (between Feb. 12 – April 15) were on a commercial tour. Total tour visitors that visited the winter visitor center (January – April 2018) show that 11.23% of visitors come to the park in the winter with a commercial tour.
8) Students made up the greatest percentage of winter visitors (17%)2, particularly during March with 23% comprising this months' visitation. Of all student visitors, 84% came in March.
9) Visitors typically spent four to seven days in Alaska and did not stay overnight in the Park or surrounding area.
10) Eighty-eight percent of visitors were aware the Park was open. 47% were aware that the Denali Park Road was plowed to Mile 13. 23% of all visitors came to the Park because the road was open.
11) Fifty-nine percent of residents living within three hours of the park were aware the park road was open.
12) Visitors who knew the road was open prior to arriving in the Park spent more time in the area were twice as likely to engage in non-motorized activities.
13) A majority of visitors were visiting Denali National Park and Preserve for the first time (76%). Nineteen percent had visited previously in the summer.
14) Thirty-five percent of winter visitors prefer to visit Denali National Park and Preserve in winter, 40% prefer summer, and 25% prefer both.
15) Driving (34% of visitors), hiking (29%), and snowshoeing (22%) were the most common activities reported by winter visitors in 2017-18.

Trip Motivations and Expectations

16) Visitors' trip motivation to Denali National Park and Preserve was to see the Park by driving (34%), or recreating (58%). Recreation motivation was primarily hiking (28%), or snowshoeing (22%). Only 4% of DENA visitors said they came to the park for aurora viewing.
17) Visitors expected to experience a connection to nature (28%), cold and snow (19%), a sense of adventure (19%), and solitude (10%). They expected to see Denali (36%) and wildlife (32%), primarily moose (52%).
18) Friend groups had the least expectations to experience solitude of any independent travelers (9%), while groups composed of family and friends had the greatest (21%).
19) Tour groups had a lower expectation for solitude (8%) compared to independent travelers but a higher expectation for a connection to nature (30%) and getting away from noise (8%).
20) For the average visitor, 13.5 people is considered a large group.

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[2]this is likely an underrepresentation due to open-ended response of the "occupation" survey question. Some may be students but listed " engineer" or " artist" instead.

21) Most visitors felt their visit would be improved by potential services (warming hut, more groomed trails, activities with rangers, food). For all services, visitors felt that their experience would be somewhat improved (47%) or very improved (30%). Visitors did not report their experience would be substantially improved by food and beverage services (28% reported no improvement), but were most willing to pay for food and beverage services (81%).

22) The greatest percentage of visitors was willing to pay (WTP) for dogsled tours (92%), ski rentals (84%), guided ski (83%), and fat bike rentals (83%). Dogsled tours averaged $70 WTP, whereas ski and fat bike rentals averaged $20 WTP.

23) The traffic camera recorded 1,932 vehicles accessing the Denali Park Road west of headquarters (mile 3.5). Seventy-one percent were personal vehicles. Thirteen percent were administrative vehicles, and two percent were commercial.

Together these findings tell us that winter visitors are younger, more independent, and more frequently Alaskan compared to summer visitors (Manni et al., 2012, Fix et al. 2011, Meldrum et al., 2007). Winter visitors are interested in services such as dogsled tours and guided skiing. They are motivated by physical activities, in contrast to summer where the average (non-backcountry) visitor is motivated by wildlife viewing. This report gives park management more information about the motivations and expectations of DENA's winter visitors, if these visitors are aware of and motivated by the ERO, and how the ERO affects their experience in the Park.

Acknowledgments

Thank you to Murie Science and Learning Center staff, Denali National Park and Preserve Resource team and Denali Geoscientist in Park interns who helped in pilot testing the survey and whose comments were valuable to the final survey design. Thanks to Murie Science and Learning Center staff and volunteers who helped deliver the survey in 2017, and provide space and support for the survey efforts throughout the winters of 2017 and 2018.

List of Terms

Early Road Opening (ERO): the date when the park road is plowed to Mt. Vista Rest Area (mile 13) and open to private vehicles, typically the second weekend in February annually. Beginning in 2014, the Denali Park Road has been plowed and opened to vehicle traffic around mid-February. Prior to 2014, it was not plowed and opened until mid-March.

Rove: a scheduled observation period (2 hrs) to monitor (1) the interaction of vehicles and wildlife along the road corridor and (2) use by and behavior of vehicles at the Mountain Vista rest stop.

Winter Shoulder Season: the period between October and mid-March**.**

Sample Universe: the projected population of winter visitors in a given year. The sample universe is used to calculate the appropriate survey sample size.

Logistic Regression: a process by which several independent or predictor variables and a dependent variable are modeled in a log-linear relationship in order to find significant relationships in the data.

Qualitative Content Analysis: a process by which qualitative material (observations, interviews) are distilled into themes and coded for use in quantitative applications or contextualizing findings.

Soft Refusal: when an individual refuses to take survey but does agree to respond to a set of questions verbally. The responses to these questions are used to assess any bias in the survey from non-participants.

Hard Refusal: when an individual refuses to take the survey and respond to a set of questions verbally.

Non-response Bias: the error in a sample that arises if individuals drawn to participate in the survey are very different from those who consistently do not participate in the survey.

Two-Way T-Test: tests if the means of two groups differ more than would be expected by chance.

Introduction

Rising winter and shoulder visitation is consistent in recent years (Figure 1). Primarily external factors drive this (such as marketing and service refinement in tourism hubs), but to what extent do internal factors, such as the early road opening (ERO), contribute to this rise in visitation? How well known is it to the public that the park is open in the winter? These two questions motivated a collaborative study between the Denali Road Ecology and Social Science programs which examines winter visitation along the Denali Park Road, at the winter visitor center (hereafter, MSLC), and at the Mountain Vista Rest Area (hereafter, Mt. Vista).

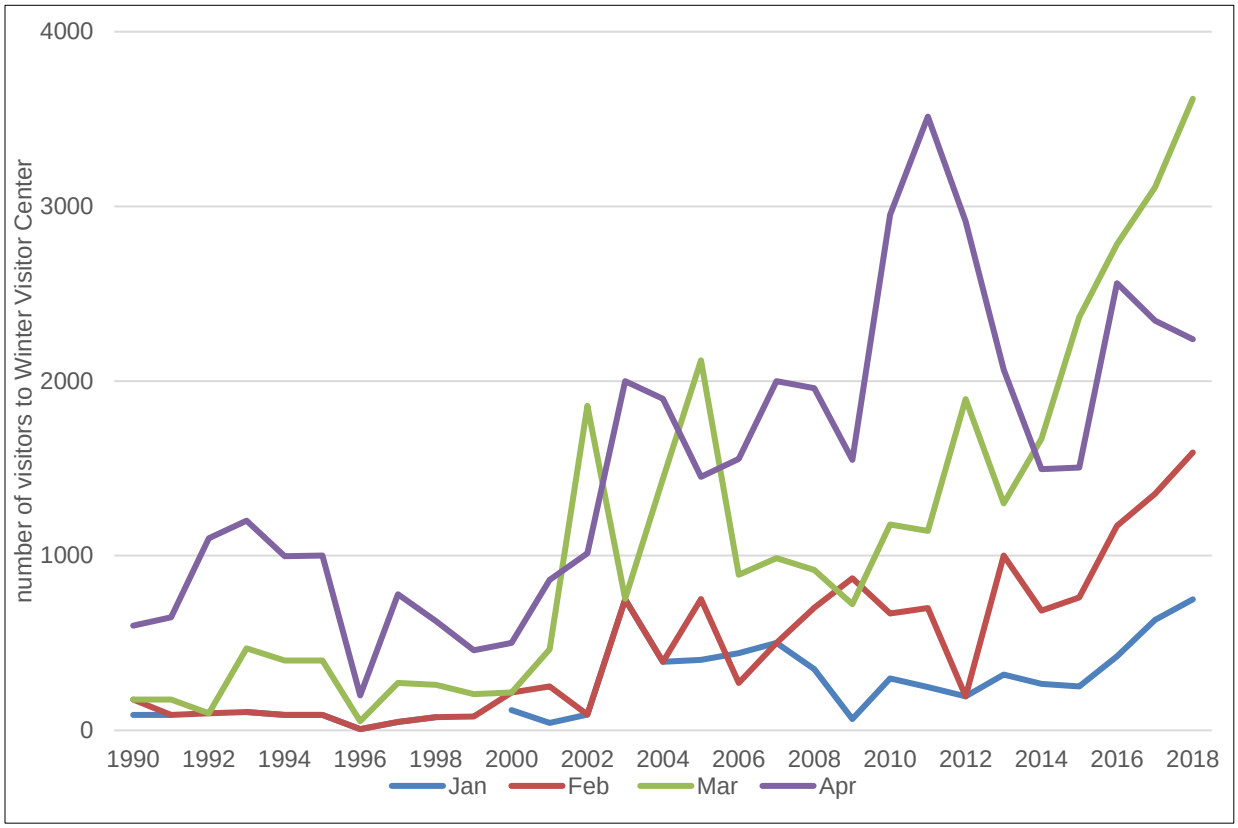

Figure 1. Winter/Shoulder Visitation to Denali National Park and Preserve's Winter Visitor Center (Murie Science and Learning Center). Visitation data from 2005 – present is collected by the staff of the Murie Science and Learning Center (MSLC). From 2005 - 2014, staff counted each time a visitor entered the center. Since 2014, staff has counted each visitor once. National Park Service and MSLC staff was not included in these counts. In 2018, January had 750 visitors, February 1,591 visitors, March 3,616 visitors, and April 2,239 visitors.

The ERO began in 2014. Since then, park resource staff have conducted roves to monitor the use of the park road by private vehicles, number of parked and idling vehicles at Mt. Vista, length of time parked at Mt. Vista, wildlife sightings, and wildlife behavior (NPS 2013). The ongoing monitoring context provided a valuable opportunity to better understand how early road access to the Park in

winter can stimulate a diversity of visitor activities and experiences. ERO was predicted to facilitate winter visitor experience, responding to a general rising trend of “aurora tourism” to Alaska and the circumpolar north.

Three objectives guided the Winter Visitor Experience Survey that began in 2017: (1) examine how the road opening affected trip plans of visitors to DENA; (2) determine the distribution and density of winter visitor demographics; and (3) analyze visitor experience against visitor reported expectation and need. To address these objectives, NPS staff drew on theories of trip behavior and planning, expertise in social science survey methods, and experience with survey interviewing.

The purpose of the winter visitor experience study was to explore visitor needs in winter while framing the study in DENA management goals. This report integrates the results of the Winter Visitor Experience Surveys from 2017- 2018 and ERO monitoring of the park road in 2018.

Methods

Winter Social Science Survey

This survey examined why people came to the park (motivations), how (group, cost, travel time, length of stay), with what expectations of service and experience (knowledge, needs), and their willingness to pay for additional services. We conducted two Winter Visitor Experience surveys. The surveys took place in February 12 to April 15 in 2017 and 2018. The survey aimed to address questions related to winter use, which help to inform the cost and benefits of continued road plowing that begins February 1 annually.

Data Collection

We administered surveys to visitors and National Park Service (NPS) staff prior to February 12 to test the instrument. This gave us insight into how people interpreted questions and their ease of answering questions with potentially unclear language. It also provided valuable information about visitors' comfort with questions. The final survey instrument (Appendix A) and sampling plan was reviewed by Office of Management and Budget for a three-year consecutive execution (OMB Protocol Number 1024-0224). In 2018, revised questions were added to the instrument that did not receive OMB review in time for the execution of the survey. These questions were not approved.

We generated a stratified random sample to ensure each winter visitor had an equal chance of selection in the study. A random selection of days and times within days were generated using a Stata v. 15 random sample generator for clustered samples. Decisions about data collection and the sampling design were informed by staff's institutional knowledge.

A trained survey administrator approached every "n^{th}" (usually every 3rd) individual over age 18 and asked if they would participate in the study. For groups, we asked the individual with the most recent birthday to complete the survey to minimize potential group leader bias (Battaglia et al., 2008). The schedule was stratified by day of the week and time of the day for survey administration; data were collected in the mornings and afternoons of 19 weekdays and seven weekend days. We coded and entered responses into Stata v. 15.1 software for data storage and analysis. Surveys were administered at the MSLC. The on-site survey took approximately 12 minutes to complete. We used contact logs to monitor response rates and calculate potential non-response bias (Allison 2002).

In 2018, rather than considering entire tours to be a single group, we identified subgroups within the tour, and sampled every n^{th} subgroup. When possible, we approached sample groups and asked the person with the most recent birthday to take the survey. In several cases, we enlisted the tour guide to ask for volunteers to take the survey. These surveys were included in the statistical sample.

Data Analysis

Frequency distributions and valid percentages (i.e., percentages excluding missing values) were estimated for various response categories. Descriptive statistics were calculated to illustrate mean values and standard deviations. Two-way t-tests were used to compare between group mean values.

We followed this analysis with a multiple logistic regression of unique factors[3] identified in the two-way t-tests. Scaled survey items were used in order to avoid list-wise deletion of missing survey observations. Cronbach's alpha tests revealed internal consistency of scales used in this report (Dillman et al 2014).

Early Road Opening Monitoring

The study area monitored during the Early Road Opening is the segment from the Headquarter (HQ) gate (Mile 3.3) to the parking area at Savage Cabin just west of Mt. Vista (Figure 2). To maintain comparable datasets between years, the Road Ecology Program (REP) used a common monitoring period of 30 days. For 2018: Saturday, February 17 to Sunday, March 18. During the monitoring period in 2018, snow closed the road for three days: February 22-23 and March 14.

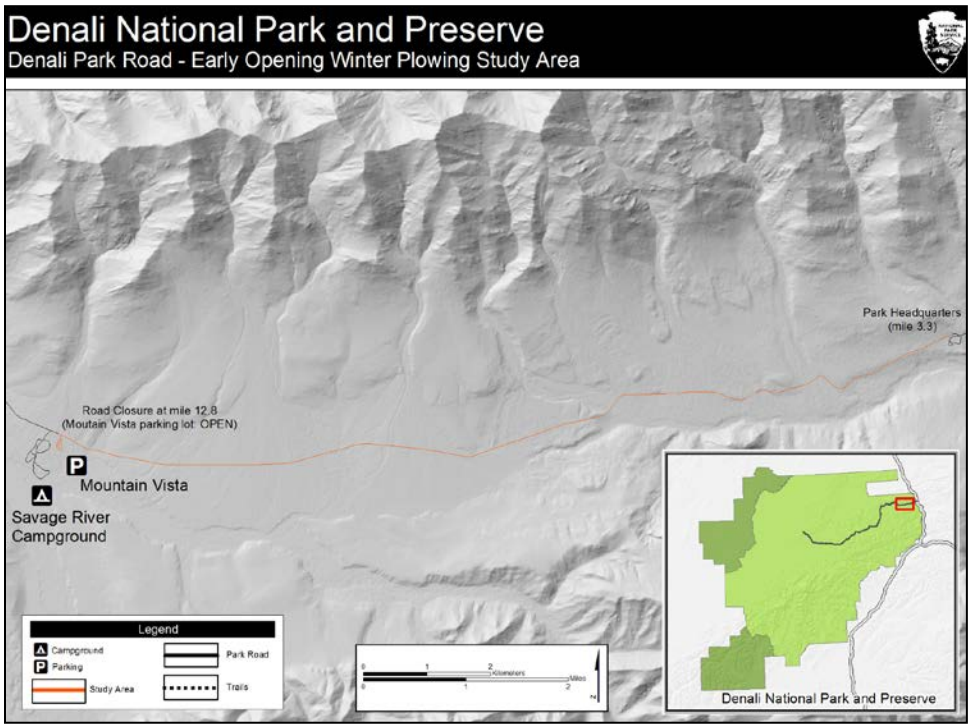

Figure 2. The Early Road Opening study area of the Denali Park Road, Denali National Park and Preserve (Denali Park, Alaska). The study area is a 9.5-mile segment of road that begins at Park Headquarters and ends just west of the Mountain Vista parking area.

Visitor Center Statistics

The Murie Science and Learning Center (MSLC, located at mile 1.4) functions as DENA's winter visitor center from mid-September to mid-May. MSLC staff have counted visitors since 2005. Counting methods have changed over time. Through 2014, staff counted the number of visitors entering the door regardless of whether they had entered earlier. Since 2015, staff count each visitor

[3] level of agreement of environmental statements by residency, group size, age, education.

only once. Thus, counts that are more recent represent a more accurate estimate of unique winter visitors at the MSLC. NPS and MSLC staff are not included if entering for work purposes.

Total Vehicle Traffic Estimates

From February 17 to March 18, REP staff deployed one Reconyx Hyperfire License Plate Camera (Reconyx, Holemen, WI) on a tree angled toward the park road at Mile 3.3 to collect data on traffic. The camera took three rapid-fire photos for each motion trigger.

We classified camera captures in Excel by 1) vehicle grouping and 2) direction of travel. Vehicles were grouped as: privately owned vehicle (POV), government-owned vehicle (GOV), heavy equipment (Equip), commercial vehicle (Commercial), indeterminate (Ind), or pedestrian (Ped), which included skiing, skijoring, snowshoeing, walking, dog walking, and biking. Direction of travel was either west (W), east (E), or indeterminate (Ind). If presence of a vehicle was inferred (e.g. from snow blown by tires or from shine made by lights) but identification was not possible, the capture was recorded as "indeterminate." Many eastbound vehicles failed to register, likely due to the angle of the camera. However, their presence could reasonably be inferred by blown snow. Where a capture occurred without a visual indicator, "no capture" was indicated.

All vehicles on the park road must travel west and east. Thus, we used the higher of the two figures as the basis for the vehicle count.

Mountain Vista Vehicle Counts

REP staff recorded number and type (POV, GOV, Equip, bus, van) of vehicles parked at MV. MV has striping for approximately 12 vehicles and 8 pull-through spaces. We used a random number generator (RNG; www.random.org) to determine dates and times of observation periods. Vehicles were counted when staff first arrived (time=0), after 15 minutes, and after 30 minutes. Total MV counts includes vehicles in the MPL but did not include the monitoring vehicle. We did not count vehicles observed driving through the parking lot without stopping.

Commercial Use and Interest

The DENA Concessions Management Specialist provided a list of CUAs issued to companies for 2018. In 2017, 741 people came through the park frontcountry a commercial tour, whereas 2018 had 1,407 visitors on a commercial tour through the park frontcountry, 89% increase.

Wildlife

Wildlife Sightings and General Observations

REP staff used Apple iPads (Apple, Cupertino, CA) to gather data on wildlife sightings along the park road between HQ and MV. Visitor and Resource Protection (VRP) rangers recorded observation during patrols using a similar analog template. Wildlife sighting data included species, count, age (adult vs. young), sex, behavior, change in behavior, milepost, side of road, and distance from road. Target wildlife species included moose (*Alces alces*), caribou (*Rangifer tarandus*), wolf (*Canis lupis*), Dall sheep (*Ovis dalli*), and grizzly bears (*Ursus arctos*). We considered different species occurring in the same location as different events.

Because more than one observer may have gathered data on a given day and because we gathered data on both westbound and eastbound trips, wildlife sightings do not represent unique counts of individuals. The goal of wildlife sightings data was to document the occurrence of wildlife viewable from the park road and describe their behavior with respect to vehicle presence.

Results

Winter Social Science Survey

The sample universe was all winter shoulder season (February-April) DENA visitors: 7,446 for the months of February, March, and April; a 93% increase from 2014 (n=3,850), a 61% increase from 2015 (n = 4,630), a 14% increase from 2016 (n = 6,514), and a 9% increase from 2017 (n = 6,811). To calculate a sample size with a 5% margin of error, we used visitation estimated from 2017 data and set a minimum size of 229 (2017 sample size: 220). Incomplete or invalid survey responses were deleted from the statistical sample in the data gleaning process. We sampled 282 individuals in 2018 and 240 in 2017. Twelve were soft refusals, 11 were hard refusals, and 18 agreed to take the survey but did not return it. In the end, 441 individuals participated in the surveys, yielding an 88% response rate.

Fifty visitors agreed to take the survey but asked to take it with them and return it after they had spent more time in the park. Visitors typically did this when they did not have time to take the survey before starting their activities or when they felt they needed to experience more of the Park before being able to complete the survey. This was noted on the survey contact log along with whether or not the visitor eventually returned the survey (76% returned the survey).

The mean group size of respondents (M = 3.53, SD = 3.46) was statistically significantly less than the mean group size of individuals who refused to take the survey (M = 5.95, SD = 1.11) ($t(253) = -2.9455$, $p = 0.0018$). This indicates a response bias that underrepresented large groups in the survey results. We did not detect any other response biases.

Half of all soft refusals were from individuals from Alaska, and 17% were internationals visitors (France and China). Respondents from Alaska and international locations were overrepresented among soft refusals, indicating a response bias. Ninety-two percent of individuals categorized as a soft refusal said they planned to stop in the Park. There was no statistically significant difference in whether visitors planned to stop in the park among visitors who did (91%) and did not (88%) refuse to take the survey ($t(249) = -0.2603$, $p = 0.7948$).

Winter Visitor Socio-demographic Information

The demographics of DENA winter visitors differ from those of summer visitors, particularly in age (VSP 2012, VSP 2007), education, and income (Fix et al. 2011, van Riper et al. 2017) (Table 1). The gender distribution of survey respondents was skewed with a greater percentage of females taking the survey (59%). Visitors in the winter of 2018 also reported the ages of their group members, which gave us the mean age of all DENA winter visitors in 2018 (M = 33.14, SD = 15.64, 0-89 years old). DENA 2018 winter visitors were primarily under 30 years old (49%) or 31 to 50 year olds (37%); few were 51 years and older (15%). Individuals who chose “not applicable” when asked their group

type had the greatest mean age (M = 39.07, SD = 13.11) and tour groups had the lowest (M = 28.39, SD = 14.97)[4].

Table 1. Socio-demographics of Denali National Park and Preserve winter visitors: 2017 – 2018. N = 441.

Socio-demographics	Response	Mean (SD)	N (%)
Gender	Male	–	178 (40.12)
	Female	–	265 (59.89)
Age	–	33.14 (15.64)	–
Number in Household	–	2.48 (1.32)	–
Annual Household Income	–	$94,277 ($56,097)	–
Race	American Indian or Alaska Native	–	7 (1.45)
	Asian	–	102 (24.64)
	African American	–	6 (1.45)
	Native Hawaiian or other Pacific Islander	–	3 (0.48)
	White	–	242 (59.42)
	Multiple	–	18 (4.35)
	Other	–	34 (8.21)
Group Size	–	3.53 (3.46)	–
Group Type	Family	–	197 (44.07)
	Friends	–	156 (33.05)
	Family & Friends	–	18 (4.66)
	Tour	–	50 (10.99)
	Not applicable	–	23 (7.63)

Over 2017-2018, winter visitors have reported a mean household income of $94,820 (SD = $57,586). Alaskan visitors had the lowest average household income (M = $82,022, SD = $45,078), domestic visitors from other U.S. states had the highest (M = $98,937, SD = $58,147) followed closely by international visitors (M = $96,118, SD = $75,508). Occupation was broken down into categories in the 2018 survey effort. Students (as a standalone category) made up the greatest percentage of 2018 winter visitors (17%)[5], followed by visitors working in engineering, technology, and math (13%), the medical field (13%), and legal or business occupations (13%). Eighty-four percent of students visited in March during their spring break. Students made up 23% of March visitation. Students reported

[4] not representative of Taiwanese tours

[5] this is likely an underrepresentation due to open-ended response of the “occupation” survey question. Some may be students but listed “engineer” or “artist” instead.

household incomes much lower than the winter visitor average (M = $59,414, SD = $49,773). Winter visitors are also highly educated: 81% reported an undergraduate or graduate degree.

Visitors were asked to write-in their race, which resulted in 42 unique responses. These responses were categorized (Table 1). The majority of DENA winter visitors were white (60%) followed by Asian (24%), other (8%), and multiple (4%). Note that race, residency and native language are three separate self-reported measures. Visitors can identify as Asian, but reside in the U.S. and have a native language that is Mandarin. When referring to residency in visitation therefore, Asian visitors may appear underrepresented due to where in the world they reside.

The majority of DENA winter visitors came from the United States (93%) (Figure 3). Visitors from states in the western U.S. made up the largest percentage of domestic winter visitors (32%), followed by Alaskan visitors (26%) (Figure 4). The majority of visitors from the western U.S. came from California (50%), followed by Washington (25%). Alaskans came primarily from the Fairbanks area (57%), followed by Anchorage (31%). Local visitors were least likely to be intercepted: only 2% of the combined sample were from Healy, Cantwell, Stampede, McKinley Village, or Ferry.

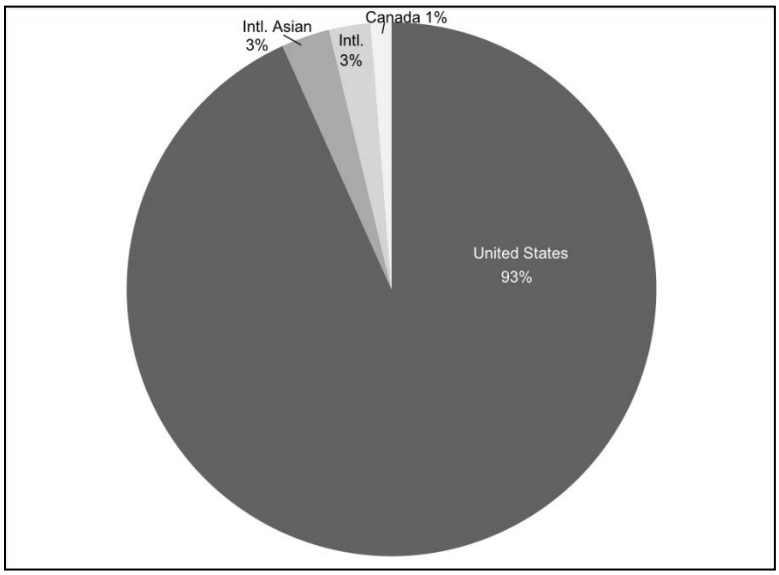

Figure 3. Residence of Denali National Park and Preserve winter visitors: 2017 & 2018 data.

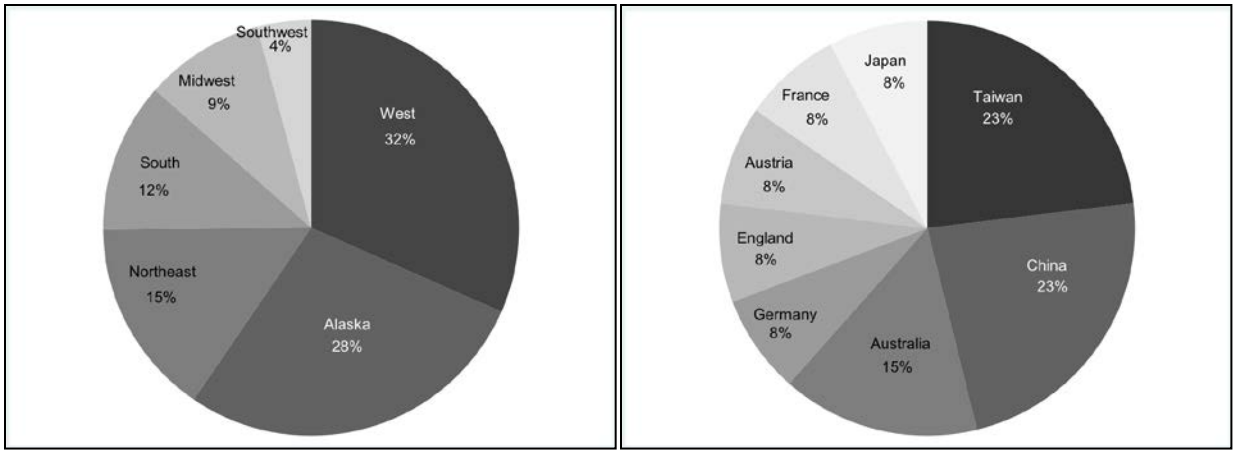

Figure 4. Residence of Denali National Park and Preserve domestic and international winter visitors: 2017 & 2018 data.

International Asian[6] visitors make up three percent of winter visitors, as well as other international visitors (also 3%), followed by Canadian visitors (1%) (Figure 4). The greatest proportions of international visitors were from Taiwan and China (both 23%), followed by Australia (15%), Japan, France, Austria, England, and Germany (all 8%).

The majority of DENA winter visitors reported that they are proficient in English (98%). Twenty-four languages were reported when visitors were asked their native language. Mandarin was second to English (30%), but the majority of Mandarin-speaking visitors live in the U.S. (87%). Spanish, Portuguese, Czech, French, and German were the most frequently cited native languages of DENA winter visitors (each 2%) after Mandarin.

Trip Information

DENA winter visitors traveled in groups of 3 people (SD = 3.46) on average. Group size varied greatly, from one person to 38 people[7]. However, 90% of visitors came to the Park in groups of five people or less. The most common type of group that DENA winter visitors reported being a part of was a family group (44%), followed by friends (33%) (Table 1). Visitors on tour made up 11% of DENA winter visitors sampled.

Winter visitors spent $2,184 (SD = $2,206) on average for their trip from start to finish. Trip costs ranged from no cost to $15,000. Trip cost was greatest on average for visitors traveling in family groups (M = $2,643, SD = $2,761). Visitors on tour spent from $100 to $6,500 on their trip cost (M =

[6] International Asian visitors are self-reported Asians who do not currently live in the U.S. The proportion of Asian visitors in the total sample is 25%, due to the large U.S. resident population who identifies as Asian in the sample.

[7] The group of 38 people was a group of friends visiting from California on March 1.

$2,240, SD = $1,546). Visitors spent an average of 12.76 days in Alaska (SD = 35.86). Forty percent spent 4-7 days in the state, while 37% spent over 30 days.

The majority of winter visitors did not stay overnight in the DENA area (72 %) (Figure 5). Visitors who did not know the park road was open planned to spend less nights in the area (M = 0.37, SD = 0.80) than individuals who knew the road was open (M = 0.74, SD = 1.04) (t (204) = -3.1325, p = 0.0010).

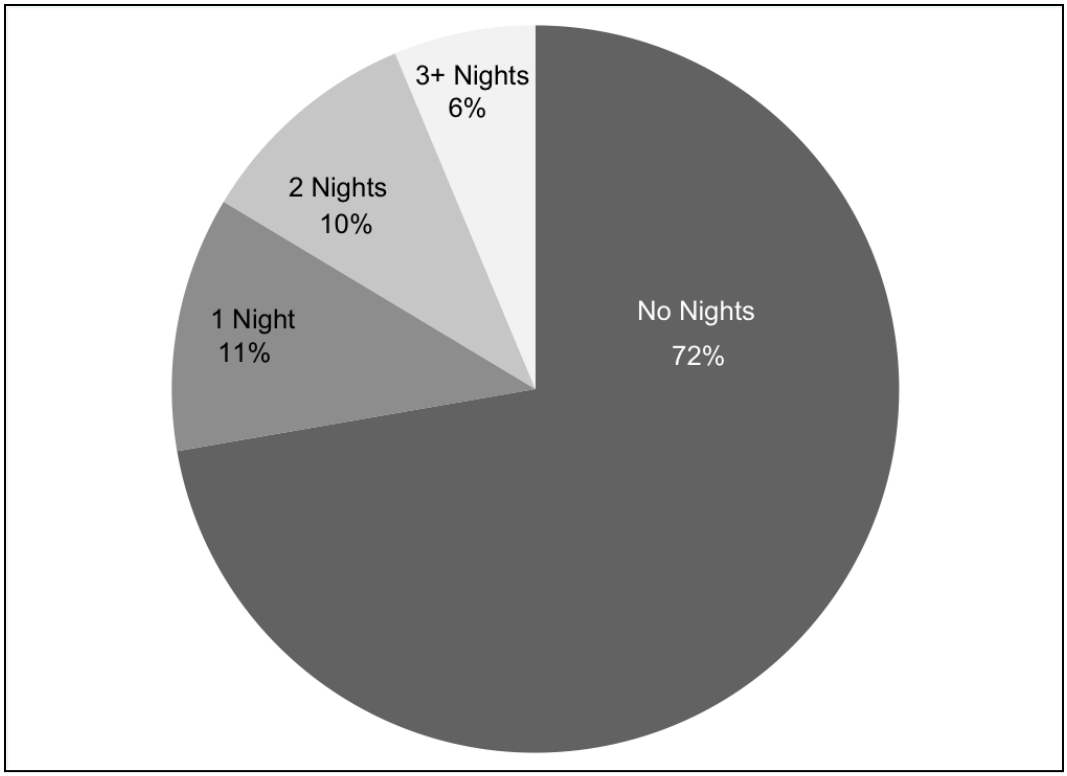

Figure 5. Number of nights Denali National Park & Preserve winter visitors planned to stay in the Park or surrounding area: 2017 & 2018 data.

Return winter visitors had visited DENA an average of 3.77 times (summer and winter) previously (SD = 14.79). However, a majority (76%) of visitors were on their first visit to the Park (Table 2). The mean number of winter visits was 1.87 (SD = 6.64), ranging from 1 to 100 (Figure 6). The majority of visitors were visiting for the first time in the winter (85%)[8].

[8] One visitor, a 68- year old man from Washington, reported 100 winter and 100 summer visits.

Table 2. Previous visitation of Denali National Park and Preserve winter visitors.

Visit Information	Season	Mean (SD)	Min	Max	N (%) Return Visitors
Number of Previous Visits	Winter	1.87 (6.64)	1	100	40 (14.58)
	Summer	1.94 (8.88)	0	100	60 (18.91)
	Total	3.77 (14.79)	1	200	90 (23.53)

Visitors were asked if they would prefer to visit DENA in the summer and winter (Table 3). Twenty five percent of visitors answered yes to both questions or noted that they prefer summer and winter equally.

Table 3. Winter visitor preference for visiting Denali National Park and Preserve. Visitors who answered "Yes" to both seasons or commented that they prefer both equally were included as preferring both seasons.*

Season	Yes N (%)	No N (%)	Don't Know N (%)
Winter	97 (53.30)	11 (6.04)	74 (40.66)
Summer	123 (56.68)	12 (5.53)	83 (37.79)
Both	59 (24.89)	178 (75.11)	–

* data not comparable to 2017

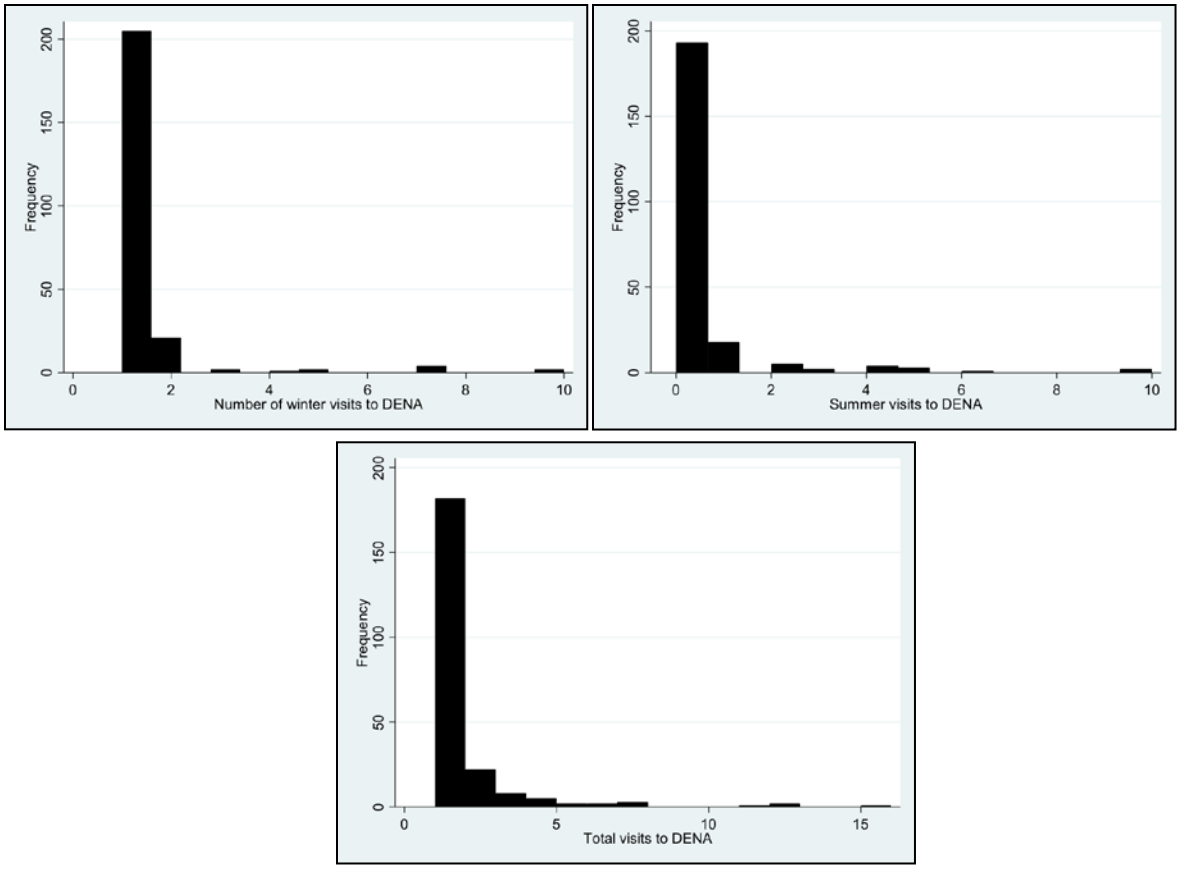

Figure 6. Number of winter, summer, and total visits made to Denali National Park and Preserve by number (frequency) of winter visitors (y-axis). Individuals who have visited over 10 times per season or 20 times total were omitted from the figure.

Park Awareness

A majority (88%) of DENA winter visitors planned to stop in the Park, and were aware the Park is open in the winter prior to arriving at DENA (Figure 7). Of the visitors who did not know the Park was open, 83% planned to stop anyway.

Visitors were asked when they were aware the Park was open (Figure 7). The greatest percentage chose other (53%) and reported that they had learned the park was open on the internet while doing research prior to their visit. Many specified the DENA or NPS website (42%).

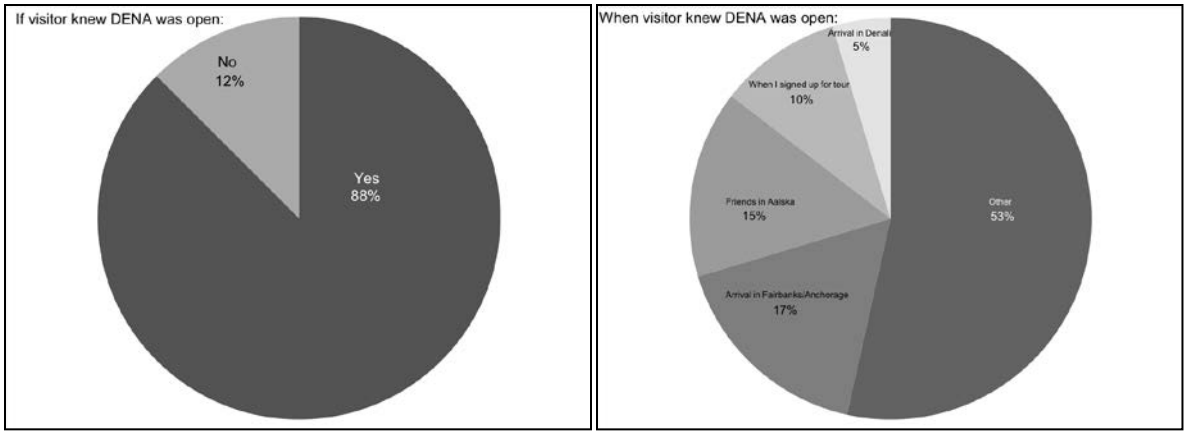

Figure 7. If and when Denali National Park and Preserve winter visitors were aware that Denali National Park and Preserve is open in winter.

Road Awareness

Overall, 47% of winter visitors were aware that the park road was open (Figure 8). The visitors who did not know the road was open, 43% said they would have changed their trip plans if they knew about the road being open. The greatest percentage of visitors who knew the road was open learned while planning their trip (49%), followed by those who learned while in Alaska (31%), and those who learned once they reached DENA (20%). Winter visitors who knew the road was open primarily learned online (45%), followed by other (29%), an Alaskan tourism publication (17%), and calling the park (9%). Visitors were allowed to select all sources of information that applied to them. Of the individuals who already knew the park road was open, 59% came to visit DENA due to the ERO[9]. One hundred percent of international visitors, 58% of Alaskan visitors, 57% of other U.S. visitors, and 50% of Canadian visitors reported that they came to the Park because the road was open.

[9] one visitor from Florida commented that she had not come to the Park because the park road was plowed but had altered the timing of this portion of her 21-day Alaskan trip to be in the DENA for the plowed road

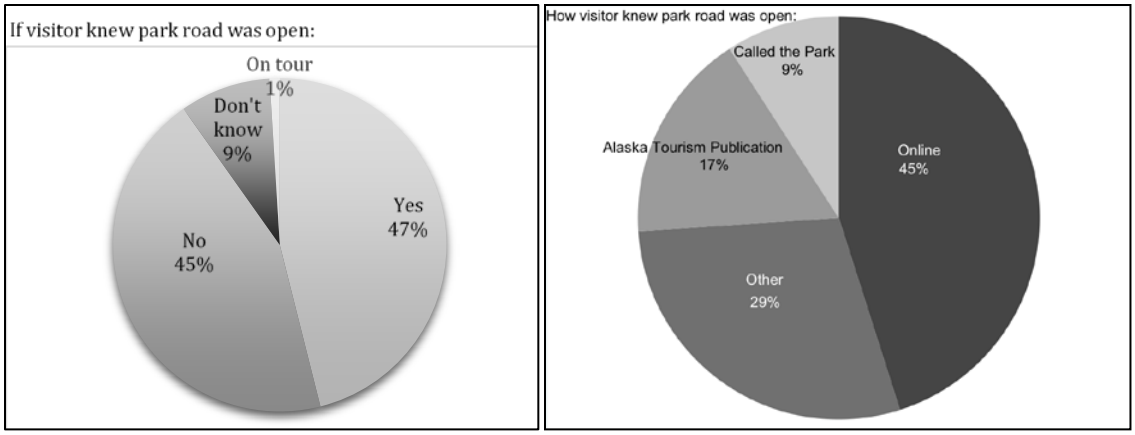

Figure 8. Denali National Park and Preserve winter visitors' awareness of the Denali Park Road being open prior to arriving in the Park. If visitors were aware the Denali Park Road was open, how they learned.

Activities

Overall, 69% of visitors reported they were prepared with gear to spend 4 – 8 hours outside. A greater percentage of visitors who were aware the park road was open were prepared to spend time outside than of visitors who were not aware the road was open (80% and 66%, respectively) (Table 4).

Table 4. Denali National Park and Preserve winter visitor preparedness to spend four to eight hours outside and visitor awareness of the Denali Park Road being open. N = 241.

Aware Park Road Was Open	Prepared	Not Prepared	Don't Know	On Tour
Yes	80.00%	13.33%	5.71%	0.95%
No	66.34%	25.74%	6.93%	0.99%
Don't know	40.74%	37.04%	11.11%	11.11%
On Tour	0.00%	0.00%	66.67%	33.33%

Visitors were asked to select all the activities they planned to engage in while at DENA then select their primary activity. The greatest percentage of DENA winter visitors reported that their primary activity was driving (34%), followed by hiking (29%)[10] (Figure 9). Other responses (an open-ended category) included conducting a pit stop, exploring, photography, and seeing Denali. In cases where visitors selected more than one primary activity, we reported the first listed.

[10] Visitors who listed hiking as their primary activity may have been using snowshoes. Consulting the records of snowshoe rentals kept by MSLC staff might help to get a more complete picture of how many visitors are borrowing snowshoes.

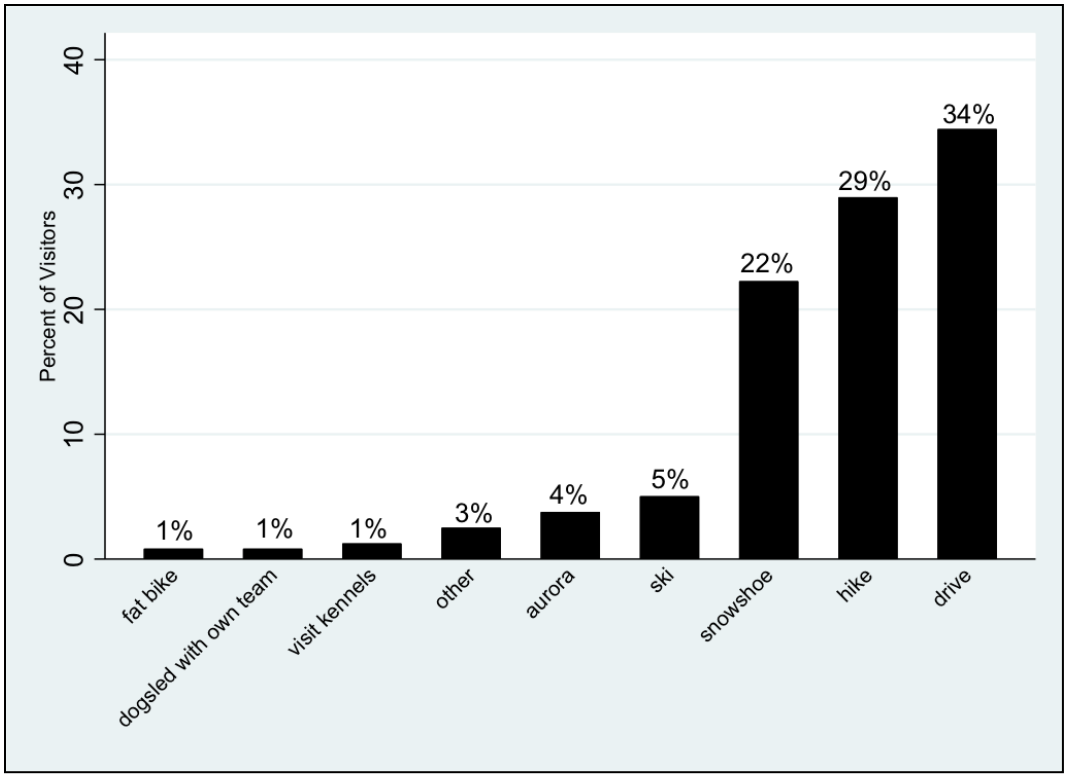

Figure 9. Primary activities of winter visitors while in Denali National Park and Preserve.

Visitors who knew the park road was open prior to arriving at DENA were more likely to list skiing, snowshoeing, and fat biking as their primary activity than visitors who were not aware (Table 5). The percentage of visitors who list driving as their primary activity decreases from 39% to 30% for visitors who are aware the park road is open relative to those who are not aware. Snowshoeing was the most frequently cited primary activity for visitors who knew the road was open.

Table 5. Activities of Denali National Park and Preserve winter visitors and their awareness that the Denali Park Road was open. Includes activities visitors listed as their primary activity while at the Park. N = 441.

Activity	All Visitors	Not Aware the Park Road was Open	Aware the Park Road was Open	Came to the Park Because the Park Road was Open
Ski	5.04%	4.00%	7.55%	6.41%
Snowshoe	22.27%	16.00%	31.13%	24.36%
Hike	28.99%	28.00%	24.53%	25.64%
Fat Bike	0.84%	0.00%	1.89%	2.56%
Dogsled (own team)	0.84%	1.00%	0.94%	0.00%
Visit Kennels	1.26%	3.00%	0.00%	0.00%
Drive	34.45%	39.00%	30.19%	34.62%
View the Aurora	3.78%	5.00%	2.83%	3.85%
Other	2.52%	4.00%	0.94%	2.56%

Expected Experiences and Sights

Visitors were instructed to choose up to three things they expected to experience while in DENA (Figure 10). Many (23%) chose more than three, in which cases we reported the first three choices listed. Visitors most expected to experience a connection to nature (28%), followed by cold and snow (19%), a sense of adventure (19%), solitude (10%), and learning about the park (9%)[11].

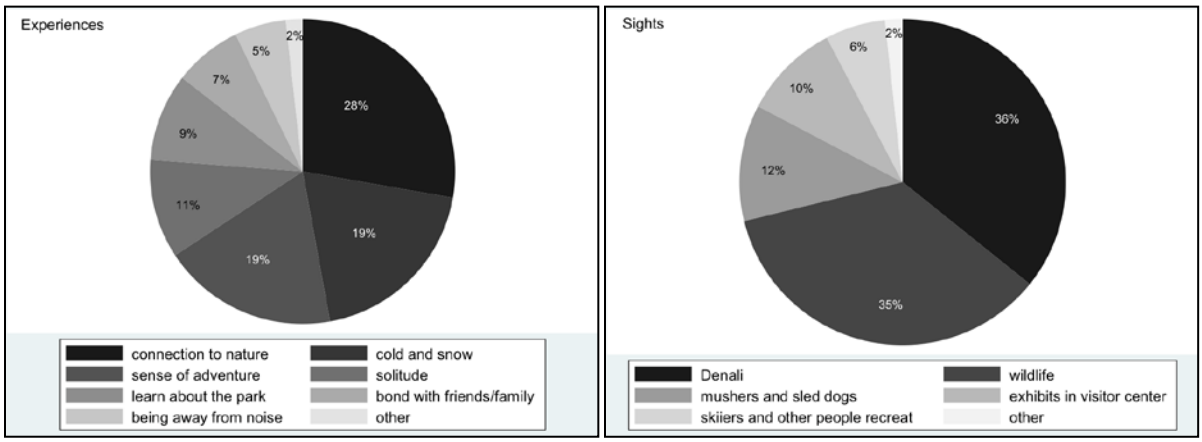

Figure 10. Expected experiences and sights of Denali National Park & Preserve winter visitors.

[11] It is possible that there was an order bias that affected these results. However, the order bias is likely low given the relatively low proportion of visitors who selected solitude, which was listed second, and the relatively high proportion of visitors who selected learning about the park, which was listed seventh. This result is different from what we would see if 23% of visitors selected all options each time.

Expected experiences were similar across group types (Table 6). The greatest percentage of all groups expected to experience a connection to nature. Friend groups had the smallest percentage who expected to experience solitude (9%) while family + friend groups had the greatest (21%). Visitors in groups of two to four people had the highest expectation for solitude (12%) followed by solo travelers (8%). Friend groups had the highest percentage of individuals who expected to experience a sense of adventure (23%). Friends and family groups had the greatest percentage of individuals who expected to bond with their group (9%). Family groups had the greatest expectation to learn about the park (11%). Tour groups had less of an expectation for solitude (8%) but had a higher expectation for a connection to nature (30%), and being away from noise (8%).

Table 6. Expected experiences of Denali National Park and Preserve winter visitors by group type*. N = 241.

Visitor Residence	Connection to Nature	Solitude	Cold and Snow	A Sense of Adventure	Bond with Friends and Family	Be Away from Noise	Learn About the Park
Family	26.60%	11.11%	18.52%	17.85%	8.42%	5.05%	11.11%
Friends	28.18%	8.64%	19.09%	22.73%	6.82%	5.45%	6.82%
Friends and Family	27.27%	21.21%	21.21%	12.12%	9.09%	0.00%	9.09%
Tour	30.16%	7.94%	19.05%	19.05%	6.35%	7.94%	9.52%

* Items not comparable to 2017

Expected experiences differed with visitor residence (Table 7). Alaskan visitors had a higher expectation for solitude than visitors from other locations. International Asian visitors had the highest expectations for a connection to nature but no expectation of being away from noise. International visitors on tours from non-Asian countries had the highest expectation for being away from noise.

Table 7. Expected experiences of Denali National Park and Preserve winter visitors by visitor residence.* N = 435.

Visitor Residence	Connection to Nature	Solitude	Cold and Snow	A Sense of Adventure	Bond with Friends and Family	Be Away from Noise	Learn About the Park
Alaska	22.49%	13.61%	18.34%	18.93%	11.24%	5.33%	7.69%
United States	29.07%	9.91%	19.38%	18.94%	6.39%	5.51%	9.47%
Canada	43.33%	12.00%	11.11%	22.22%	11.11%	20.32%	22.22%
International Asian	37.50%	6.25%	25.00%	25.00%	0.00%	0.00%	6.25%
International Other	29.41%	5.88%	23.53%	5.88%	0.00%	17.65%	11.76%

*Percentages will not add up to 100% because responses in “other” category were not included.

Visitors were instructed to choose up to three things they expected to see while in DENA (Figure 10)[12]. The greatest percentage of visitors expected to see Denali (36%), followed closely by wildlife (35%).

Crowding*

Approximately equal proportions of DENA winter visitors said that encountering large groups outside or on trails would affect their experience negatively (32%) and not at all (31%). About one fifth (20%) did not know how a large group encounter would affect them, and 17% said it would positively affect their experience.

The percentage of visitors who said a large group would negatively affect their experience was similar across all group types (30-34%). A greater percentage of visitors who were on tour said they would be positively impacted by encountering larger groups than of visitors not on tour (38% and 13%, respectively). The oldest age group (51+) reported being the most negatively affected by large groups (44%), followed by 31-50 (35%) and under 30 (23%). Visitor perceptions of how encountering large groups would affect their experience varied by their residency (Table 8). The greatest percentage of Canadian and Alaskan visitors reported that they would be negatively affected (50% and 34%, respectively), followed by non-Asian international visitors (33%) and other domestic visitors (32%). A higher percentage of international Asian visitors reported that encountering large groups would positively impact their experience (29%) than any other group.

Table 8. Residency of Denali National Park and Preserve winter visitors and how encountering large groups outside or on trails would impact their experience. N = 232.

Residency	Negatively	Positively	Not At All	Don't Know
Alaska	33.90%	13.56%	33.90%	18.64%
Other U.S.	32.26%	16.13%	30.97%	20.65%
Canada*	50.00%	0.00%	0.00%	50.00%
International Asian	14.29%	28.57%	42.86%	14.29%
Other International	33.33%	16.67%	33.33%	16.67%

*Only three Canadians responded to this question

Visitors were asked to define what they considered a large group (Figure 11). Responses ranged from two to 100 people. On average, visitors considered 13.43 people (SD = 11.01) a large group. The most common response (mode) was 10 people. Some visitors did not give a number but wrote in "tour group" or "bus group." Alaskan visitors considered 11.60 people (SD = 9.40) to be a large

[12] Visitors more frequently followed these instructions. Only 2% chose more than three options. In cases where they selected over three options, we reported the first three.

* not comparable to 2017 data

group, while non-Alaskan visitors had a higher threshold 14.02 (SD = 11.44). Individuals who stated that they are negatively affected by large groups considered 12.33 people (SD = 6.94) to be a large group.

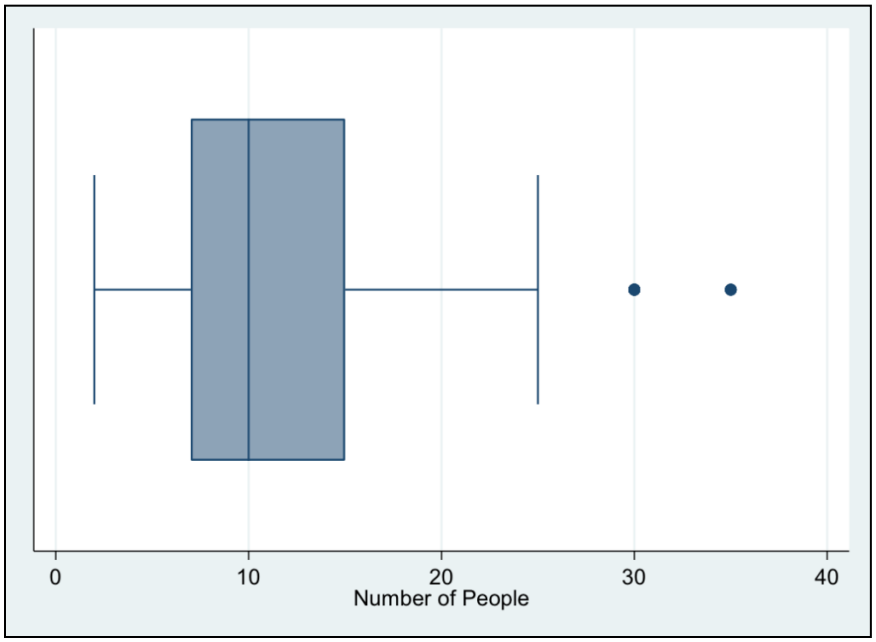

Figure 11. Self-reported number of people that Denali National Park and Preserve winter visitors consider to be a large group. Outliers responses of 40 (n=1), 50 (n=7), and 100 (n=1) were removed from this figure.

Visitors were asked how crowded they felt in different areas of the park. The visitor center parking lot, hiking trails in general, and ski trails were the only locations to be rated as extremely crowded. The extreme responses occurred on February 24 (due to the annual park Winterfest event), and March 25 (unknown outlier) for the parking lot. The hiking and skiing trails were rated as extremely crowded on March 1. The visitor center and "overall visit" were the only two locations to receive a rating of crowded in February, both on Winterfest. All other crowded ratings occurred in March and April.

Ski trails in April were rated crowded more frequently than any other location and month (Figure 12). The MSLC and MSLC parking lot were "crowded" overall and consistently throughout the survey period. Mt. Vista trails and trails near the MSLC were rated similarly in February and March, but Mt. Vista trails received approximately twice the frequency of crowded rating in April. Although more visitors came to the Park in March, respondents in April rated their overall visit as crowded more frequently than visitors in any other month.

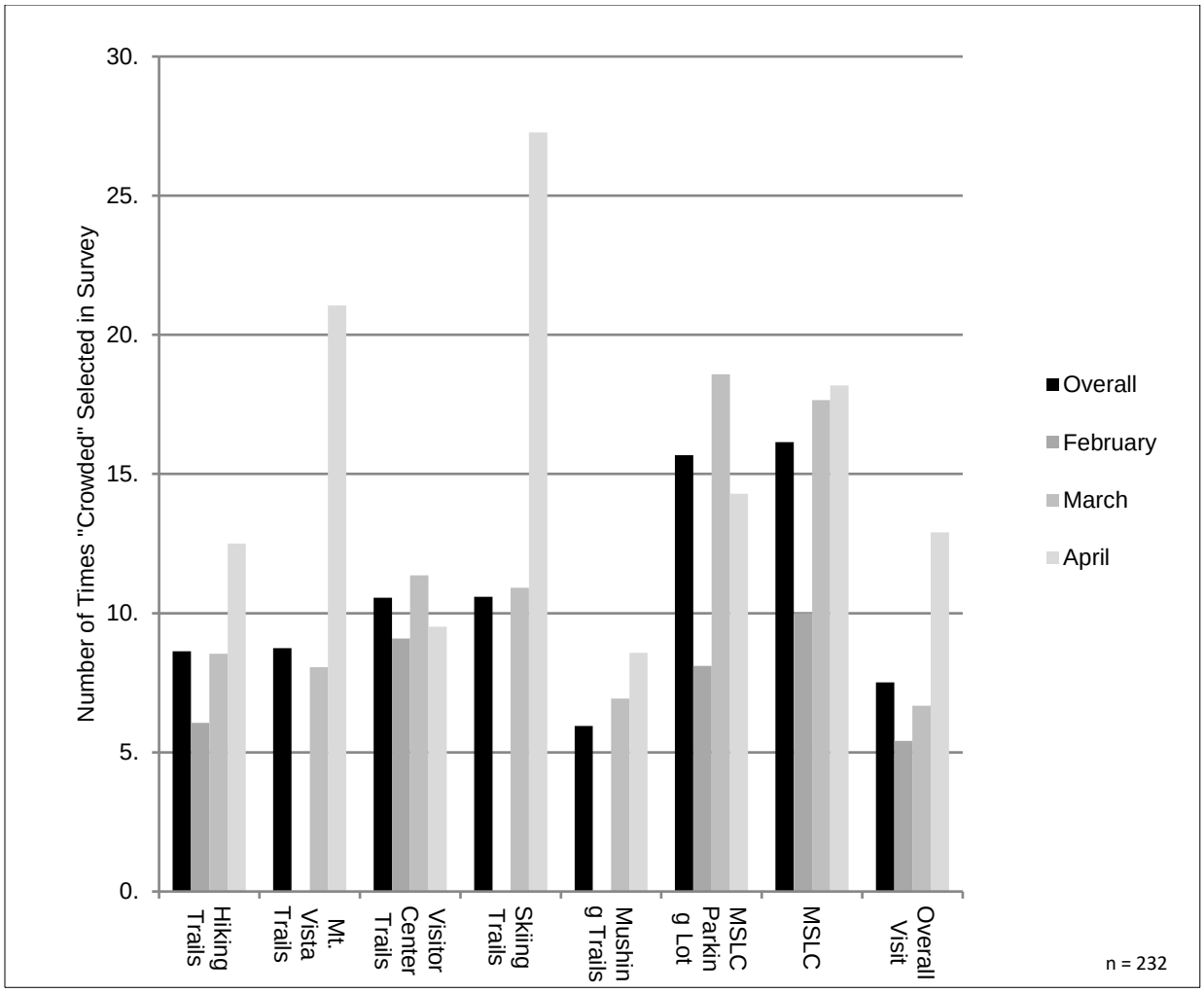

Figure 12. Frequency (number of times selected response in survey) at which locations in Denali National Park and Preserve were rated as crowded by winter visitors. Frequency is given for the duration of the survey ("Overall") and separated by month. Responses of "somewhat crowded," "crowded," and "extremely crowded" were included. Responses of "not applicable" were removed from analysis.

Visitors' tolerance for large groups varied by primary activity. Individuals planning to dogsled had the lowest mean threshold for what they considered a large group (M = 4.00, SD = 0.00), while drivers had the highest (M = 14.99, SD = 13.40) (Figure 13). More individuals dogsledding, viewing the aurora, snowshoeing, and skiing reported that encountering large groups on the trail would negatively affect their experience (100%, 50%, 42%, and 42%, respectively) than individuals engaging in other activities.

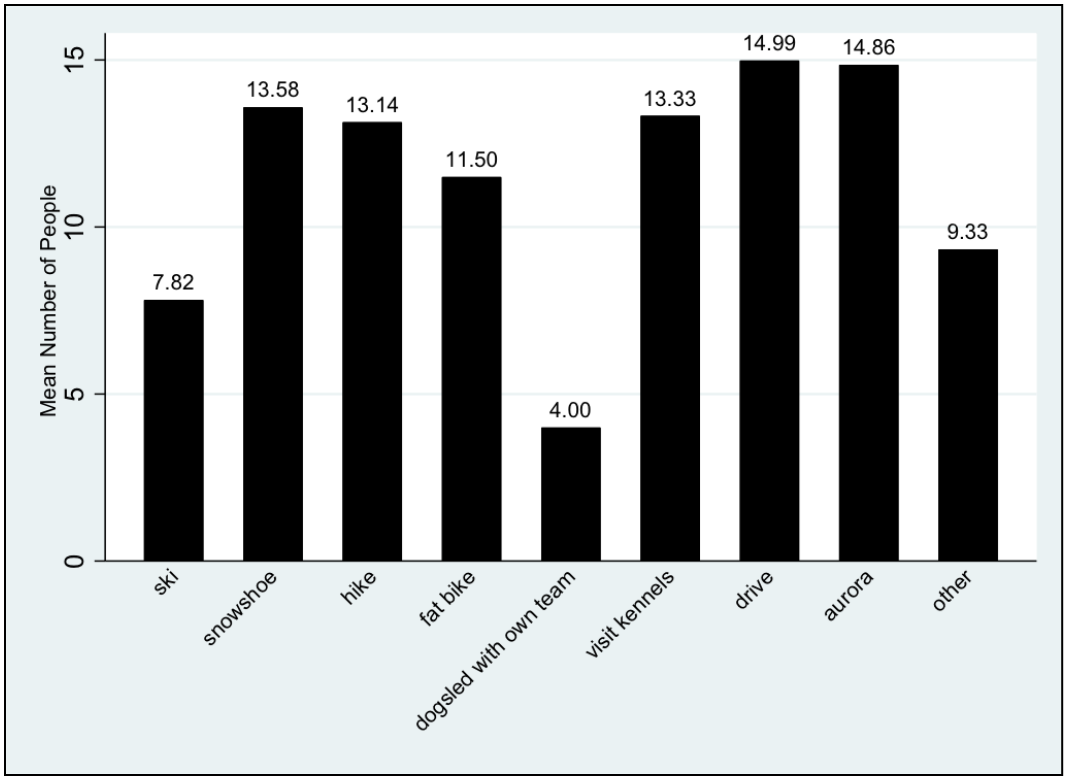

Figure 13. Mean number of people considered a large group by Denali National Park and Preserve winter visitors by their primary activity.

Visitor Needs[13]

DENA winter visitors were asked to write-in up to three things they desire to have a high quality winter experience in Denali National Park and Preserve. These self-reported needs were grouped into six categories: “Access” (41%), “Nature” (19%), “Activities” (15%), “Local” (10%), “Information” (10%), and “Other” (5%). “Access” included availability of trails (hiking, cross country skiing, snowshoeing, groomed, short, easy, safe, clearly marked), restrooms, roads (open, safe, clear, access to trails and savage river area, more access), camping, solitude, equipment, and access to facilities. The “Nature” category included wildlife, snow, scenery, weather, Denali, and the aurora borealis. The “Activities” category included seeing the sled dogs, guided tours or programs, and other winter activities, such as hiking, fat biking, or skiing. The category “Local” included local economic activities, such as food, beverages, and lodging. Information included signage, information about trails and activities in the park, rangers, and the visitor center. The “Other” category included reasonable cost, environmental sanitation, friendly people, having fun, heating, inclination, more time, peace of mind, right preparation, safety, viewing, and winter experience. Several visitors (2%) commented that they were not sure or would not need much or any more than the current set up.

[13] not comparable to 2017 data

Visitors' Comments, Recommendations for Management

Respondents were asked to provide any additional information they felt was necessary (Appendix B). Comments were sorted into eight broad themes (Table 9). The overall visitor experience received the most comments (21 total, 18 positive, 2 negative, 1 suggestion).

Table 9. Main themes distribution of open-ended comments on the Winter Visitor Experience Survey given to Denali National Park and Preserve winter visitors. Positive comments are denoted with "+," negative comments with "-," and suggestions that are neither positive or negative with "s".

	February			March			April			Total		
Theme	**Positive Comments**	**Negative Comments**	**Neutral Suggestions**	**Positive Comments**	**Negative Comments**	**Neutral Suggestions**	**Positive Comments**	**Negative Comments**	**Neutral Suggestions**	**Positive Comments**	**Negative Comments**	**Neutral Suggestions**
Visitor Center/ Rangers	1	0	0	5	0	1	1	0	0	7	0	1
Overall Experience	4	1	0	10	1	1	4	0	0	18	2	1
Winter Experience	1	0	0	2	1	0	1	0	0	4	1	0
Activities	6	0	1	2	0	1	1	0	2	9	0	4
Park Road	2	1	0	1	0	0	1	0	0	4	1	0
Lodging/ Food	0	1	0	0	0	0	0	1	0	0	2	0
NPS	1	0	0	1	1	0	1	1	0	3	2	0
Survey	0	0	0	0	2	0	0	0	0	0	2	0
Total	**15**	**3**	**1**	**21**	**5**	**3**	**9**	**2**	**2**	**45**	**10**	**6**
Total All Comments/ Suggestions	**19**			**29**			**13**			**61**		

Willingness to Pay*

Visitors were asked to consider their trip budget and decide if they would be willing to pay $20, $40, or $70 for potential services during their visit (Table 10). Willingness to pay questions on the survey help gauge the priorities of DENA winter visitors (Loomis et al. 1996). After answering questions about their willingness to pay, individuals were asked if they thought the NPS would use the information they had provided to set fees. We do this to gauge if a visitor is seriously considering their budget and answering the question with sincerity. Because a high percentage of visitors responded yes (89%), we can estimate true visitor priorities.

Visitors were most willing to pay at least $20 for dog sled rides (92%) followed by ski rentals (85%), guided skiing (84%), and fat bike rentals (83%). Photography instruction received the least interest (59%). More were willing to pay $70 for short dogsled rides than any other service (29%). Many visitors were willing to pay $70 for guided skiing tours (16%)[14]. Visitors from Alaska were generally less willing to pay for services than other domestic visitors or international visitors (Table 10). For all potential services, a greater percentage of Alaskan visitors were unwilling to pay than any other residency. Two local visitors commented that they were not willing to pay for certain services (e.g. snowshoe, fat bike, ski rentals) because they already owned the equipment and could bring it with them. International visitors (excluding Canadians) were generally more willing to pay higher fees for services. Domestic visitors were most willing to pay for ski rentals and photography instruction compared to Alaskans and international visitors.

[14] One visitor who selected $70 commented that she would pay for a private guided ski.

* not comparable to 2017 data

Table 10. Winter visitor preference for potential winter services at Denali National Park and Preserve. Data is given for all visitors, then broken down by visitor residency. Canadians are not included in international (Int.) visitor data for this analysis. N = 246.

	Not Willing to Pay					Willing to Pay					Willing to Pay $20				Willing to Pay $40				Willing to Pay $70			
Service	**Total**	**AK**	**U.S.**	**Int.**	**lower hhinc^**	**Total**	**AK**	**U.S.**	**Int.**	**lower hhinc**	**Total**	**AK**	**U.S.**	**Int.**	**Total**	**AK**	**U.S.**	**Int.**	**Total**	**AK**	**U.S.**	**Int.**
Guided Ski	**16.58%**	20%	15%	11%	65%	**83.42%**	80%	85%	89%	35%	**28.50%**	36%	28%	11%	**39.38%**	32%	41%	44%	**15.54%**	12%	16%	33%
Narrated Shuttle Bus to Mt. Vista	**37.63%**	42%	36%	40%	64%	**62.38%**	58%	64%	60%	36%	**50.00%**	48%	51%	40%	**10.40%**	10%	10%	20%	**1.98%**	0%	0%	0%
Fat Bike Rentals	**16.67%**	20%	17%	0%	82%	**83.33%**	80%	83%	100%	18%	**57.81%**	53%	60%	56%	**22.40%**	22%	22%	22%	**3.13%**	4%	2%	22%
Snowshoe Rentals	**25.50%**	33%	24%	33%	55%	**74.50%**	67%	76%	90%	45%	**67.50%**	63%	69%	80%	**7.00%**	4%	7%	10%	**0.00%**	0%	0%	0%
Ski Rentals	**15.54%**	26%	13%	0%	69%	**84.46%**	74%	87%	100%	31%	**49.74%**	49%	50%	56%	**29.53%**	26%	29%	44%	**5.18%**	0%	8%	0%
Photography Instruction	**41.18%**	55%	38%	33%	92%	**58.82%**	45%	62%	67%	8%	**38.50%**	32%	41%	33%	**13.37%**	9%	15%	0%	**6.95%**	5%	6%	33%
Short Dogsled Tour	**7.91%**	13%	7%	0%	90%	**92.09%**	87%	93%	100%	10%	**26.98%**	34%	25%	17%	**35.81%**	32%	35%	58%	**29.30%**	21%	33%	25%

^ household income (hhinc) was a significant factor in determining visitors' willingness to pay for services. A logit model predicted the likelihood of lower income visitors vs. higher income visitors willing to pay for each service option. Lower income visitors were 6.2 times less likely to pay for services than higher income visitors.

Visitors rated if additional services would improve their experience, as well as provide their willingness to pay a “small fee” to support the service (Table 11). For all services, visitors felt that their experience would be somewhat improved (47%) or very improved (30%). More visitors thought their experience would be *very improved* by groomed trails at Mt. Vista than any other service (37%).

Over half of visitors were willing to pay a “small fee” for each service listed (53 – 81 %). Visitors were most willing to pay for food and beverages (81%), and least willing to pay for a narrated shuttle (38%). Visitors who rated a service as improving their experience more were more likely to be willing to pay to support the service.

The willingness of visitors to pay for services may be overrepresented because individuals appeared to skip questions rather than answering they were not willing to pay. Twelve percent of respondents skipped questions and only answered yes. However, this is not the case with all missing answers. Some respondents (6%) filled in “no” for one service and left others blank. The services that were skipped varied among these respondents.

Table 11. How winter visitors feel services would change their experience in Denali National Park and Preserve and if they are willing to pay a "small fee" to support the service. N = 246.

Service	How Service Improves Visitor Experience			% Willing to Pay			
	Not At All	Somewhat Improved	Very Improved	Of Individuals Who Answered Not At All Improved	Of Individuals Who Answered Somewhat Improved	Of Individuals Who Answered Very Improved	All Individuals
Warming Hut	21.72%	48.48%	29.80%	32%	57%	73%	60.85%
More Groomed Trails Near the Visitor Center	27.96%	43.55%	28.49%	33%	49%	63%	52.94%
More Groomed Trails at Mt. Vista	17.65%	45.99%	36.36%	35%	61%	78%	65.52%
Activities with Rangers	22.40%	51.91%	25.68%	27%	66%	88%	67.61%
Food and Beverages	27.98%	43.52%	28.50%	44%	89%	94%	80.66%

Personal Perspectives of Winter Visitors on Environmental Statements[15]

Several questions gauged visitors' environmental attitudes related to public lands while visiting public lands, which help predict how visitors will respond to different policy changes regarding accessibility of public lands and resource management (Heberlein 2012).

Visitors responded overwhelmingly positive to environmental statements, a measure used to assess pro-environmental values (Heberlein 2012). Fewer visitors on tour agreed with pro-environmental statements (Table 12) that they felt responsible for the environment and that plants and animals have as much right to exist as humans. Alaskans agreed strongly with one pro-environmental statement (feeling a personal responsibility to the environment), but agreed less with the pro-environmental statement (caring for the environment is more important today than in the past) than other visitor groups (Table 12). Visitors did not tend to agree strongly with the anthropocentric statement (the antithetical measure) that privatization would enhance conservation efforts with the exception of international Asian tourists, all of whom (100%) agreed privatization enhances conservation. Visitors on tour more strongly agreed with the anthropocentric statement (humans are meant to use and modify nature) than independent travelers.

DENA winter visitors generally felt positively towards public lands. Visitors overwhelmingly felt that public lands are generally welcoming and open (99%). Over half of visitors agreed with the statement: "public lands should be utilized for their natural resources for our economy" (61%), a common measure in behavioral sciences to assess anthropocentrism. A high percentage of international Asian (80%) and other (83%) visitors agreed. Domestic visitors from states other than Alaska had the lowest rate of agreement to this statement (57%).

[15] not comparable to 2017 data

Table 12. Denali National Park and Preserve winter visitor agreement with statements about the environment and public lands by their residence and involvement with a tour group. N = 241.

Category	Statement	All Visitors	Alaskans	Other Domestic Visitors	International Asian Visitors	Other International Visitors	Visitors on Tour
Pro-Environmental Statements	Public lands are generally welcoming and open.	99.11%	98.28%	99.34%	100.00%	100.00%	100.00%
	Public lands should be primarily set aside for conservation.	94.90%	92.31%	95.49%	100.00%	100.00%	94.12%
	I feel personal responsibility for the environment.	99.10%	100.00%	98.68%	100.00%	100.00%	95.24%
	Caring about the environment is more important today than in the past.	95.37%	89.29%	97.26%	100.00%	100.00%	100.00%
	Plants and animals have just as much right to exist as we do.	96.88%	96.49%	96.69%	100.00%	100.00%	90.48%
Anthropocentric Statements	Public lands should be utilized for their natural resources for our economy.	60.68%	64.71%	57.45%	83.33%	80.00%	73.68%
	Privatization would enhance conservation efforts.	38.51%	30.43%	38.98%	100.00%	0.00%	68.42%
	I feel personal responsibility for my local economy.	90.64%	82.69%	92.65%	100.00%	100.00%	88.24%
	We can fix environmental issues through technology.	89.00%	83.33%	90.91%	85.71%	100.00%	83.33%
	We are meant to use and modify nature.	48.39%	52.08%	44.44%	75.00%	80.00%	68.42%

Age and income are consistently significant positive correlates of pro-environmental attitudes (Heberlein 2012). Logistic regression shows that only age and an interacted term, (group size x income), were the largest significant factors in the likelihood of agreeing with pro-environmental statements (Table 13). The likelihood of an individual holding pro-environmental attitudes increased by 10% with each additional year of age ($p = 0.036$). When looking at the relationship between group size and income, each additional person in a group was associated with a 48% decrease in the likelihood of pro-environmental compared to anthropocentric attitudes ($p = 0.002$).. Group size is negatively associated with income in winter visitors (Pearson's $r = -0.12$), which partially explains the negative effect of group size on pro-environmental attitudes (Table 13).

Table 13. Results of a logistic regression of the likelihood of Denali National Park and Preserve winter visitors agreeing with pro-environmental statements[A.] The Pseudo R^2 value of the model is 0.22. Significant predictors noted by asterisk (*). N = 241.

Predictor Variable	Odds Ratio	Standard Error	z
Age*	1.10	0.05	2.10
Group Size*	0.67	0.11	-2.52
Group Size x Income*	0.52	0.10	-2.05
Residency – Other U.S. State	0.80	0.78	-0.23
Residency – Canada	1.00	–	–
Residency – International	2.41	6.02	0.35
Female	0.57	0.35	-0.91
Household Income	1.00	$5.77e^{-6}$	-1.08
Constant	1.48	2.77	0.21

[A]An individual was considered pro-environment if they agreed or strongly agreed with all pro-environmental questions and did not agree or strongly agree with any of the anthropocentric questions. Individuals were considered not to be pro-environment if they had agreed or strongly agreed with any anthropocentric questions.

Survey Interviewer Observations of Visitors at the MSLC

NPS rangers are a large part of the winter visitor experience. We observed that nearly every visitor group who came into the MSLC talked to a ranger (Appendix C). 40% of visitors complimented MSLC staff in their survey comments (Appendix B).

Winter Tour Groups

The proportion of total commercial tour visitors (11.2%) is slightly larger than total sampled visitors on a commercial tour (11%) due to the sample running only Feb. 12 – April 15, while tours operate between October and April. We observed five tour companies bringing clients to the winter visitor center: Skylar Travel, Northern Alaska Tours, Winter Wilderness Guides, Salmon Berry Tours, and Stampede Excursions. From January to April 2018, tours brought 1,407 visitors to the MSLC[16] compared to 2017, commercial tours brought 741 to the MSLC, (this number does not include tour

[16] concessionaire reports, not part of the sampled visitors for the survey

guides). . Visits from tour groups typically peak in March (McLane (NPS) 2017, internal division report, accessed May 2018).

Tour visitors' demographics come from the visitor sample. Tour visitors primarily came from other states in the U.S. (67%). Eight percent were from China or Taiwan. A quarter reported that they were from Alaska. Over half of tour visitors were Asian (58%), and 26% were white. Eighty-eight percent of Skylar Tours visitors were Asian, and most were living in the United States (92%). Northern Alaska Tours had an even mix of Asian (43%) and white visitors (43%). All of Northern Alaska's visitors came from other U.S states.

While these groups were in the MSLC, we observed that they typically watched *Heartbeats of Denali*, shopped at the AK Geo bookstore, and left to go to Mt. Vista. Northern Alaska Tours utilized the Indoor Picnic Area to eat lunch and watch *Heartbeats of Denali*. Northern Alaska Tours occasionally borrowed snowshoes at the MSLC to take with the group to Mt. Vista. Oftentimes, tour groups visited before or after the Aurora Winter Train arrived and would drop off or pick up visitors from the train.

Early Road Opening Monitoring

The traffic camera captured 899 vehicles in 2017 (19 days) and 1,033 vehicles in 2018 (27 days) traveling west on the park road. POVs represented the highest number of vehicles by far (n=1,365; 71%). GOVs represented approximately 13%, Ind 8%, Equip 7%, and commercial 2%. POV use of the road peaks the last two weekends of the ERO period with between 70 and 80 vehicles daily. Peak time of day for POVs was is 2 – 3 pm hour blocks. For POVs, weekends were at least twice as busy as weekdays.

Mt. Vista Vehicle Counts

Park staff made 115 total vehicle counts at Mt. Vista during 43 trips across 24 days of 2017 and 2018 ERO. The average number of vehicles observed was 5.4 (SD = 4.8). The maximum number of vehicles observed was 23, on Saturday, March 17, 2018: Eighteen POVs, one GOV, and four Equip were counted. One POV was parked on the park road at the gate to the mushers' lot. Another POV, the equipment vehicles, and the GOV were parked at the mushers' lot. The remaining vehicles (16 POVs) were parked at Mt. Vista.

Saturday and Sunday had by far the highest mean number of parked vehicles (Sat: M = 8.5, SD = 5.8; Sun: M = 5.7, SD = 3.1); Monday, Wednesday, and Thursday had the lowest mean number of parked vehicles (Mon and Wed: M = 2.5, Thurs: M = 1.6,). Fifteen observations included vehicles idling. POVs outnumbered all other vehicle types by a large margin.

Wildlife Observations

Of an estimated 112 trips during ERO (31 by REP staff, 81 by VRP rangers), we recorded 54 sightings of target species. Moose and caribou were the only target species observed; the majority of sightings were of moose (81%; 44 of 54). The maximum group size for moose and caribou were six and 22, respectively. Most wildlife sightings occurred west of mile nine, where tree cover is less

abundant. Wildlife sightings occurred uniformly in time over the ERO period. POVs were observed at 11 of the 54 wildlife sightings.

Fifteen-minute wildlife behavior observations were not well captured in 2017. Whether the challenge was technology or training is not clear. We observed one caribou (as the closest member of a larger group) run away from the road approximately 10 minutes before lying down during vehicle stimulus. VRP made several behavior observations: 14 instances with no observed effect, two instances of the animal moving or running away from the road, and one instance of the animal(s) staring. In 2018, we initiated 15-minute behavior observations on 11 moose encounters. Two moose initially trotted away as a response to the vehicle presence. The nine others briefly glanced (6), did not respond (2), or stared at the observer's vehicle (1). All animals resumed their previous activity after their initial response, whether it was lying, feeding and travelling, or walking. VRP made several moose behavior observations: nine instances with no observed effect and two instances of the animal moving or running away from the road.

For a full report of ERO monitoring results see: Winter Road Plowing in Denali National Park and Preserve: Monitoring Results 2017, 2018 (Clark et al. 2018a, Clark et al. 2018b).

Discussion and Conclusions

Denali National Park and Preserve Winter Visitors

Based on our observations and interviews, visitors seem to come to Alaska primarily for viewing the aurora borealis and then make a separate trip to the Park. Some stop because DENA is at a convenient location between Anchorage and Fairbanks. Others specifically plan to stop and make a trip from Fairbanks or Talkeetna. Of visitors who are not aware the Park is open, 80% still plan to stop at the Park. When they arrive to find the Park is open, they do as many activities for which they have time.

Visitors primarily travel independently: only 11% of visitors come to the park as part of a commercial tour. Individuals come to the Park expecting to find a connection to nature, cold and snow, a sense of adventure, and solitude (see Table 6). They expect to see Denali (the mountain) and wildlife. Visitors typically spend around a week in Alaska but do not stay overnight in the DENA area. While visitors are in the Park, their most frequently cited primary activities are driving, hiking, and snowshoeing.

Visitors' desires (stated needs) for a high quality experience in DENA were access, nature, and activities. They are most willing to pay for dog sled tours, ski rentals, guided skiing, and fat bike rentals. Additional services, such as a warming hut, more groomed trails near the visitor center, groomed trails at Mt. Vista, activities with rangers, or food and beverages would somewhat improve visitor experience. More than half of visitors are willing to pay a "small fee" for these services.

April 2018 does not fit the pattern of consistent increase in DENA visitation since 2012 as seen in the other winter months. The decrease in April visitation could be due to the delayed park road opening to Teklanika (Mile 30) in 2018. We observed that the MSLC received many calls inquiring about the status of the road opening beginning in April. Another factor is that staff from other departments working at the MSLC the last week in April 2018 were less experienced and may have inconsistently counted visitors.

Effects of Early Road Opening on Winter Visitor Experience

Visitor Awareness of Park Road Opening and Effect on Trip Planning

The status of the park road does not appear to be widely known by winter visitors. Less than half of DENA winter visitors knew the park road was open to Mile 13. However, when visitors do know that the road is open, it can affect their trip planning. Forty-three percent of visitors who did not know the road was open said they would have changed their trip plans had they known. The common changes were:

- Extend trip length to one overnight (76%), two or more nights (20%), undecided (4%)
- Seek local lodging (77%)
- Seek local guided recreation (22%)

Of those who knew the road was open, 59% came to DENA because the road was open. This effect appears to be strongest among locals who often called the MSLC during the sampling period to ask about the status of the park road. Fifty-eight percent of Alaskan visitors came to the Park because the park road was open. Alaskan groups as well as commercial tours may be coming to the park now expecting a plowed roadway, but Denali locals (residents in the Denali Borough) may be more hesitant about this assumption given the number of calls reported by MSLC staff from locals compared to other callers who ask specifically for road conditions.

From observations at the MSLC, local visitors appear to be motivated to visit when the road is open, so we may see increased local visitation as more locals learn of the park road being open, given only 59% of Denali Borough residents in the sample knew about the ERO. However, results have shown that Alaskan visitors have higher expectations of solitude and a lower threshold for large groups (Table 7, Table 8). Because of this, local visitation is challenging to predict. This makes it particularly important to consider the perspectives of Alaskan visitors when developing the plan for winter visitation.

Knowledge of the road opening appeared to have an effect on the number of nights visitors stayed in the park or the surrounding area. Visitors who did not know the road was open spent fewer nights in the area than individuals who were aware. Knowledge of the ERO could cause increased local lodging demand. The results suggest more local lodging options would facilitate longer visits to the Park.

Knowledge of the park road opening was associated with the preparedness of visitors and the activities in which they planned to engage. Visitors who knew the road was open were more prepared to spend four to eight hours outside, and more frequently (Pearson's $r = 0.44$) engaged in non-motorized activities, particularly skiing, snowshoeing, and fat tire biking. If more visitors learn that the park road is open during the winter and shoulder season, DENA could see an increase in visitors using the trails for non-motorized activities, perhaps increasing demand for gear rentals or locally guided recreation opportunities. More visitors engaging in non-motorized activities may increase the load on established trails and heighten visitors' perception of crowding at Mt. Vista. Visitors perceived crowding the most at Mt. Vista in April (see Figure 12).

Access to the Park

Visitors provided up to three open-ended desires for a high quality winter experience that we grouped into categories using qualitative content analysis. "Access" comprised the largest category (41%). Common themes that were included in this category were: road and trail systems (29%), access to solitude (5%), and general access to different areas of the park by guided or solo opportunities (7%). Based on this information, the quality of DENA returning visitors' experience diminishes if the ERO is discontinued.

Being able to access more of the Park may help to facilitate a connection to nature, which was the most frequently cited expected experience by DENA winter visitors. Access is important to meeting this expectation, especially considering that driving was the most prevalent primary activity of winter visitors.

However, as the opportunity to experience more of the Park in winter grows together with rising visitation, opportunities for solitude and silence will likely decrease as crowding increases. This could negatively affect visitors' ability to form a connection to nature, especially for visitors with a low threshold for encountering other people on trails.

ERO total vehicle estimates show that a large number of visitors in their personal vehicles are using the park road. Both visitors who knew the road was open prior to arrival and those who did not frequently decided to drive to Mt. Vista. While administering surveys in the MSLC, we observed that visitors who heard the road was open typically decided to drive as far into the Park as their time allowed.

The high percentage of winter visitors who drive is something to consider as winter visitation continues to increase. At some point, the number of cars on the park road and parked at the Mt. Vista lot may start to increase feelings of crowding and diminish the quality of visitors' experiences. The number of people driving to Mt. Vista will also increase the use of the parking lot and may eventually lead to more cars than there are spots. Public transit or a narrated shuttle is something that was included in the survey as a service option. Visitors had relatively low interest in a narrated shuttle to Mt. Vista (Table 10) but interest in a transport shuttle given restricted private vehicle use of the road in winter was not explored in the survey.

Viewing Denali

When visitors were asked what they expected to see while visiting DENA in the winter, they most frequently chose Denali (mountain). Driving to Mile 13 gives visitors who may not be able to hike the Mount Healy Overlook Trail an opportunity to view Denali. The ERO increases the number of visitors who have a chance to be inspired by viewing Denali. This is particularly important in light of past studies that show that many visitors feel that the mountain embodies the aspects of the Park that they value (van Riper et al. 2017, van De Kamp 2001).

However, there are opportunities outside of the Park to view Denali. While administering surveys in the MSLC, we observed rangers advising visitors to drive approximately two hours to Denali View South (Mile 135.2 George Parks Highway) when the road was closed at Mile 3. Visitors who were motivated to see Denali were often willing to make the drive to this viewpoint if they had time. In the future, it could be helpful to track the percentage of visitors who are willing to drive to Denali View South or the Denali Hwy in Cantwell. This would help to gauge the necessity of the ERO to visitors' ability to view Denali.

Wildlife Viewing

Many visitors expected to see wildlife (35%). Moose were the most expected animal and were the most commonly seen animal during roves in 2017 and 2018. This suggests that visitors' expectations of wildlife viewing are likely to be met. Having increased access to the park road likely increases opportunities for wildlife viewing, but no data exist to prove the ERO increases wildlife sightings. During 2017 ERO roves, most animal sightings occurred west of Mile 8 (Clark et al 2018). If the park road were closed at Mile 3, the wildlife seen during the ERO roves would go unseen by visitors in the 818 POVs that currently travel the road during the ERO period.

Solitude/Getting Away from Noise

Solitude and getting away from noise were not dominant expectations of DENA winter visitors but are still important to consider as there are potential secondary effects that reduce visitors' ability to experience solitude and quiet with earlier road openings. Some of these secondary effects could include increased infrastructure, more people on the trails, more cars on the road, and increased commercial activity (Clark et al. 2018). Importantly, solitude and getting away from noise were particularly high expectations among Alaskan visitors.

Visitors reported feeling similarly crowded on Mt. Vista trails and trails near the MSLC. Results suggest visitors do not get an increased amount of solitude while at Mt. Vista. However, this does not account for solitude found through backcountry opportunities from areas along the park road past Mile 3. Allowing for meaningful backcountry experiences is important in light of findings that DENA summer backcountry visitors value scenic locations more intensely than summer frontcountry users (van Riper et al. 2017).

The noise of cars traveling the park road could have an effect on visitors' ability to experience quiet. A soundscape monitoring station located above Mile 7.5 of the park road was deployed in the winter of 2013-14 before and after the ERO. The station recorded distant traffic, such as cars near the entrance of the park road, were in a range of 18-19 dBA (weighted decibels), which is near the threshold of what a human can detect. Traffic from mile 9 - 12 was 36-38 dBA, which is clearly audible. Noise events increased from 1.4 per day before the ERO to 38.6 per day during the ERO in 2013 - 2014. Road maintenance operations, which increased during the ERO were the loudest (Toubman et al. 2015). This increase in noise associated with the ERO period limits opportunities to experience silence in the first 13 miles of the park road (Betchkal, 2014).

A study of DENA summer frontcountry visitors' experience of noise found that visitors considered all types of noise to be "annoying," especially vehicle noise (72%), which is the dominant source of noise in the winter. Additionally, annoyance varied with location (Newman et al. 2017). It is possible that winter visitors also have different expectations for quiet and solitude depending on which area of the park they visit. Future studies could parse the populations that hiked at Mt. Vista and the MSLC trails to examine differences in expected experiences and tolerance for anthropogenic noise[17].

[17] It is difficult to determine if visitors value solitude and silence more than access based on survey data. We did not ask visitors who took the survey to choose between the two management priorities.

Visitors Awareness of the Early Road Opening

If DENA aims to increase awareness of the ERO, our data show that most visitors are learning about the Park on the internet before arriving. Visitors specifically look at the DENA website. It could be valuable to put a banner on the front page of the Park website to alert visitors to the road opening.

Based on data from the survey, it seems that Alaskans, particularly those living within three hours of the Park, are most motivated by the road opening. These visitors value solitude and have a lower tolerance of crowds. We might see the ERO effect diminish if winter in DENA becomes busier.

While visitors from other locations may not decide to make a trip to Alaska and DENA specifically because the park road is open, their trip plans might change if they knew about the road opening prior to arriving in the Park. Visitors would likely stay in the DENA area longer, which would increase the need for lodging in the area. Another potential consequence of visitors knowing about the road in advance is that they will prepare to engage in more non-motorized activities while in the Park. This could mean higher demand for MSLC snowshoes. More visitors engaging in non-motorized activities would increase the number of people on hiking and skiing trails, which would decrease opportunities for solitude. Increased non-motorized activity may also start to increase the impacts on the winter landscape (e.g. litter), making it important to educate winter visitors about Leave No Trace principles.

Further increases in visitation would have implications for staffing and infrastructure needs. The MSLC and MSLC parking lot are rated as crowded in visitor surveys and will be challenged to accommodate increased visitation without having a negative effect on some visitors' experiences. More visitors using trails and accessing the backcountry also raises concern of visitor safety.

Recommendations to Improve Winter Visitor Experience

- During the shoulder season, especially in April, rangers working at the MSLC were often asked about trail conditions. Regularly roving the winter trails could improve the ranger's ability to give visitors trail information, particularly when spring conditions are changing frequently. This would increase staffing needs but could provide more opportunities for visitors to learn about safety and Leave No Trace principles.
- From MSLC observations, visitors often came to the Park excited about being able to see the Park's sled dogs. 20% of observation days noted disappointment from visitors who mistook the opportunity to ride with the Park sled dogs. Clarifying information should be added to the Park's website to give visitors more realistic expectations about seeing the sled dogs in winter. Adding a schedule feature of when the dogs are at the kennels could aid with visitor expectations.
- Visitor comments in the survey related to access present an opportunity to educate visitors about what already exists regarding access (motorized and non-motorized) to the park in winter. For example, visitors could learn about how people can snow machine in the ANILCA New Park additions for traditional activities. This also edifies the existing park policies to prohibit snow machine use in the designated wilderness.

Recommendations for Future Studies

- Future winter visitor studies could include some days of sampling vehicles passing the MSLC to acquire basic residency, activity, and group characteristic data. This may help to confirm or not that we are missing local Alaskan visitors with current survey methodology.
- It may be helpful to better capture the commercial use of the park road during the ERO period. The ERO monitoring reports 17 commercial vehicles using the road past Mile 3.3 from February 18 to March 17, 2018. This is inconsistent with our observations that tours drove to Mt. Vista on nearly every visit to the Park. This discrepancy may be due to tour companies using nondescript vans to transport their clients, which would be coded as a POV in the ERO analysis.
- It would be helpful to track where visitors are going while in DENA in winter. This would allow us to compare expectations, tolerance for crowds, and feelings of crowding for visitors who engage in non-motorized activities at Mt. Vista relative to those who stay in the frontcountry. Such an analysis would help in determining management priorities specific to Mt. Vista.
- It will be important to track visitor trip motivations as knowledge of Park services increases and new services are added. Studies should continue to follow changes in visitor demographics, with an emphasis on local or lower income visitors, due to the significant differences found in their willingness to pay for visitor services between locals vs. non-locals and lower income vs. higher income (Table 10).
- It will be important to track non-motorized use of DENA backcountry in winter to compare these visitors' expectation and experience overtime as visitation increases.

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Appendix A: Methods & Winter Survey Form

Discussion of Survey Methodology

Several improvements were made to the 2018 Winter Visitor Experience Survey methodology. The survey was administered by a dedicated employee throughout the sampling period. This reduces the inconsistencies in sampling, detail of field notes, and the system of selecting individuals to sample. The survey was piloted prior to implementation, which allowed us to identify how individuals interpret potentially unclear or multiply-interpreted questions. This enabled us to word questions more clearly and to better interpret results from potentially unclear questions.

In the 2018 winter visitor survey, visitors were asked to write in their gender and race. No individuals reported being uncomfortable with this question during the pilot test. Only response of male and female were received for visitor gender in 2018. The high frequency of race write-ins that were coded as multiple races for analysis highlighted the importance of allowing individuals to define their race in their terms. The number of individuals who wrote in an ethnicity or nationality for race indicates that race is not well understood.

Despite improvements to survey methodology, some potential problems persist. One potential weakness of the sampling methodology is underrepresentation of the number of local people who come into the park. Unless they stop at the MSLC to use the restroom or ask about trail conditions, local visitors generally know where they want to go if they have previously visited DENA in the winter. We observed several local visitors who stopped in to use the restroom and were surprised to learn that there is an entrance fee in the winter- all mentioned that they had come to the park in the winter many times without paying the fee because they had not stopped in the MSLC. In addition to Alaskan visitors potentially being missed during sampling, Alaskans were overrepresented among soft refusals. Because of this, it is likely that the perspective of Alaskans, particularly local visitors, is underrepresented in this report.

Another weakness is a bias introduced with the method we used to sample tours. When possible, we approached subgroups within the tour and asked them to complete the survey, the same way we would sample any n^{th} group that came into the MSLC. When that was not possible, we asked the tour guide to ask for volunteers. We noted when this method applied, we surveyed mostly students who live in the U.S. while attending school. Occasionally when we surveyed independent family/friend groups of international visitors, the person with the most recent birthday would decline to take the survey and give it to the best English-speaker in the group. We noted when this occurred. These factors could make the sample of international visitors, particularly those on tour, biased towards younger individuals who were more confident in their ability to read and write English. As a result, the English proficiency of DENA winter visitors may be overrepresented.

Welcome to Denali National Park and Preserve! We hope you will take a few minutes to tell us about your experience in Denali, how you decided to come to Denali, and what is most important for your visit. Your responses will help us improve our winter services. Please complete and return this survey before you leave the park.

Start Here.

How many times have you visited Denali National Park in winter?

☐**First visit** OR _____**visits** *(# times)*

Did you plan to stop in Denali today?

☐ Yes ☐ No

Have you visited Denali before in the summer?

☐ Yes: _____ *(# times)* ☐ No

Would you **prefer to visit** Denali…

in summer? ☐ yes ☐ no ☐ don't know

OR:

in winter ? ☐ yes ☐ no ☐ don't know

How long is your trip in Alaska? (write number of days) ____, OR ☐I live in Alaska.

How long do you plan to stay in Denali?

☐ only today ☐ 1 night ☐ 2 nights ☐ 3 or more nights

Did you know you could visit Denali National Park in the winter before arriving today?

☐ No ☐ Yes

☐ only at arrival in Denali
☐ only at arrival in Fairbanks/Anchorage
☐ from friends in Alaska
☐ when I signed up for a tour package
☐ other_____

1

What are the 3 main things you need/desire to have a high quality winter experience in Denali? *(please be specific)*

1._____

2._____

3._____

Since 2014, the Park plows the road 13 miles to the rest area: Mt. Vista. This was not done in the past. The Park is currently deciding whether to keep this service.

Before arriving today, did you know the Park plows the road?

☐ Yes ☐ No ☐ don't know ☐ on tour

If NO you did not know the park plows the road, would you have **spent longer** in Denali had you known the road was plowed?

☐Yes ☐No ☐ don't know ☐ on tour

If YES you did know, when did you learn that?

☐ while planning my overall trip
☐ while in Alaska but before reaching Denali
☐ only upon arrival in Denali

If YES you did know, how did you learn that? (**check all that apply**)

☐online article/blog ☐Alaska tourism publication
☐called the park ahead of trip ☐other _____

If YES you did know, did you come to Denali because the road was plowed?

☐Yes ☐No ☐ don't know ☐ on tour

We manage the park to maintain a true wilderness experience for our visitors. This means, we occasionally ask visitors what they see, hear, and feel about their time recreating and exploring in the park.

Would encountering large groups outside/on trails impact your experience?

☐ Yes, negatively ☐ Yes, positively ☐ Not at all ☐ Don't know

2

In your words, what is a "large group?" _____(write in # people)

How crowded did you feel at the following sites?

	Not at all crowded	Somewhat Crowded	Crowded	Extremely Crowded	Not Applicable
On hiking trails	☐	☐	☐	☐	☐
On ski trails	☐	☐	☐	☐	☐
On mushing trails	☐	☐	☐	☐	☐
In parking lot (visitor center)	☐	☐	☐	☐	☐
Mt. Vista trails	☐	☐	☐	☐	☐
In the Visitor Center	☐	☐	☐	☐	☐
Visitor Center trails	☐	☐	☐	☐	☐
During your entire visit	☐	☐	☐	☐	☐

From the options given, what do you most expect to **experience** in Denali? (***Choose up to 3***)

☐ a connection with nature
☐ solitude
☐ cold and snow
☐ a sense of adventure
☐ bond with my friends/family
☐ being away from noise
☐ learning about the Park
☐ I most expect to experience: _____

3

From the options given, what do you most expect to **see** in Denali? (***Choose up to 3***)

☐ Wildlife: *which animal(s)?* _____
☐ Denali (the mountain)
☐ Mushers & sled dogs
☐ Skiiers and other people recreating
☐ Exhibits in the Visitor Center
☐ none of these. I most expect to see _____

What are your activities today in Denali? (**Choose all that apply**)

☐ ski
☐ snowshoe
☐ hike
☐ skijour
☐ fat bike
☐ dogsled (with my own team)
☐ visit the park kennels (sled dogs)
☐ drive
☐ aurora viewing
☐ none of the above. I wish to _____

What is your **primary** activity today in Denali? (***Choose ONE***)

☐ ski
☐ snowshoe
☐ hike
☐ skijour
☐ fat bike
☐ dogsled (with my own team)
☐ visit the park kennels (sled dogs)
☐ drive
☐ aurora viewing
☐ none of the above. I wish to _____

In your opinion, are you adequately prepared with gear, etc., to spend 4 – 8 hours outside today?

☐ Yes ☐ No ☐ Don't know ☐ tour will provide what I need

4

Denali managers would like to understand what visitors most want to do in the park. Imagine you are asked to pay a fee to participate in the following services. Seriously consider your travel budget and needs. **What services would you be willing to pay, and what is the maximum fee you would pay?**

	$ 20 fee	$40 fee	$70 fee	Will not pay
Guided ski	☐	☐	☐	☐
Narrated shuttle bus to Mt. Vista	☐	☐	☐	☐
Fat bike rentals	☐	☐	☐	☐
Snowshoe rentals	☐	☐	☐	☐
Ski rentals	☐	☐	☐	☐
Photography instruction	☐	☐	☐	☐
Short dogsled tour	☐	☐	☐	☐

How would the following services *change* your experience in Denali?

	Not at all	Somewhat improved	Very improved	**Are you willing to pay a small fee to support the service?**	Yes	No
A warming hut for day trips	☐	☐	☐	→	☐	☐
More groomed trails near visitor center	☐	☐	☐	→	☐	☐
Groomed trails at Mt. Vista	☐	☐	☐	→	☐	☐
Activities with Rangers	☐	☐	☐	→	☐	☐
Food and beverages	☐	☐	☐	→	☐	☐

Do you believe NPS will use the above information to estimate fees?

☐ Yes ☐ No

5

Demographic questions

What is your gender? (write in) _____

In what year were you born? (write in) _____

Which category best fits your household's total income in the past 12 months

☐under 25,000 ☐70,000—99,999 ☐200,000 or more
☐26,000—39,999 ☐100,000—150,000 ☐prefer not to answer
☐40,000– 69,999 ☐150,000—200,000

How many people in your household? _____

What is the total anticipated cost of this trip from when you left home to when you return? ($)_____

From where are you visiting? (Check one, and write in)

☐ Alaska (*provide zip code)* _____
☐ Other U.S. State (*provide State)* _____
☐ Canada (*provide Province/Territory)* _____
☐ Other country (*provide Country)*_____

Do you speak English well? ☐ Yes ☐ No

What is your native language? _____

What is your level of formal **education**? (**Check one**)

☐ some high school
☐ high school graduate
☐ some college/vocational school
☐ four-year college degree [or Bachelor's degree]
☐ master's Degree [or Graduate degree]
☐ Ph.D., M.D., J.D., or equivalent

What kind of group are you travelling with on this trip? (**Check one**)

☐ family ☐ not applicable
☐ friends ☐ family and friends

How many are in your group? _____

6

What are the ages of each group member? ____ ____ ____ ____ ____ ____

Are you part of a guided tour?
☐ No ☐ Yes (which one)? _____

What is your occupation? _____

What do you consider your race? _____

What are some of your personal perspectives regarding environment and management?
How much do you agree or disagree with the following statements:

	Agree	Somewhat agree	Neither	Somewhat disagree	Disagree	Don't know
Public lands are generally welcoming and open	☐	☐	☐	☐	☐	☐
Public lands should be utilized for their natural resources for our economy	☐	☐	☐	☐	☐	☐
Privatization would enhance conservation efforts	☐	☐	☐	☐	☐	☐
Public lands should be primarily set aside for conservation	☐	☐	☐	☐	☐	☐
I feel personal responsibility for the environment	☐	☐	☐	☐	☐	☐
I feel personal responsibility for my local economy	☐	☐	☐	☐	☐	☐
Caring about the environment is more important today than in the past	☐	☐	☐	☐	☐	☐
We can fix environmental issues through technology	☐	☐	☐	☐	☐	☐
We are meant to use and modify nature	☐	☐	☐	☐	☐	☐
Plants and animals have just as much right to exist as we do	☐	☐	☐	☐	☐	☐

Any additional comments? We would love to hear about your experience: good and bad!

THANK YOU for your help and feedback. Your experience in Denali truly matters!

8

END

Appendix B: Visitor Comments

Selected comments have been corrected for spelling and some grammar but are otherwise unaltered. Bolded text is followed by bracketed [themes] of the material. Comments are organized by connotation within sampling months. Visitor suggestions are called out in **bold** within comment boxes. Comments are organized in exclusive groups.

Comments from February

Themes: [Activities] [Camping] [Denali, general] [Denali, winter] [Fees] [Park Road] [Trails] [Visitor Center Staff] [Winterfest]

[Activities]

Loved the hike today. Thank you!

Guided snow mobile tours (like Yellowstone), guided ice climbing (if applicable)

Loved the dog kennels! Would like to enjoy more of the Park for brief visit (half day) that does not require vigorous activity.

[Camping]

Riley Creek Campground is great in the winter. **Please keep plowing any roads to encourage visitors**

[Denali, general]

Love the park. Can't wait to make another winter trip and visit in the summer. Very helpful staff. Thanks!

Beautiful!

Can’t deny that Denali is great.

Keep up the good work!

Improve and protect the park, adapt the infrastructures to the growing number of visitors

Good place.

[Denali, winter]

Thanks for the opportunity to visit this majestic NP in winter.

[Fees]

We would pay for activities or things that the national park needs to stay open! We love the national park!

[Park Road]

We were only here for a few hours, but we really appreciated having the road to Mt. Vista plowed and access to snowshoes.

It would be nice if the road was plowed in further. Maybe tell us when the aurora would be out. Have a schedule for the train in the winter visitor center.

Having the road open to Mountain Vista in the winter is greatly appreciated for backcountry camping. It helps feel the solitude.

[Trails]

Thanks for being here! Great ski trails.

[Visitor Center Staff]

Great visitor center staff!

[Winterfest]

Love the Winterfest activities! We live in Fairbanks and try to attend this event every year. We are glad there are activities for all ages and abilities :)

Happy campground is plowed for camping in winter. **Would be nice to have a designated trail that people could bring "friendly" unleashed dogs**. Winterfest was fun! We've lived in AK 35+ years and this was the first we have ever heard of Winterfest. **Perhaps more advertising** :) We LOVED the Winterfest event!!

Comments from March

Themes: [Activities] [Denali, general] [Denali, winter] [Equipment Rentals] [Facilities] [Food/Beverages] [Information] [Lodging] [NPS] [Park Road] [Survey] [Visitor Center Staff]

[Activities]

Excited for my hike. Park looks amazing.

[Denali, general]

You've done a good job: we enjoy the tour!

Overall, this has been a great experience-everyone is helpful and welcoming.

Thanks!

Very friendly place, remote, beautiful

Keep it open!

Having a good time in Denali.

Fantastic staff, beautiful park, epic nature!

There are not many options for us today as visitors to have a trip to Denali, and even Alaska. As a photographer, who also wants adventures, I wish I would experience different things and be given more freedom in schedule *On Skylar tour*

Beautiful park and a very fun visitor center. Roads were pleasantly clear and much appreciated!

See you guys again. And Welcome to Taiwan.

Denali is amazing and beautiful and **should be preserved at all cost.**

Have only been here once last summer and did not get here early enough to experience much. Went in the visitor center and hiked a trail. Loved every minute. Just arrived here in Denali Park 3-20-18. Beautiful in the winter. Plan to drive into the park up to the 12 miles and see dog kennels. Will be back in June 2018 to experience all the activities. Love the park and Alaska :)

[Denali, winter]

I hope we can be more involved in winter.

The experience seemed like we were missing something (probably because we were visiting in winter). I liked the visitor center. **It would have been helpful to have a sign from the Parks Rd. stating that you all are open!** Thanks!

We are happy to find the visitor center open in winter. **Ski and fat bike rentals would attract winter visitors. Warm food and coffee availability would help too. Open the road to snow machines.**

[Equipment Rentals]

I would love to rent skis for the trails! Keep it up with the friendly staff!

I didn't know the visitor center/NPS loaned out snowshoes. It made me wonder if other parks do something similar. If so, I would have tried to do those things for sure. **Maybe more advertisement of these benefits would be good for the park**. Very lovely visit-so much fun-so beautiful!

[Facilities]

Warm indoor toilet with flush!

[Food/Beverages]

McDonald's/restaurants would come in handy.

[Information]

I'm interested in viewing the whole Denali, and **I would like to know more about the photo taking place**

[Lodging]

Would be nice to have lodging available.

[NPS]

Keep up the good work! We need the NPS more now than ever

I'm not a fan of the direction the current administration is heading with regards to national parks. Preservation in and of itself is vital and for the betterment of all.

[Park Road]

My Denali experience is just beginning. So far the park roads and signage have been great. Visitor center help has been superb. Looking forward to the rest of our park stay

[Survey]

Have an online survey for further details about park experience for data collection/analytics

Two postcards for incentives :)

[Visitor Center Staff]

Visitor center people=super cool and very helpful. Loves this place—**have to protect it from too many people–don't let us love it to death**.

At visitor center, people were really helpful and nice. Thank you.

Don't undervalue Park Rangers; they are so important to the mission of the Parks System. Yay, Parks! We're here on our Honeymoon because nature RULES!

Friendly and helpful staff!

Comments from April

Themes: [Camping] [Denali, general] [Denali, winter] [Equipment Rentals] [Kennels] [None] [NPS] [Park Road] [Surrounding Town] [Survey] [Trails] [Visitor Center Staff]

[Camping]

Plow a couple more sites in campground winter.

[Denali, general]

Good: great country, welcoming people, good facilities for non-explore (?) visitors. GREAT Murie Science & Learning Center and staff- couldn't be better! Not so good: limited winter food facilities. Advanced signage of rest stops (facilities etc.) Overall-absolutely brilliant!

Thank you for working so hard to keep the park clean and welcoming :)

NPS was awesome! Made the trip!

You all are doing a fantastic job! Thank you for your commitment and service.

[Denali, winter]

Thanks for being open in winter! And for your work :)

[Equipment Rentals]

We did not know to come with snowshoes or grips, so the fact that the park offers this is great!

[Kennels]

Visiting Denali kennels-3rd year-w/ 7th graders. 2 nights camping at Savage River. Kennel Park Rangers are AWESOME *School group from Fairbanks*

[None]

Not that I can think of now! Thank you!

[NPS]

This is a wonderful park. I am against the administration plan to increase fees. I am also unhappy with more public lands being opened up to development.

National parks are a treasure we should use with care. Preserving the ecosystems that support wildlife should be their primary focus.

[Park Road]

Please keep plowing the road! We love visiting Denali before the tourist come and the buses start running! *From Matanuska-Susitna Borough, AK

[Surrounding Town]

Open town in winter. Promote northern lights.

[Trails]

Loved the Horseshoe trail and sled dogs. Trail map was a little confusing but signs very clear on trail. Loved all the photo stops along road. I very much enjoyed my trip!

[Visitor Center Staff]

Keep Denali natural and beautiful. It is an amazing place. Thank you to all the wonderful park rangers. Young park ranger at the Visitor's Center was wonderful. She is a perfect custodian for the place. Passionate and upbeat! The quiet solitude of the mountain without anyone around has made this an exceptional experience, even though we did not get to see any wildlife. I am glad we came in April, even though we were informed online that it was not a good time to visit Alaska.

Appendix C: Observations for Interpretation Division

MSLC staff is often the visitor's first impression of the park. They help visitors find activities that fit their schedule and interests and give important safety and stewardship information. In their qualitative comments, many visitors complimented the rangers who staff the MSLC. We observed many visitors who came into the MSLC uncertain of what activities to do in the park left excited about their plan for the day after talking to the rangers. Based on these observations and visitor comments, having staff who are able to spend adequate time talking with each visitor who needs information greatly improves visitor experience.

Mandarin-speaking visitors appeared to benefit from having a Mandarin-speaking interpreter on staff. Although many Mandarin-speaking visitors speak English well or travel with someone who does, they appeared to be more engaged when spoken to in Mandarin.

When visitors were in the MSLC, they primarily spent their time talking to the rangers. The exhibit that seemed to draw the most visitor attention was the Touch Table in the center of the room. Many visitors walked straight to it after coming in the door. Of all the exhibits in the MSLC, the Touch Table seemed to generate the most questions from visitors and provide the greatest number of opportunities for interpretive moments.

The most common activities we heard visitors ask about were hiking or snowshoeing, viewing the aurora borealis, seeing Denali, and seeing the sled dogs. When snowshoe hikes were offered during the weekend of Winterfest, they seemed to be well attended and visitors came back excited about the experience. Many of the children who came into the visitor center did the Jr. Ranger program. One child mentioned wishing the Jr. Ranger booklet was specific to winter, like the winter Jr. Ranger program in Yellowstone.

The Department of the Interior protects and manages the nation’s natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

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National Park Service
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