Indicators and Standards of Quality for the Visitor Experience on the Denali Park Road

Park Studies Laboratory
University of Vermont

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Chapter 1

Introduction and Objectives

National parks contain natural, cultural, and recreational resources of great importance to the nation and, in many cases, to the international community. Given the significance of this resource base, public demand to see and experience these areas is not surprising. Data on visitation to the national park system dramatically support this premise. Visits to the national park system now total nearly 300 million per year.

The popularity of the national park system presents substantial management challenges. Too many visitors may cause unacceptable impacts to fragile natural and cultural resources, and may also cause crowding and other social impacts which degrade the quality of the visitor experience. How many visitors can ultimately be accommodated in a park or related area? How much resource and social impact should be allowed? These and related questions are commonly referred to as carrying capacity (Manning 1999; Stankey and Manning 1986; Shelby and Heberlein 1986; Graefe et al. 1990; Manning 2007).

The Denali Park Road is a good example of the issue of carrying capacity. This road is the primary way that most visitors experience the park. Visitors travel most of the road by bus, on either a park-sponsored Visitor Transportation System (VTS) bus or a commercial tour bus. Denali's 1986 General Management Plan established a use limit of 10,512 vehicle trips annually on the road to protect the natural environment and the quality of the visitor experience. However, the demand for vehicle trips is now approaching this limit, and this has created a need to reexamine this issue.

Several years ago, the National Park Service (NPS) began developing a carrying capacity framework titled Visitor Experience and Resource Protection (VERP) (National Park Service 1997; Manning 2001). As the name suggests, this planning framework is aimed at maintaining the quality of the visitor experience and protecting natural and cultural resources in the face of increasing visitor use. VERP is built upon the same basic principles and concepts that drive other contemporary carrying capacity and related planning/management frameworks, including Limits of Acceptable Change (Stankey et al. 1985), and Visitor Impact Management (Graefe et al. 1990).

Application of VERP can be supported by a program of research. For example, information on visitor use and associated impacts can help inform the planning process. Research can also guide formulation of indicators and standards of quality for natural/cultural resources and the visitor experience. Indicators of quality are measurable, manageable variables that help define the quality of natural/cultural resources and the visitor experience. Standards of quality define the minimum acceptable condition of indicator variables. Research suggests that visitors often have norms or standards about the resource and social conditions acceptable in a park or related area, and that such norms can be useful as a means of formulating indicators and standards of quality (Shelby and Heberlein 1986; Shelby et al. 1992; Manning, Lime, Freimund, and Pitt 1996a; Manning, Lime, and Hof 1996b; Manning 2007).

VERP was initially applied to Arches National Park as a test case and a model for other units of the national park system (Hof et al. 1994; Manning et al. 1996b; Manning et al. 1993; Lime et al. 1994; Manning et al. 1995). This application resulted in a carrying capacity management plan that has now been implemented at that park (National Park Service 1995).

Additional applications of VERP have been conducted and are now proceeding at selected units of the national park system (Manning 2007).

The purpose of this study was to gather information that will help support application of VERP to the Denali Park Road. In particular, the objectives of this study were to help identify indicators and standards of the quality for the visitor experience on the Denali Park Road.

Chapter 2

Study Methods

This study was designed in two phases. Phase 1 consisted of a series of qualitative interviews with bus riders on the Denali Park Road to identify potential indicators of quality. Phase 2 consisted of a quantitative survey of bus riders to identify a range of potential standards of quality for indicator variables identified in Phase 1. Several other types of information were also collected in this survey, including baseline data about bus users and use patterns, wildlife viewing experiences, and overall satisfaction.

Phase 1: Indicators of Quality

One of the most common ways to inform the development of indicators of quality is through survey research directed at recreation participants and others who are most affected by park management. For example, participants may be asked to report what they enjoyed most and least about their time at an area, or they may be asked to rate the importance of a list of potential resource and experiential impacts. Responses to these questions are then categorized and weighed against desirable criteria for indicators (Belnap 1998). Survey methods have helped NPS managers select indicators at many park units.

Qualitative interviews have been suggested as another research-based approach for informing the development of indicators (Manning 2007). Interviews typically ask a set of open-ended questions that encourage respondents to provide narrative, contemplative answers. Interviews with visitors and stakeholders were used at Arches National Park, Acadia National Park, and Cape Cod National Seashore to identify indicators as part of planning processes

employing the VERP framework (Manning et al. 1995, Halo and Manning, in press; Hallo and Manning, in review).

Qualitative methods, such as interviewing, may provide a greater depth of insight into recreation experiences than more quantitative approaches and are particularly useful when little is known about the nature of experiences or what influences them (Borrie et al. 2001; Glaspell et al. 2003). For example, measures of central tendency often employed in analyzing and reporting findings from quantitative recreation-related studies do not capture the full context or description of visitors' experiences. Using qualitative methods to encourage respondents/visitors to elaborate on their experiences is therefore well suited in helping to suggest indicators of quality.

Qualitative exit interviews were conducted with vehicle-based visitors of the Denali Park Road to inform development of indicators of quality for their experience. A total of 126 interviews were conducted during the 2006 peak visitor use season (July – August). Two focus groups were also conducted at one of the Kantishna lodges. Managers at this lodge did not want their guests to be interviewed individually.

Interviewees were selected so that road users on VTS buses (both camper and general bus users), Tundra Wilderness Tour buses, Denali Natural History Tour buses, Kantishna lodge buses, and in RV's were included in the study. A quota was set for the number of interviews to be conducted with each type of road user (Table 2-1). Table 2-2 shows the Kantishna lodges where interviews and focus groups were conducted, while Table 2-3 shows the sampling locations for tour user interviews and the number of interviews conducted at each location. Interviews were conducted in a semi-structured format where all respondents were asked a series of standard questions, but the interviewer was permitted to ask follow-up or exploratory questions. Questions asked were intended to gather information to help understand the visitor

experience on the Park Road and to inform development of indicators of quality. The interview script is shown in Appendix A.

Table 2-1: Interviews and focus groups conducted with each type of road user

	VTS Bus User		**Commercial Users**			**Private Vehicle**	
	Camper Bus	General Bus	Lodge Bus	Tundra Wilderness Tour	Natural History Tour	RV Campers	**Total**
Objective	25	25	20	25	10	15	120
Completed	25	27	14 + 2 Focus groups	27	18	15	126

Table 2-2: Kantishna lodges where interviews and focus groups were conducted

Lodge	**Number of Interviews**
Camp Denali	4
Denali Back Country Lodge	5 + 1 Focus group
Kantishna Roadhouse	1 Focus group
North Face	4

Table 2-3: Locations for tour user interviews

Sampling Location	**Number of Interviews**
McKinley Chalet	21
McKinley Village	9
Princess Lodge - Main & Caribou Canyon	15

All interviews were recorded and transcribed verbatim. A content analysis of each interview was then performed. In this analysis, interviews were coded based on procedures described by Patton (2002) and Miles and Huberman (1994). Coding segments data into simpler, general categories that can then be used to expand and tease out new questions and levels of interpretation (Coffey and Atkinson 1996). Codes assigned during the process were developed inductively – as they emerged from the text of the transcripts – but the structured questions were used as an organizing framework (Strauss and Corbin 1990). The following guidelines were used in this coding process:

- The text associated with a question typically followed the asking of that question in the transcript.
- If an answer to a question seemed unduly prompted or otherwise drawn out by the interviewer, then it was not coded as a response.
- Second-hand information or hearsay was not coded as a response.
- Text is coded only once – it was coded as pertaining to the most relevant question, even if multiple question topics are addressed.
- Multiple codes could be assigned for a respondent's answer to a question.
- Only coherent, directed thoughts were coded. In other words, every attempt was made not to make something out of nothing.
- Not every piece of text needs a code assigned to it because not all text pertained to a question.

Potential indicators were then derived by examining codes and related text for variables that meet criteria for a good indicator (e.g., measurable, manageable, integrative, and related to visitor use).

Several steps were taken to ensure an acceptable degree of coding reliability. First, a lead coder was designated, and this person established all new codes. However, new codes were suggested by all three coders. Second, all coders independently coded the first five transcripts, compared the codes assigned, and discussed and resolved any differences. Third, intercoder reliability was checked using the formula recommended by Miles and Huberman (1994): coder reliability = number of agreements/(total number of agreements + disagreements). An intercoder reliability of 77.1% was obtained in coding of transcript data.

Phase 2: Standards of Quality

Research on standards of quality increasingly has focused on personal and social norms. Developed in the discipline of sociology, norms have attracted considerable attention as a theoretical construct and empirical framework in park and outdoor recreation research and management (see, for example, two special, double issues of *Leisure Sciences*, Volume 18, Numbers 1 and 2, and Volume 24, Numbers 3 and 4). In particular, normative theory has special application in helping to formulate standards of quality for the recreation experience. As applied in parks and outdoor recreation, norms are generally defined as standards that individuals and groups use for evaluating behavior and social and environmental conditions (Donnelly, Vaske, and Shelby 1992; Shelby and Vaske 1991; Vaske, Graefe, Shelby, and Heberlein 1986). If visitors have normative standards concerning relevant aspects of park and outdoor recreation experiences, then such norms can be measured and used as a basis for helping to formulate standards of quality.

Application of normative theory and methods to help formulate visitor-based standards of quality in parks and outdoor recreation is most fully described in Shelby and Heberlein (1986), Vaske et al. (1986), Shelby et al. (1996), Manning (1999), and Manning (2007). These applications have relied on the work of Jackson (1965), who developed a methodology – return-potential curves – to measure norms. In the context of parks and outdoor recreation, visitors (or other survey respondents) are conventionally presented with a range of recreation-related impacts and asked to judge the acceptability of such conditions. For example, respondents might be asked to rate the acceptability of encountering a range of other groups per day (e.g., 0, 2, 4, 6, 8, 10) along wilderness trails. Using these methods, the personal norms of individuals can be aggregated to test for the existence of social norms or the degree to which norms are shared across groups. Normative research in outdoor recreation has focused largely on the issue of

crowding (Basman et al. 1996; Heberlein et al. 1999; Lawson and Manning 2002; Manning et al. 1996c; Manning et al. 1996a; Manning et al. 1996b; Manning et al. 1999; Manning et al. 2002; Patterson and Hammitt 1990; Saarinen 1998; Shelby 1981; Vaske et al. 1986; Whittaker and Shelby 1988; Williams et al. 1991), but has also been expanded to include other relevant issues, including ecological impacts to trails and campsites (Manning et al, in press; Shelby et al.1988).

Normative research on standards of quality in parks and outdoor recreation has often used visual simulations to portray a range of resource and social impacts and resulting conditions (Manning et al. 1996; Manning and Freimund 2004; Manning 2007). Visual research methods offer several potential advantages over conventional narrative/numerical questions to measure standards of quality. For example, visual methods can help "standardize" such research, focus more directly and exclusively on the treatment variables under study, offer a more elegant means of communicating variables that are difficult or awkward to describe in narrative/numerical terms, and can be used to represent conditions that are difficult to find in the field or that do not currently exist. Research suggests that visual research methods may be most appropriate in high use density contexts, may result in more valid or realistic estimates of visitor standards of quality in such applications, meet generally accepted standards of validity, and may be methodologically robust.

In Phase 2 of the study, a quantitative survey using normative theory and methods was conducted. The survey was administered to the five major types of bus users on the Denali Park Road: VTS general bus users, VTS camper bus users, Kantishna lodge bus users, Tundra Wilderness Tour participants, and Natural History Tour participants. The survey included questions about visitor use patterns, ratings of the degree to which selected issues were problems

on the Denali Park Road, and normative standards of quality for several of the indicator variables identified in Phase 1. The survey questionnaire is shown in Appendix B.

Where appropriate, visual simulations were used to measure normative standards of quality. A series of visual simulations was developed and integrated into the survey to measure visitor-based standards for the number of buses at one time on a segment of the Denali Park Road, the number of buses at informal wildlife stops along the road, and the number of buses and visitors at a rest stop. Study photographs are shown in Appendix C through F.

The survey was administered by trained surveyors who selected representative samples of each of the five types of bus users. General and camper VTS bus users were surveyed as they disembarked at the Wilderness Access Center. Camper bus users were also surveyed at Wonder Lake Campground. Kantishna lodge bus users were surveyed at either the lodges or the train depot. Tundra Wilderness Tour and Natural History Tour bus users were surveyed at either the lodges outside the park or at the train depot. A systematic sampling protocol (e.g., asking every 5th visitor group, then choosing the person from this group with the most recent birthday) was used to select survey respondents, and each survey respondent was asked a screening question to prevent multiple responses from the same visitor. Surveys were administered during normal times of visitor use. For example, VTS bus users disembark at the Wilderness Access Center between the hours of 11:40 a.m. and 11:20 p.m. “Early” and “late” sampling days were scheduled to ensure that visitors from this entire daily use period were included in the survey. Similarly, commercial bus users were sampled during times they were normally at the intercept locations. A response rate of 78% was attained and this yielded 707 completed questionnaires. The number of completed questionnaires by visitor type is as follows: VTS general bus users = 207; VTS camper bus users = 148; Kantishna lodge bus users = 87; Tundra Wilderness Tour bus

users = 174; Natural History Tour bus users = 91. The survey was administered during July and August 2007.

Chapter 3

Indicators of Quality

This chapter presents findings from the phase 1 qualitative survey of Denali Park Road users. As described in the previous chapter, codes were created to characterize the open-ended responses that were recorded. Findings are presented in three sections. The first addresses the less qualitative questions about visitors and their use patterns. The second section is a presentation and extended discussion of findings from three key open-ended questions. This discussion includes a number of direct quotations from respondents to illustrate the depth and richness of the resulting data and how indicators were derived by examining resulting codes and related text. The third section presents a series of tables and brief narratives that describe the codes derived from the remaining study questions.

Visitors and Visitor Use Patterns

Three questions addressed the issues of how long visitors spent traveling on the road, how far along the road they traveled, and how they decided how far to travel, and findings are presented in Tables 3-1 to 3-3. Most visitors spent between four and eight hours on the road. The farthest point reached along the road varied considerably. The most frequently reported destinations, in decreasing order, were Wonder Lake, Fish Creek, Teklanika Campground, and Kantishna. Reasons for alternative destinations also varied considerably, with the most common reasons, in decreasing order, being 1) to go as far as possible so as to experience the park at its best, 2) to facilitate the types of activities desired, 3) to go as far as available time allowed, and 4) advice from another person.

Table 3-1: Codes assigned for responses to question "How long did you spend traveling along the Denali Park Road today?"

Length of Time	Frequency
2 hour or less	12
>2 to 4 hours	8
>4 to 6 hours	27
>6 to 8 hours	22
>8 to 10 hours	10
More than 10 hours	5

Table 3-2: Codes assigned for responses to question "[VTS users] How far into the park did you go today?"

Location	Frequency
Wonder Lake	24
Fish Creek	13
Teklanika Campground	10
Kantishna	9
Toklat	6
Stoney Hill	2
Cathedral Mountain	1

Table 3-3: Codes assigned for responses to question "How did you decide on how far into the park you would travel?"

Code	Frequency
Go farthest into Denali to experience it the best (e.g., see the most wildlife, better scenery)	25
Based on the activity they wanted to participate in	22
Based on the amount of time they wanted to devote to visiting the park	13
Based on a suggestion or recommendation from another person	9
Based on past experience	7
To get away from everybody else	2
Based on the place they wanted to see	1

Key Questions

Three questions were considered as foundational to identifying potential indicators of quality and these are discussed in this section. When respondents were asked about the three things they enjoyed most about their time on the Denali Park Road the most frequently occurring codes related to 'wildlife', 'scenery or mountains', and 'driver or information provided by the driver'

(Table 3-4). Two respondents indicated the importance of all of these variables to their experience:

Respondent 1: The animals.

Respondent 2: Yea, the viewing possibilities.

Interviewer: So, animals and viewing possibilities. When you say viewing, do you mean wildlife viewing?

Respondent 2: Both, Both. We stopped and we were told about the glaciers and how they had formed the landside and, and…just the different landscapes…and it wasn't just the animals. But, it was the opportunity to get out and see these mountain ranges, and…

Other response codes suggested the importance of specific landscape attributes, activities, and experiences characteristics. For example, one respondent said "Well we had wonderful weather so we were able to see Denali, in all its glory." Another respondent identified the significance of 'social experiences with others', in addition to the importance of the bus driver when responding "…the view of the mountain for sure. And, actually the interaction too. Just the person, the tour guide, as well as just the other people on the bus." Some respondents indicated the importance of 'solitude or not too much traffic' and 'using bus transportation':

Respondent : Uh, it's the way we've mostly…when it's, it's the way we find things, it's the way we've been traveling. We don't normally go on a tour bus or something to get to places, we have our own bikes or car…it's kind of important to me.

Interviewer: Anything else that was very enjoyable about your trip?

Respondent : It is, it's gorgeous, it's really pretty, just a nice quiet drive, there were no, not many cars which is a good thing.

With lesser frequency, codes were assigned indicating the enjoyment that some respondents got from either 'hiking along the road' or 'riding along the road'. Also, 'wildflowers', 'Polychrome Pass' (a notable location on the Park Road), 'driving on the road with an RV', and 'rules intended to protect wildlife' were reported as enjoyable aspects of the experience on the Denali Park Road.

Table 3-4: Codes assigned for responses to question "What are the three things you enjoyed most about your time on the Denali Park Road today?"

Code	Frequency
Wildlife	87
Scenery/mountains	83
Driver/information provided by the bus driver	49
Mt. McKinley/Denali	14
Natural environment/landscape	8
Social experience with others	7
Solitude/not too much traffic on the road	6
Bus transportation	4
Hiking	3
Ride along the road	3
Wildflowers	2
Polychrome Pass	2
Driving on the road with RV	2
Rules on the bus intended to protect wildlife	1
Being able to get off the bus and walk around	1

A greater number of codes emerged from responses to the question about the three things respondents enjoyed least about their time on the Park Road (Table 3-5). The two most frequently occurring codes – 'Long ride or being on the bus' and 'uncomfortable seats on the bus' – related to the schedule of the bus trip or the bus itself. For example, one respondent who used the bus to get to their hiking location said "I got a bad back and the buses hurt. It sounds weird to carry a pack, but the bus is harder on my back than the pack is." Other experiential issues regarding the bus schedule or bus emerged in less frequently occurring codes such as

‘malfunctioning or dirty windows’, ‘frequency or duration of stops’, ‘buses too big’, and ‘time to load and unload the bus.’ One respondent indicated that both the length of the trip and malfunction window impacted her experience:

> Respondent: It takes a long time, today was all right, wasn’t too bad, but the tundra [wilderness tour] one took forever. Today wasn’t that good ‘cause in the morning it was kind of rainy and all the windows were dirty, so you couldn’t see anything, even if there was something out there. And it was cold. None of the windows on the damned bus worked, so you’d pull them up, and it kind of just drops down again, so that’s not good.

Codes related to the built road environment emerged in response to this question. Safety concerns related to the road were expressed by several respondents, particularly regarding traveling through Polychrome Pass. One respondent said “The road is narrow in some spots, there are blind curves, and you can see that there’s potential for an accident at some point. There are some pretty high spots through the passes that the busses are trying to negotiate.” Also, respondents suggested that the ‘condition of the road’ or ‘dust’ generated by vehicles detracted from their experience. For example, one respondent said what they enjoyed least was “Being on a gravel road. It was uncomfortable. There was lots of dust and dirt.” Other responses indicated that “some of the outhouses weren’t as nice as they could have been” or that there was a ‘lack of signs on the road’.

Codes for wildlife viewing and factors influencing that experience were assigned in response to this question. Some responses indicated that ‘not seeing enough wildlife or wildlife being too far away’ impacted their experience:

> Respondent 1: We didn’t see any moose, or sheep, or bear. We didn’t see anything.
>
> *Interviewer: No wildlife?*

Respondent 2: We didn't see anything. No wildlife.

Respondent 1: We didn't see anything…

Respondent 2: I guess that was the least...But all in all it was pretty nice.

One respondent reported an issue with a bus scaring away wildlife of interest:

Respondent: Well… sometimes you can scare away some animals when you go. And I love seeing wildlife, so…

Interviewer: So was it the fact that you scared away the animals that you didn't enjoy or the fact that there wasn't as much wildlife?

Respondent: Well like yesterday we were on a bus to a hike and there was a fox in the middle of the road and we went a little too close and it ran away.

Other codes assigned to responses related to who respondents interacted with or what people experienced. Seeing 'other buses or traffic' or 'too many people at rest areas' impacted the experience of road users. For example, one respondent said "I don't like all the buses. I just think it takes away from it. It makes it feel like you're in Disneyland or something. I would like to have the road all to myself." For other respondents the least enjoyable aspects of their experience were their interactions with the 'driver', the 'behavior and actions of others on the bus' and 'not seeing Mt. McKinley.' Also, codes of 'poor value or too costly' and 'bus not going far enough into the park' were assigned in the analysis.

Table 3-5: Codes assigned for responses to question "What are the three things you enjoyed least about your time on the Denali Park Road today?"

Code	Frequency
Long ride/being on the bus	28
Nothing	20
Uncomfortable seats on the bus	19
Didn't see enough wildlife/wildlife too far away	12
Safety concerns (e.g., driving through Polychrome)	12
Dust	12

Condition of the road	10
Seeing buses/traffic	7
Frequency/duration of stops	6
Driver (e.g., couldn't hear, annoying, not informative)	5
Malfunctioning/dirty windows	4
Behavior and actions of other visitors on the bus	4
Lodge buses too big and with too many people	3
Too many people at rest areas	2
Lack of facilities	2
Tour didn't go far enough into park	2
Bathroom facilities along road were not very nice	2
Vehicles scaring wildlife away	1
Road was unpaved	1
Poor value/cost	1
Not seeing Mt. McKinley	1
Lack of signs on road	1
Time to load and unload the bus	1

Responses to the question "Did you feel you were in the wilderness during your trip along the road? Why or why not?" were first categorized as affirmative or non-affirmative. Of the codes assigned, 122 affirmed a feeling of being in the wilderness and 95 did not. Additional subcodes were assigned to characterize reasons for these feelings (Table 3-6).

Affirmative subcodes suggested that the most frequently occurring reasons for respondents feeling like they were in the wilderness was the 'road was surrounded by a vast, natural landscape', there was 'not much traffic or use' on the road, there were 'few buildings' along the road, or because of 'the wildlife that was seen' while on the road. A respondent characterized responses associated with many of these subcodes when he said:

> Respondent: Yeah, definitely.
>
> *Interviewer: Why is that?*
>
> Respondent : Um, because there, you don't see habitation, human habitation. You don't see a lot of vehicles. You don't see hardly anything. A few buses, and we did see animals, so, and the wilderness is, it looks like it's untouched.

In addition, some respondents reported that the 'character of the road' and a 'lack of street signs, traffic signals, or power lines found on other roads' contributed to a feeling of being in wilderness:

> Respondent 1: Yes. There were very few cars, very few people, then, you know, an occasional bus or other buses, but that's it. You didn't see people walking the roads, you didn't see, you know, lots of buses or lots of cars.
>
> Respondent 2: And also I think that the nature of the road, it was a little bit bumpy, but that contributes to the feeling that you're in a wilder environment. If it had been a paved road with several lanes of yellow stripe down the middle, then that would have lessened the wildness, the experience.
>
> Respondent 1: Minimal signage.
>
> Respondent 2: Yes, that's, I was just going to say for as far as you could see, you're not seeing any development…
>
> Respondent 1: Right.
>
> Respondent 2: …you know, no houses. You're just seeing land, and hopefully wildlife.
>
> Respondent 1: Not McDonald's.
>
> Respondent 3: As the young lady said, you know, it's the road. Don't ever pave that road. It will eliminate a lot of the feeling that you're out in the middle of No-Man's-Land, if you pave it.

Some respondents felt that it was the lack of cars that made it feel like they were in wilderness: "I would say the thing that I, talking about feeling like wilderness, I would say that you feel it a lot more being on one of the buses than you do having your own car driving back in." Other subcodes assigned (though will less frequency) to explain affirmative responses to

feelings of being in wilderness were ‘not much litter’, ‘quiet’, ‘I walked along the road’, ‘primitive or undeveloped rest areas’ and ‘character of the bus.’

Reasons given for non-affirmative responses to this question were most frequently characterized by the subcodes ‘number of buses and people’, ‘being on the bus’, or ‘the road itself.’ For example, the following respondent suggested that being on the bus, and particularly having to look through the windows, removed them from a feeling of being in wilderness:

> Respondent: Well, on the drive it’s just the window. You know, you’re driving through it and there’s a window. It’s still a barrier, you know. Like, today we went up the mountain and we saw the Dall sheep and you know, like, they were mainly in front of the garbage can, and if there’s no barrier, you can kind of like, they can just charge at you, just kind of like primal instinct or whatever you want to call it. But if there’s a bus, I mean, it’s not happening, you know? It’s not going down, so…the excitement’s dead.
>
> *Interviewer: So, just the fact that you’re in a bus removes that wilderness feeling?*
>
> Respondent: Exactly, yeah, exactly, 100%. Like I said, it’s just like in a zoo. I mean, it can be a gate or, it can be a window. It’s still there, it’s still a barrier.

Other respondents indicated that the road and seeing many buses took away from their wilderness experience:

> Respondent 1: … you could always see the road in front of you. It’s when you’re in the middle of nowhere and you can’t see or hear anything. That’s wilderness.
>
> *Interviewer: So the road took you out of that feeling?*
>
> Respondent 1: Yeah, you know you’re still attached to civilization.
>
> Respondent 2: Yes, and because you’re constantly seeing buses ahead of you or passing you.

Other non-affirmative subcodes were ‘facilities (rest stops) were present’, ‘construction activities’, ‘human created noises’, and ‘landscape wasn't rugged or forested’. The latter of these was mentioned by the following respondent:

> Respondent: I just thought wilderness would be more snow capped mountains, rugged looking mountains, more forestation, because what looked nice was really a valley. I just didn’t have the concept of a smooth rolling green valley in Alaska. I thought it would be a riverbed with sheer drops to the riverbed, mountain drops.
>
> *Interviewer: So wilderness to you means trees?*
>
> Respondent: Mountains, trees, rivers, but more rugged looking then I think I saw here.

Table 3-6: Codes assigned for responses to question “Did you feel you were in the "wilderness" during your trip along the road? Why or why not?”

Code	Frequency
Yes, because (no further reason given)	*6*
The road is surrounded by a vast, natural landscape	42
Not much traffic/use	18
Few buildings	15
Character of the road	11
The wildlife that was seen	10
No street signs, traffic signals, or power lines that would be found on other roads	7
Only buses, no cars on the road	5
Not much litter	2
Quiet	2
I walked along the road	1
Primitive or undeveloped rest areas	1
Character of the bus	1
No, because (no further reason given)	*1*
The number of buses and people	31
Being on the bus detracted from a feeling of wilderness	27
The road	20
Facilities (rest stops) were present	7
Landscape (wasn't rugged or forested)	5
Construction activities	2
Human created noises	1

Related Questions

Several groups of questions were asked to develop additional insights into potential indicators of quality for the Denali Park Road experience. The first group of questions addressed how often visitors had been on the road, their expectations for the experience, and how their perceptions of the experience had changed over time. Findings are reported in Tables 3-7 through 3-13.

The vast majority of respondents were first-time visitors. First-time visitors were asked several follow-up questions about their expectations. The most common responses focused on wildlife. Many respondents expected to see wildlife, but many reported expecting to see more wildlife than they saw. Many visitors expected a long ride on the bus and that it would be a rough, but scenic ride. And some visitors reported not knowing what to expect. Expectations about the road experience were based largely on travel guidebooks/brochures, accounts of other visitors, and the internet. Many respondents reported that the experience was better than expected and that this was due primarily to the fact that more wildlife was seen than expected. A smaller number reported that the experience was worse than expected, primarily because less wildlife was seen than expected. A relatively large number of respondents reported that their expectations were not well formed enough to answer this question.

Repeat visitors were asked how many times they had been on the road, the year of their first trip, and how their experience on the road had changed over the years. Only a very small number of respondents had been on the road more than twice. The vast majority of previous trips on the road had occurred within the past 15 years. The most commonly reported changes in the quality of the experience included the road being in better condition, more vehicles on the road, and a better experience on the buses.

Table 3-7: Codes assigned for responses to question "Is this your first trip on the Denali Park Road?"

Code	Frequency
First time visitor	105
Repeat visitor	32

Table 3-8: Codes assigned for responses to question " [If first time visitor] What did you expect your trip along the Denali Park Road to be like?"

Code	Frequency
More wildlife than was seen	34
Lots of wildlife to see	23
Long ride/many stops	21
Rough ride	16
Not sure what to expect	15
Scenic	15
Wild/undeveloped environment	12
Less wildlife than was seen	12
More traffic/use	4
Road is in better condition	3
More developed (e.g. paved road)	2
More than one road	1

Table 3-9: Codes assigned for responses to question "[If first time visitor] How did you know what to expect?"

Code	Frequency
Travel guidebook/brochures	33
Other visitors' accounts of their trips	24
Internet	18
Experiences at other parks	15
Television/videos	12
Don't know/nothing	7
Information at the visitor center	3
Bus driver	1

Table 3-10: Codes assigned for responses to question "[If first time visitor] Was your trip better or worse than you expected?"

Code	Frequency
Worse	*2*
because less wildlife was seen than expected	11
because of the bus ride (e.g., bumpiness of ride, lack of stops, cold)	3
because scenery was not as great as expected	2
because of the driver	1
Neither better nor worse than expected	*19*
Better	*18*
because lots of wildlife was seen	18
because it is more beautiful/wonderful when seeing it in person	9
because of the information provided by driver	1
because it's not very crowded	1
because of nice facilities along the road	1

Table 3-11: Codes assigned for responses to question "[If repeat visitor] How many times have you been on the Denali Park Road?"

Number of previous visits	Frequency
2	20
3	1
4	4
5 or more	6

Table 3-12: Codes assigned for responses to question "[If repeat visitor] When was your first trip along the Denali Park Road?"

Years since last visit	Frequency
1 to 5	6
6 to 10	8
11 to 15	9
16 to 20	3
21 or more	4

Table 3-13: Codes assigned for responses to question "[If repeat visitor] How has your experience on the Denali Park Road changed over the years?"

Code	Frequency
Road is in better condition	8
More tour buses/traffic/use	6
Better experience on bus	6
No change	5
Better/more facilities	3
Fewer animals along the road	3
Saw more wildlife	3
Better interpretive information provided	1

The second group of questions addressed the quality of the visitor experience on the road. Findings from these questions are reported in Tables 3-14 through 3-21. The first question was quite general and asked respondents to report "anything about traveling along the road that was important in affecting the quality of your experience today". Relatively few responses were derived from this question, perhaps because it was so general. The most common responses were that bus drivers stopped when they were asked to, interpretive information was provided, and the rugged character of the road enhanced the quality of the experience.

Several follow-up questions were more specific and asked if there was anything about selected aspects of the road experience that affected quality, including rest areas, wildlife stops,

visitors hiking or biking along the road, and the number of vehicles along the road. The vast majority of comments regarding rest stops were very positive noting their frequency/availability and that they were clean and well-maintained. The vast majority of comments regarding wildlife were also very positive noting that buses stopped for a sufficient period to enjoy wildlife and the surrounding environment and that bus drivers were helpful in wildlife viewing. Nearly all respondents reported that they experienced wildlife stops when more than one bus was stopped. A majority of respondents reported that this did not negatively affect the quality of the experience. In fact, 25 comments were recorded that this positively affected the quality of the experience because it indicated that wildlife was present. Only a small number of comments noted negative effects due to the "artificial" character of the experience, interference with wildlife viewing, and delays in travel time. Most visitors reported that seeing people walking or biking on the road did not affect the quality of their experience either positively or negatively, though a substantial percentage of comments suggested that it was nice that people could use the road and surrounding areas in this way. A strong plurality of comments reflected the fact that the number of vehicles on the road did not affect the quality of the experience either positively or negatively. However, this feeling was not universal with 22 comments reporting "too many buses" and another 14 comments suggesting the number of buses encountered diminished the sense of solitude on the road.

Two final questions addressed the quality of the experience more broadly. The first asked "What are the things that you'd need to see and do to say that you've had a great visit along the Denali Park Road?" The two most common responses were wildlife-oriented: seeing wildlife in general and grizzly bears specifically. Other common responses were seeing Mt. McKinley/Denali, seeing the surrounding scenery/mountains, and seeing other types of wildlife.

The second question asked if respondents felt "hurried" at any point during their visit. The vast majority of comments indicate that respondents did not fell hurried.

Table 3-14: Codes assigned for responses to question "Was there anything about traveling along the road that was important in affecting the quality of your experience today?"

Code	Frequency
Driver stopped when asked to	10
Interpretive information/sound or video system	7
Ruggedness, character, or condition of the road enhanced the experience	7
Long ride	5
Safety/skill of driving	3
Cramped or uncomfortable seating	2
Bus driver was not good (e.g., rude)	2
Traffic well managed/rules of the road	2
Social experiences with others on the bus	2
Lodge buses were a pleasant ride	1
Being able to see more of the park	1
Being able to get off the bus	1
Not having to drive/being able to look around	1
VTS bus was comfortable	1
Not too many people on the bus	1
Visitor center	1

Table 3-15: Codes assigned for responses to question "Was there anything about stopping at rest areas that was important in affecting the quality of your experience today?"

Code	Frequency
Availability/frequency of rest areas and stops	38
Rest areas were clean and well-maintained	23
Too many stops or too much time spent at rest area stops	6
Rest areas were unappealing (e.g., outhouse style) toilet, no	5
Too many people	2
Interpretive information at visitor center	1
Behavior or actions of other visitors	1

Table 3-16: Codes assigned for responses to question "Was there anything about stopping to observe wildlife that was important in affecting the quality of your experience today?"

Code	Frequency
Stopping and taking adequate time to enjoy wildlife/environment	55
Bus driver providing information & assistance with wildlife viewing (e.g., locating wildlife, using binoculars)	21
There wasn't enough wildlife to see/wildlife too far away	8
Rules for wildlife viewing were appropriate	4
Too much time spent at wildlife stops	2
Bus exhaust at stops	1
Being on the wrong side of the bus	1

Table 3-17: Codes assigned for responses to question "What are the things that you'd need to see and do to say that you've had a great visit along the Denali Park Road?"

Code	Frequency
Wildlife	57
Grizzly bear	44
Denali/Mt. McKinley	37
Scenery/mountains	34
Moose	20
Wolf	17
Caribou	12
Tour information/learn about the wildlife, history, & geology of Denali	11
Sheep	9
Experience the vastness of the park	7
Get out of the bus and walk around	4
Eagle	4
Hiking	4
Have a safe, comfortable bus ride	4
Meet other people on the bus	2
Ptarmigan	2
Camping	2
Fox	1
Wonder Lake	1
Photograph wildlife/nature	1

Table 3-18: Codes assigned for responses to question "Did you see any visitors walking or biking along the road or hiking off the road? [If yes] Did that affect the quality of your experience in any way?"

Code	Frequency
Yes	*14*
Didn't affect the experience either positively or negatively	62
Nice to see that people could use the road by walking or biking on it/a feeling of envy	39
Concerned about other's safety because of wildlife	4
Took away from the feeling of being in the wilderness	3
Interacting with hikers/bikers added to the experience	3
No	*8*

Table 3-19: Codes assigned for responses to question "How did the number of vehicles on the Denali Park Road affect your enjoyment of visiting the park?"

Code	Frequency
Negatively	*1*
Encountered too many buses	22
Removed them from a sense of solitude or being in the wilderness/made it feel unnatural	14
Too many other vehicles interferes with wildlife viewing (e.g., get in the way)	6
Other buses led to concern about safety	5
Many vehicles created too much dust	4
Too many vehicles scared wildlife away from the road	2
Caused waiting or rushing at facilities	2
Concern about emissions from too many buses	1
Neither Negative or Positive	
No affect on the enjoyment of visiting the park	62
More than expected, but that wasn't bothersome	10
Positively	*1*
There were not many vehicles on the road	13
More buses increases the chance of seeing wildlife	3

Table 3-20: Codes assigned for responses to question "Did you experience any instances in which more than one bus was stopped to observe wildlife or to use the rest areas? [If yes] Did this affect the quality of your experience in any way?"

Code	Frequency
Yes, positively	
Other buses indicated that wildlife was present	25
Other buses at rest stops provided opportunities to interact with others	3
Yes, negatively	*1*
Multiple buses reduced enjoyment because it makes it feel artificial or not like a wilderness	10
Multiple buses reduced enjoyment because it delays travel	7
Multiple buses at wildlife stops interfered with wildlife viewing (e.g., got in picture, disturbed wildlife)	7
Multiple buses at rest stops made the rest facilities difficult to use	5
Multiple buses makes it feel crowded	5
Yes, but it didn't impact the experience	*67*
No	*8*

Table 3-21: Codes assigned for responses to question "Did you feel hurried at any point during your visit? If so, why? [Follow-up probe] Did you feel hurried when you were stopped to view wildlife and other natural features?"

Code	Frequency
Yes, because	*2*
It felt like the bus and driver are on a schedule	7
Not enough time provided to take photos	5
Other buses caused a rush	3
At rest stops	2
Driver didn't stop for wildlife	1
No, because	*64*
Bus driver provided plenty of time at stops	38
Bus driver moved on when necessary	4
Sometimes too much time was provided at stops	4
Driver stopped when asked to	2

A third group of questions addressed the number of vehicles on the road more directly. Findings from these questions are reported in Tables 3-22 through 3-24. First, visitors were asked if they knew that there was a limit on the number of vehicles on the road. Most respondents (76) reported that they were aware of this, but 53 reported that they were not. The second question asked if respondents thought a limit on the number of vehicles was a good idea. The vast majority of respondents reported that this is a good idea, primarily because it enhances the quality of the visitor experience and reduces impacts to wildlife and the environment. Finally, respondents were asked if there should be more or fewer vehicles on the road than at present. Most respondents (62) reported that the current number is about right, though 31 comments suggested that there could be a few more vehicles allowed and 15 comments suggested that there should be fewer vehicles.

Table 3-22: Codes assigned for responses to question "Did you know that the National Park Service limits the number of vehicles that travel the park road between the Savage River and Kantishna to protect park resources and to maintain high quality visitor experiences? Do you think having a limit on the number of vehicles is a good idea?

Code	Frequency
Yes, I was aware of the limit	76
No, I was not aware of the limit	53

Table 3-23: Why or why not?"

Code	Frequency
It's a good idea, because	*17*
Few vehicles make for a better experience (e.g., protects a sense of wilderness, makes it feel less crowded, more safe)	58
It reduces the impacts to wildlife and the environment	47
It balances access and protection	12
The road couldn't accommodate high use levels	9
The limit prevents the park from becoming too developed or commercialized	1
It's not a good idea, because	
It's a barrier to greater access	3

Table 3-24: Codes assigned for responses to question "[Follow-up probe] Could there be more vehicles allowed on the road without impacting the experience, or should there be fewer vehicles than are allowed on the road right now?" (Note: this follow-up question emerged during interviewing and is not included in the interview script)

Code	Frequency
Current numbers/limit is about right and it should be maintained	62
A few more vehicles could be allowed without impacting the experience	31
There should be fewer tour buses/vehicles	9
Future decisions about vehicle numbers should be based on information that balances visitor access and wildlife impacts	7
There should be fewer vehicles for experiential or environmental reasons	6
Don't know	6
Number of vehicles within sight, not limit, is issue	3

Several questions focused specifically on aspects of the bus trip. Findings from these questions are reported in Tables 3-25 through 3-29. Visitors were asked why they chose the type of bus trip (i.e., VTS bus or tour bus) they did. For those who chose VTS buses, it was primarily because this enabled them to participate in the recreational activities (e.g., hiking and camping) in which they were interested. Some respondents also felt the VTS buses offered them a better

value. For visitors who chose a tour bus, this choice primarily a function of the fact that it was part of a vacation package. Some respondents favored tour buses because this type of trip included a narrative talk. The vast majority of all bus riders felt that bus drivers positively influenced the quality of their experience. This was primarily because bus drivers were very informative and were also very hospitable and even humorous. Comments about the bus itself were mixed. While some respondents appreciated certain features ("appropriate" seating, storage racks, seatbelts) the majority of comments were negative noting issues such as uncomfortable or cramped seating and windows that were dirty or did not function properly. A related question asked if the quality of the visitor experience was affected by the bus. Only a minority of respondents answered this question in a substantive way with most comments indicating the bus was "okay." Finally, respondents were asked if the number of people on the bus affected the quality of the visitor experience. Most comments suggested that there were not too many people on the VTS buses and that the tour buses were full but that this did not detract from the quality of the experience. A minority of comments (15) noted that the number of people on buses interfered with wildlife viewing.

Table 3-25: Codes assigned for responses to question "Why did you choose the type of bus that you did?"

Code	Frequency
Took a VTS bus because,	
They had to because of the activity they wanted to participate in (e.g., hiking, camping)	25
It was a better value	12
It allows you to get off and do what you want	7
Just needed transportation	5
Tour buses are not the type of experience I wanted (e.g., too much talking, dissimilar people, personal preference)	5
Recommended by someone	5
Unaware of other options	2
VTS buses have a more flexible schedule	1
Took Tour bus because	
It was part of a vacation package	37
Because a narrative talk was included	12
Unaware of other options	2

Table 3-26: Codes assigned for responses to question "[For VTS and tour bus riders] How did your bus driver affect the quality of your experience in the park?"

Code	Frequency
Positively	
Pointed out/shared knowledge/answered questions regarding wildlife, plants, history, and geology	86
Nice, helpful, or humorous personality	33
Safe driver	8
Provided information/advice about activities (e.g., camping, hiking)	3
Negatively	
Drivers personality/presentation was unappealing	7
Driver didn't provide enough (or correct) information	4
Driver wasn't responsive to questions	2
Driver rushed to stay on schedule	2

Table 3-27: Codes assigned for responses to question "[For VTS and tour bus riders] Did you find anything about the bus to be especially pleasing or annoying?"

Code	Frequency
Pleasing	
Seats were comfortable/appropriate	10
Features of bus (e.g., storage racks, camera system, seatbelts)	9
Driver/information provided by the driver	3
Character of bus	3
Bus was well maintained	1
Annoying	
Uncomfortable or cramped seating	36
Windows (e.g., malfunctioning, dirty, or poorly designed windows)	23
Having to wear a seat belt	7
Rattling/loud bus	5
It was cold on the bus	5
Smell of brakes/exhaust	2
Poor accommodations for handicapped/elderly	2
It was hot on the bus	1
Neither pleasing nor annoying	*10*

Table 3-28: Codes assigned for responses to question "[Follow-up probe] Was your experience affected by the number of people on your bus?"

Code	Frequency
Not too many people on the VTS bus	31
Tour bus was full but that didn't affect the experience	27
A crowded bus interfered with wildlife viewing (e.g., not being able to see out of both sides of bus)	15
Not too many people on the tour bus	5
Loading and unloading bus took a long time with more people	5
Having more people on the bus provided social opportunities	3
Tour bus was full, and it made it feel crowded	1

Table 3-29: Codes assigned for responses to question "[Follow-up probe] Was your experience affected by the physical characteristics of the bus such as the type of bus, size of the bus, or condition of the bus?"

Code	Frequency
Buses were ok (general answer, no further reason given)	24
Overall size of bus was good (e.g., not too big, not too small, appropriate)	5
Concern over bus maintenance	5
Buses were clean	4
Buses inappropriate for experience (e.g., too big, like a prison-bus)	2
Windows worked well	1

The final group of questions addressed the quality of the visitor experience more broadly. Findings from these questions are reported in Tables 3-30 through 3-34. The first question asked visitors what they thought of "the overall way the National Park Service manages the Denali Park Road." The vast majority of comments were positive, noting the road seems well maintained and that traffic is well managed (e.g., the number of vehicles is limited, the use of buses instead of private automobiles). The second question asked if anything had "detracted from your wildlife viewing experience" along the road. A large majority of comments suggested that nothing had detracted from this, though a relatively large number of comments (26) noted that lack of wildlife or lack of wildlife within close view were problems. Other problems included bus windows that were dirty or not functioning properly and the behavior of some bus riders (e.g., scaring wildlife, disobeying rules). Third, respondents were asked "do you think the type and use levels of vehicles and visitors on the Denali Park Road is having any negative effects on wildlife or other park resources." The vast majority of comments reported that no such effects had been observed. However, a relatively large number of comments (22) suggested that some impacts are probably occurring, but they had not been observed. Other comments suggested that wildlife seemed habituated to people and vehicles (16 comments) and that animals are staying away from the road because of vehicles (13 comments). Fourth, visitors were asked if they thought the "type and use levels of vehicles and visitors on the Denali Park Road is having any negative effects on the quality of the visitor experience." The vast majority of comments reported no impacts. Only a small number of comments reported that the number of visitors and vehicles made the experience fell less like wilderness. Finally, visitors were asked if there was anything else they would like to comment on. Virtually no comments were offered.

Table 3-30: Codes assigned for responses to question "What do you think of the overall way the National Park Service manages the Denali Park Road?"

Code	Frequency
Doing a good job, because	*57*
The road seems well maintained	40
Traffic is well managed (e.g., limit the number of vehicles, use of buses versus private vehicles, rules of the road)	13
Of the facilities on the road	6
They're balancing difficult competing interests	2
Not much litter along the road	2
Rules and safety were enforced	2
The park seems natural and not commercialized	1
The road character is appropriate for the experience	1
Not doing a good job, because	
The road is not well maintained/constructed	9
Permitting commercialization/development of the park and park services	4
Too many vehicles on the road	4
Reservation system doesn't work properly	2
Don't know	2
Information about the road and buses was difficult to obtain	1
More services/facilities should be offered in the park	1
RV's are not allowed to use Wonder Lake	1
Use of road by RV's is unfair	1
More interpretive information should be provided	1

Table 3-31: Codes assigned for responses to question "Was there anything that detracted from your wildlife viewing experience along the Denali Park Road today?"

Code	Frequency
Nothing detracted from the wildlife viewing experience	49
Lack of wildlife or a lack of wildlife within close view	26
Windows (e.g., dirty, malfunctioning, or poorly designed windows)	16
Behavior and actions of others on the bus (e.g., scaring wildlife, get in pictures, disobeying rules)	10
Number of people on the bus	7
Feeling rushed and not having enough time to take pictures or view wildlife	4
The number of buses	4
Comfort of bus (e.g., cold, seats, seatbelts)	3
Signs of civilization among wildlife	2
Impact of buses on wildlife (e.g. scaring animals away)	2
Size of the lodge bus	1
Not being able to get out of the bus	1

Table 3-32: Codes assigned for responses to question "Based on your observations, do you think the type and use levels of vehicles and visitors on the Denali Park Road is having any negative effects on wildlife or other resources in the park?"

Code	Frequency
No negative effects were seen or thought to have occurred	57
Some impacts must be occurring (based more on speculation), but I don't know exactly what they are	22
Animals seem habituated to humans and vehicles	16
Animals are staying away from the road	13
Dust and pollution may be impacting wildlife/vegetation	6
Can't tell/don't know	5
Impacts are occurring, but these impacts are appropriately balanced with the need for visitor access	4
Noise is impacting wildlife (e.g., RV generators, construction)	4
Some impacts must be occurring (based more on speculation), but wildlife seem not to be too bothered	3
Wildlife is being killed by vehicles	3
Level of activity seems to stress wildlife	2

Table 3-33: Codes assigned for responses to question "Based on your observations, do you think the type and use levels of vehicles and visitors on the Denali Park Road is having any negative effects on the quality of the visitor experience?"

Code	Frequency
No impact to quality of the visitor experience	79
Vehicles/visitor use levels make it less like a wilderness experience	10
Somewhat, because of the number of vehicles that use the road	7
The number of lodge buses takes away from the park experience	4
More vehicles are scaring away wildlife	3
Noise is affecting the experience (e.g., RV generators)	2
Bikers scared away wildlife	1
It's unfair that other types of users seemed to have more freedom to use road	1

Table 3-34: Codes assigned for responses to question "Before we end, do you have anything you might like to add – anything I should have asked you about or anything you forgot to tell me?"

Code	Frequency
Encourage drivers to be friendly and open with visitors	2
Disagree with idea of connecting Denali Park Road with the Stampede Trail	2
Commercialization/development of park or at park entrance is undesirable	2
Denali is a special place that needs to be protected	1
More vehicles is not a good idea	1
Not too many people at Denali as compared to other parks	1
More trails would be nice	1
Lodges in Kantishna provide an enjoyable way to experience the park	1
Having a single road of appropriate character added to the enjoyment of seeing the park	1
More interpretive programs/hikes are needed	1
Enforcing and respecting rules to protect wildlife make it a more positive experience	1

Chapter 4

Standards of Quality

This chapter presents findings from the Phase 2 quantitative survey of bus users. The chapter is arranged into four sections based on the types of questions asked. The first section covers a series of questions addressing user characteristics and visitor use patterns. The second section covers a battery of questions that takes a quantitative approach to potential indicators of quality. Respondents were presented with a series of issues related to use and management of the Denali Park Road and were asked to report the degree to which these issues were "problems." Findings are suggestive of potential indicators of quality and tend to reinforce findings from the qualitative interviews as reported in Chapter 3. The third section of this chapter is the primary emphasis and reports findings from a series of questions designed to measure visitor-based normative standards for a series of potential indicator variables The fourth section reports findings from several related questions addressing respondent experiences viewing wildlife on the Denali Park Road, level of satisfaction, the extent to which respondents felt they were traveling through "wilderness" on the Denali Park Road, level of perceived crowding, and the degree to which the Denali Park Road contributed to the reasons why Denali was established as part of the national park system.

Use and Users

Respondents were asked to identify their place of residence and responses are presented in Tables 4-1 through 4-3. The vast majority of all five types of bus users reside in the United

States (Table 4-1). All 50 states were represented including the District of Columbia (Table 4-2). The most common country of residence outside of the United States was Canada (Table 4-3).

Table 4-1: United States residency

Q15. Do you live in the United States?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Yes	80.8	86.7	94.2	88.2	94.6	88.6
No	19.2	13.3	5.8	11.8	5.4	11.4
N	125	180	155	76	74	614

Table 4-2: State of residency

Q15a. State of Residence

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Alabama	0.0	0.6	0.0	0.0	0.0	0.2
Alaska	13.5	5.8	2.1	0.0	5.8	5.3
Arizona	2.1	3.2	1.4	1.6	0.0	1.9
Arkansas	1.0	0.0	1.4	0.0	1.4	0.8
California	9.4	12.8	10.4	17.2	7.2	10.7
Colorado	2.1	6.4	2.1	1.6	0.0	2.7
Connecticut	1.0	0.0	6.3	0.0	2.9	2.3
Delaware	0.0	0.6	0.0	0.0	0.0	0.2
District of Columbia	1.0	0.6	0.0	0.0	2.9	0.8
Florida	4.2	5.1	5.6	7.8	5.8	5.1
Georgia	3.1	3.2	2.1	1.6	2.9	2.9
Hawaii	1.0	0.0	0.0	0.0	1.4	0.4
Idaho	0.0	1.3	0.0	0.0	0.0	0.4
Illinois	2.1	2.6	2.1	1.6	4.3	2.3
Indiana	2.1	0.6	2.8	4.7	1.4	1.9
Iowa	1.0	1.9	2.1	3.1	0.0	1.7
Kansas	0.0	1.9	0.7	0.0	2.9	1.1
Kentucky	2.1	1.3	0.7	0.0	0.0	0.8
Louisiana	1.0	0.0	0.0	1.6	0.0	0.4
Maine	1.0	0.0	0.0	3.1	0.0	0.6
Maryland	6.3	1.3	1.4	1.6	2.9	2.3
Massachusetts	5.2	1.9	1.4	4.7	2.9	2.9
Michigan	1.0	1.9	6.3	4.7	1.4	3.0
Minnesota	2.1	3.8	2.1	6.3	0.0	2.9
Mississippi	1.0	0.0	0.0	0.0	0.0	0.2
Missouri	0.0	2.6	1.4	3.1	0.0	1.5
Montana	0.0	1.9	1.4	0.0	1.4	1.1
Nebraska	1.0	0.0	0.7	0.0	0.0	0.4
Nevada	2.1	1.9	1.4	3.1	0.0	1.9
New Hampshire	0.0	1.9	0.0	0.0	2.9	0.8
New Jersey	2.1	0.0	0.7	0.0	7.2	1.5

New Mexico	1.0	0.6	0.7	0.0	0.0	0.6
New York	4.2	7.7	6.3	4.7	2.9	5.7
North Carolina	5.2	0.6	2.1	1.6	7.2	2.5
North Dakota	0.0	0.0	0.7	0.0	0.0	0.2
Ohio	0.0	1.3	4.9	4.7	10.1	3.8
Oklahoma	0.0	0.6	1.4	3.1	0.0	0.4
Oregon	0.0	1.9	2.1	1.6	1.4	1.5
Pennsylvania	5.2	1.3	7.6	1.6	7.2	4.4
Rhode Island	0.0	0.0	2.1	1.6	0.0	0.6
South Carolina	0.0	0.6	0.0	0.0	0.0	4.0
South Dakota	0.0	0.0	0.7	1.6	0.0	0.4
Tennessee	0.0	1.3	0.7	1.6	2.9	1.1
Texas	3.1	7.1	4.2	4.7	4.3	4.8
Utah	0.0	2.6	0.0	1.6	1.4	1.1
Vermont	3.1	1.3	2.1	1.6	1.4	1.3
Virginia	0.0	1.9	4.2	1.6	2.9	2.3
Washington	7.3	3.2	2.1	0.0	0.0	2.7
West Virginia	0.0	1.3	0.0	1.6	0.0	0.6
Wisconsin	2.1	1.3	2.1	0.0	0.0	1.3
N	96	156	144	64	69	525

Table 4-3: Country of residency

Q15b. Country of Residence

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Canada	9.5	31.8	55.6	37.5	50.0	29.7
Netherlands	9.5	18.2	0.0	25.0	0.0	12.5
Australia	9.5	9.1	11.1	12.5	0.0	9.4
Switzerland	19.0	4.5	11.1	0.0	0.0	9.4
Germany	19.0	9.1	0.0	0.0	0.0	9.4
France	4.8	4.5	0.0	12.5	25.0	6.3
Ireland	0.0	0.0	22.2	0.0	0.0	3.1
Japan	9.5	0.0	0.0	0.0	0.0	3.1
Austria	0.0	0.0	0.0	0.0	25.0	1.6
Chile	0.0	4.5	0.0	0.0	0.0	1.6
Czech Republic	4.8	0.0	0.0	0.0	0.0	1.6
Great Britain	4.8	0.0	0.0	0.0	0.0	1.6
Guyana	0.0	4.5	0.0	0.0	0.0	1.6
Israel	0.0	4.5	0.0	0.0	0.0	1.6
Italy	0.0	4.5	0.0	0.0	0.0	1.6
New Zealand	0.0	4.5	0.0	0.0	0.0	1.6
Poland	4.8	0.0	0.0	0.0	0.0	1.6
Portugal	4.8	0.0	0.0	0.0	0.0	1.6
Russia	0.0	0.0	0.0	12.5	0.0	1.6
N	21	22	9	8	4	64

Visitors were asked whether this visit was their first to Denali National Park (Table 4-4). Of all respondents, 20.2% of respondents had been to Denali National Park before. This ranged from a low of 5.8% for Tundra Wilderness Tour users to a high of 32.4% of camper bus users.

Table 4-4: Previous visits to Denali National Park

Q3a. Have you been on the Denali Park Road before today?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Yes	32.4	24.4	5.8	14.4	25.0	20.2
No	67.6	75.6	94.2	85.6	75.0	79.8
N	148	205	173	90	84	704

If respondents had been to Denali National Park before, they were asked the number of times they had been to the park previously (Table 4-5). The average (mean) for all users was 6.1 previous visits. This ranged from a low of 2.6 for general bus users to a high of 11.3 for camper bus users. Respondents were also asked the year of their first visit to Denali (Table 4-6). For all visitors, the most common year was 2007.

Table 4-5: Number of previous visits to Denali National Park

Q3b. How many times have you been on the Denali Park Road before today?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
1	25.5	52.2	60.0	53.8	66.7	46.0
2	14.9	21.7	10.0	23.1	9.5	16.8
3	8.5	13.0	0.0	7.7	9.5	9.5
4	14.9	2.2	10.0	0.0	0.0	6.6
5	6.4	2.2	10.0	7.7	0.0	4.4
6	4.3	2.2	0.0	0.0	0.0	2.2
7	0.0	2.2	0.0	0.0	0.0	0.7
10	8.5	0.0	0.0	0.0	0.0	2.9
11 to 15	6.4	0.0	0.0	0.0	14.3	4.4
16 to 20	0.0	4.3	0.0	0.0	0.0	1.5
21 to 30	2.1	0.0	0.0	7.7	0.0	1.5
30 to 60	4.3	0.0	10.0	0.0	0.0	2.2
More than 60	4.3	0.0	0.0	0.0	0.0	1.5
N	47	46	10	13	21	137

Mean (previous visits)	11.30	2.65	7.20	3.46	3.24	6.1

Table 4-6: Year of first visit to Denali National Park

Q3c. In what year did you first travel on the Denali Park Road?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
1961	2.2	0.0	0.0	0.0	0.0	.7
1967	2.2	0.0	0.0	0.0	0.0	.7
1968	0.0	2.1	0.0	0.0	0.0	.7
1973	0.0	0.0	0.0	7.1	0.0	.7
1974	2.2	0.0	0.0	0.0	0.0	.7
1977	0.0	0.0	0.0	7.1	0.0	.7
1978	4.3	0.0	0.0	0.0	0.0	1.4
1979	0.0	2.1	0.0	0.0	0.0	.7
1980	2.2	4.2	0.0	0.0	0.0	2.2
1982	2.2	0.0	0.0	0.0	0.0	.7
1983	0.0	2.1	0.0	0.0	0.0	.7
1985	0.0	4.2	0.0	0.0	9.5	2.9
1986	2.2	0.0	0.0	7.1	0.0	1.4
1987	0.0	2.1	11.1	0.0	0.0	1.4
1988	6.5	2.1	0.0	0.0	0.0	2.9
1989	0.0	2.1	0.0	0.0	0.0	.7
1991	2.2	4.2	11.1	0.0	0.0	2.9
1993	0.0	0.0	11.1	0.0	0.0	.7
1994	2.2	2.1	11.1	0.0	0.0	2.2
1995	0.0	4.2	0.0	0.0	0.0	1.4
1996	0.0	2.1	0.0	0.0	0.0	.7
1997	2.2	0.0	0.0	0.0	0.0	.7
1998	0.0	6.3	0.0	0.0	4.8	2.9
1999	6.5	6.3	0.0	0.0	0.0	4.3
2000	2.2	2.1	0.0	0.0	14.3	3.6
2001	2.2	0.0	0.0	0.0	0.0	.7
2002	2.2	0.0	11.1	0.0	4.8	2.2
2003	4.3	2.1	0.0	7.1	4.8	3.6
2004	2.2	4.2	11.1	0.0	0.0	2.9
2005	0.0	6.3	11.1	0.0	4.8	3.6
2006	6.5	10.4	11.1	14.3	0.0	8.0
2007	43.5	29.2	11.1	57.1	57.1	39.9
N	46	48	9	14	21	138

Visitors were asked how long (in hours) they spent traveling along the Denali Park Road (Table 4-7). The average (mean) length of stay was 7.6 hours for all uses. This ranged from a low of 4.0 hours for Natural History tour users to a high of 8.6 hours for General bus users.

Respondents were also asked to indicate how far along the Denali Park Road they traveled (Table 4-8). For all visits, a plurality of responses regarding the distance was split nearly equally between Fish Creek (23.5%) and other (23.4%), but this varied by type of respondent.

Table 4-7: Length of time spent on the Denali Park Road

Q1. How long did you spend traveling along the Denali Park Road today?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Less than 1 hour	0.0	0.5	0.0	1.1	3.6	0.7
1-2 hour	0.7	0.5	1.2	0.0	0.0	0.6
2-3 hours	2.0	2.5	0.0	11.0	0.0	2.6
3-4 hours	0.7	0.0	0.6	12.1	0.0	1.9
4-5 hours	5.4	2.0	1.7	58.2	8.3	10.9
5-6 hours	10.8	0.5	1.2	13.2	10.7	5.7
6-7 hours	8.8	9.5	6.4	2.2	23.8	9.3
7-8 hours	10.8	5.0	26.0	1.1	9.5	11.4
8-9 hours	23.6	40.5	50.3	1.1	3.6	29.6
9-10 hours	16.2	8.0	5.2	0.0	1.2	7.2
10-15 hours	20.3	30.5	7.5	0.0	39.3	19.9
15 or more hours	0.7	0.5	0.0	0.0	0.0	0.3
N	148	200	173	91	84	699
Mean (hours)	7.95	8.60	7.77	3.99	8.34	7.6

Table 4-8: Distance traveled on the Denali Park Road

Q2. How far out on the Denali Park Road did you go on this trip?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Savage River	0.7	2.0	0.6	20.2	0.0	3.5
Sanctuary River	2.0	0.0	0.0	20.2	0.0	3.0
Teklanika	0.0	1.0	1.2	0.0	1.2	.7
Polychrome Pass	8.2	3.4	3.0	5.6	0.0	4.2
Toklat River	16.3	15.7	43.1	3.4	0.0	18.9
Fish Creek	29.3	45.1	16.2	0.0	1.2	23.5
Wonder Lake	38.1	26.0	8.4	0.0	11.1	19.2
Other	5.4	4.4	21.6	41.6	84.0	23.4
Don't know	0.0	2.5	6.0	9.0	2.5	3.6
N	147	204	167	89	81	723

Indicators of Quality

A series of questions was used to determine potential indicators of quality of the visitor experience on the Denali Park Road. Visitor perceptions of impacts are a key component of developing potential indicators of quality. Therefore, a set a questions asked respondents the extent to which they felt that certain issues were a problem on the Denali Park Road (Table 4-9). Respondents were provided with a list of 29 potential problems and asked to rate each one on a scale from 1 (not a problem) to 3 (big problem). The five most problematic issues were "not seeing enough wildlife close to the road", "too many buses on the Denali Park Road", "too few animals along the road", "dust generated by buses", and "not seeing enough wildlife close to the road". The five issues that respondents thought were least problematic were " smoke from wildfires", "bus drivers not stopping when asked", "lack of visitor facilities", "lack of interpretative information provided on the bus", and "feeling unsafe traveling along the road".

Table 4-9: Perceptions of problems on Denali Park Road

Q4. Please indicate the extent to which you think the following issues are problems on the Denali Park Road.

	Not a Problem (1)	Small Problem (2)	Big Problem (3)	Don't Know	N	Mean
a. Too many buses on the Denali Park Road						
Camper Bus User	29.5	49.3	20.5	0.7	146	1.91
General Bus User	50.7	44.3	4.0	1.0	201	1.53
Tundra Wilderness Tour	42.0	48.5	8.9	0.6	169	1.67
Natural History Tour	57.1	36.3	4.4	2.2	91	1.46
Lodge Bus User	35.4	48.8	13.4	2.4	82	1.78
All Users	43.3	45.7	9.8	1.2	685	1.66
b. Too many private cars/recreational vehicles (RVs) on the Denali Park Road						
Camper Bus User	47.3	34.2	15.8	2.7	146	1.68
General Bus User	68.7	21.2	7.1	3.0	198	1.36
Tundra Wilderness Tour	72.5	18.6	6.6	2.4	167	1.33
Natural History Tour	64.4	22.2	11.1	2.2	90	1.45
Lodge Bus User	67.1	18.8	7.1	7.1	85	1.35
All Users	64.5	23.0	9.3	3.2	668	1.43
c. Not seeing enough wildlife						
Camper Bus User	60.3	28.8	8.9	2.1	146	1.48
General Bus User	56.0	32.0	11.5	0.5	200	1.55

Tundra Wilderness Tour	47.0	32.3	20.7	0.0	164	1.74
Natural History Tour	23.6	42.7	33.7	0.0	89	2.10
Lodge Bus User	47.6	34.5	17.9	0.0	84	1.70
All Users	49.5	33.2	16.7	0.6	683	1.67
d. Not seeing enough wildlife close to the road						
Camper Bus User	58.9	26.0	13.0	2.1	146	1.53
General Bus User	38.8	40.8	18.9	1.5	201	1.80
Tundra Wilderness Tour	32.0	42.0	26.0	0.0	169	1.94
Natural History Tour	27.5	42.9	29.7	0.0	91	2.02
Lodge Bus User	36.0	33.7	29.1	1.2	86	1.93
All Users	39.6	37.4	22.0	1.0	690	1.82
e. Too few animals along the road						
Camper Bus User	66.0	19.0	10.9	4.1	147	1.43
General Bus User	46.2	38.7	13.6	1.5	199	1.67
Tundra Wilderness Tour	38.1	36.9	24.4	0.6	168	1.86
Natural History Tour	26.7	47.8	25.6	0.0	90	1.99
Lodge Bus User	39.5	31.4	27.9	1.2	86	1.88
All Users	45.1	34.4	18.9	1.6	683	1.73
f. Wildlife being scared away from the road by buses						
Camper Bus User	57.5	21.9	11.6	8.9	146	1.50
General Bus User	59.7	25.0	7.1	8.2	196	1.43
Tundra Wilderness Tour	63.9	19.5	10.7	5.9	169	1.43
Natural History Tour	44.4	22.2	4.4	28.9	90	1.44
Lodge Bus User	54.1	22.4	11.8	11.8	85	1.52
All Users	57.8	22.2	9.1	10.9	615	1.45
g. Other buses blocking views						
Camper Bus User	57.9	36.6	4.1	1.4	145	1.45
General Bus User	64.1	31.3	3.6	1.0	195	1.39
Tundra Wilderness Tour	59.2	31.4	8.3	1.2	169	1.49
Natural History Tour	73.3	15.6	5.6	5.6	90	1.28
Lodge Bus User	59.5	33.3	6.0	1.2	84	1.46
All Users	62.4	30.4	5.4	1.7	675	1.42
h. Too many buses at "wildlife stops"						
Camper Bus User	44.3	48.6	5.7	1.4	140	1.61
General Bus User	58.9	31.8	5.7	3.6	192	1.45
Tundra Wilderness Tour	48.8	40.1	9.9	1.2	162	1.61
Natural History Tour	63.6	23.9	5.7	6.8	88	1.38
Lodge Bus User	54.8	33.3	10.7	1.2	84	1.55
All Users	53.7	36.3	7.3	2.7	652	1.52
i. Visitors not following rules for observing wildlife while on the bus						
Camper Bus User	60.0	28.3	11.0	0.7	145	1.51
General Bus User	68.5	24.9	3.6	3.0	197	1.33
Tundra Wilderness Tour	66.7	23.8	6.5	3.0	168	1.38
Natural History Tour	77.8	13.3	5.6	3.3	90	1.25
Lodge Bus User	65.5	21.4	4.8	8.3	84	1.34
All Users	67.3	23.3	6.3	3.2	666	1.37
j. Bus drivers not providing enough time at "wildlife stops"						
Camper Bus User	86.2	11.0	2.1	0.7	145	1.15
General Bus User	84.8	12.7	1.5	1.0	197	1.16

Tundra Wilderness Tour	87.7	10.5	1.8	0.0	171	1.14
Natural History Tour	91.2	7.7	0.0	1.1	91	1.08
Lodge Bus User	87.1	7.1	2.4	3.5	85	1.12
All Users	87.0	10.4	1.6	1.0	686	1.14
k. Dust generated by buses						
Camper Bus User	37.2	42.1	20.0	0.7	145	1.83
General Bus User	44.3	41.8	12.4	1.5	194	1.68
Tundra Wilderness Tour	55.0	29.2	13.5	2.3	171	1.57
Natural History Tour	66.3	29.2	3.4	1.1	89	1.36
Lodge Bus User	44.0	40.5	14.3	1.2	84	1.70
All Users	48.3	36.8	13.2	1.6	676	1.64
l. Uncomfortable seating on buses						
Camper Bus User	64.8	27.6	7.6	0.0	145	1.43
General Bus User	54.6	39.7	5.7	0.0	194	1.51
Tundra Wilderness Tour	50.6	33.1	16.3	0.0	172	1.66
Natural History Tour	54.9	41.8	3.3	0.0	91	1.48
Lodge Bus User	48.2	32.9	16.5	2.4	85	1.67
All Users	55.0	34.9	9.8	0.3	689	1.55
m. Too many people on buses						
Camper Bus User	64.1	31.7	4.1	0.0	145	1.40
General Bus User	72.3	22.1	5.1	0.5	195	1.32
Tundra Wilderness Tour	50.0	32.0	18.0	0.0	172	1.68
Natural History Tour	57.1	37.4	5.5	0.0	91	1.48
Lodge Bus User	60.0	25.9	11.8	2.4	85	1.51
All Users	61.4	29.0	9.1	0.4	689	1.47
n. Bus noise along the road						
Camper Bus User	56.8	34.9	6.2	2.1	146	1.48
General Bus User	61.1	31.1	5.2	2.6	193	1.43
Tundra Wilderness Tour	67.8	26.3	5.3	0.6	171	1.37
Natural History Tour	62.6	29.7	6.6	1.1	91	1.43
Lodge Bus User	69.4	20.0	7.1	3.5	85	1.35
All Users	63.0	29.3	5.8	1.9	677	1.42
o. Noisy people on the bus						
Camper Bus User	62.1	28.3	9.7	0.0	145	1.48
General Bus User	67.2	29.7	3.1	0.0	195	1.36
Tundra Wilderness Tour	68.2	21.8	10.0	0.0	170	1.42
Natural History Tour	64.4	28.9	6.7	0.0	90	1.42
Lodge Bus User	63.5	25.9	8.2	2.4	85	1.43
All Users	65.5	27.0	7.3	0.3	687	1.42
p. Too many buses at rest stops						
Camper Bus User	62.9	27.3	8.4	1.4	143	1.45
General Bus User	71.3	23.1	4.6	1.0	195	1.33
Tundra Wilderness Tour	61.9	31.5	6.5	0.0	168	1.45
Natural History Tour	68.1	23.1	5.5	3.3	91	1.35
Lodge Bus User	57.6	31.8	8.2	2.4	85	1.49
All Users	65.3	27.0	6.4	1.3	677	1.40
q. Buses being poorly maintained						
Camper Bus User	85.4	10.4	0.7	3.5	144	1.12
General Bus User	88.1	7.2	0.5	4.1	194	1.09
Tundra Wilderness Tour	78.0	16.1	3.0	3.0	168	1.23

Natural History Tour	84.4	10.0	4.4	1.1	90	1.19
Lodge Bus User	73.8	17.9	1.2	7.1	84	1.22
All Users	82.7	11.8	1.8	3.7	659	1.16
r. Windows on buses not working properly						
Camper Bus User	74.3	19.4	6.3	0.0	144	1.32
General Bus User	74.6	20.2	3.6	1.6	193	1.28
Tundra Wilderness Tour	54.4	34.5	11.1	0.0	171	1.57
Natural History Tour	72.5	19.8	6.6	1.1	91	1.33
Lodge Bus User	68.2	24.7	4.7	2.4	85	1.35
All Users	68.5	24.0	6.7	0.9	682	1.38
s. Windows on buses are dirty						
Camper Bus User	65.0	30.8	4.2	0.0	143	1.39
General Bus User	54.9	34.9	9.7	0.5	195	1.55
Tundra Wilderness Tour	62.6	24.6	12.9	0.0	171	1.50
Natural History Tour	72.5	23.1	4.4	0.0	91	1.32
Lodge Bus User	65.5	26.2	6.0	2.4	84	1.39
All Users	62.6	28.6	8.3	0.4	685	1.45
t. Bus drivers not stopping when asked						
Camper Bus User	92.3	4.2	2.8	0.7	143	1.10
General Bus User	93.8	4.7	0.5	1.0	192	1.06
Tundra Wilderness Tour	91.2	7.1	1.2	0.6	170	1.09
Natural History Tour	96.7	3.3	0.0	0.0	91	1.03
Lodge Bus User	88.2	5.9	1.2	4.7	85	1.09
All Users	92.6	5.1	1.2	1.2	677	1.08
u. Lack of interpretive information provided on the bus						
Camper Bus User	89.5	9.8	0.7	0.0	143	1.11
General Bus User	77.4	16.9	4.1	1.5	195	1.26
Tundra Wilderness Tour	94.1	4.7	1.2	0.0	169	1.07
Natural History Tour	95.6	4.4	0.0	0.0	90	1.04
Lodge Bus User	77.6	14.1	4.7	3.5	85	1.24
All Users	86.6	10.3	2.2	0.9	680	1.15
v. Lack of visitor facilities (e.g., restrooms)						
Camper Bus User	91.7	7.6	0.0	0.7	144	1.08
General Bus User	94.9	4.6	0.0	0.5	195	1.05
Tundra Wilderness Tour	88.9	9.4	1.2	0.6	171	1.12
Natural History Tour	89.0	9.9	1.1	0.0	91	1.12
Lodge Bus User	84.7	12.9	1.2	1.2	85	1.15
All Users	90.6	8.3	0.6	0.6	686	1.09
w. Degradation of the quality of the Denali Park Road						
Camper Bus User	67.4	23.6	4.9	4.2	144	1.35
General Bus User	62.4	29.9	3.1	4.6	194	1.38
Tundra Wilderness Tour	64.9	23.4	9.4	2.3	171	1.43
Natural History Tour	76.7	16.7	1.1	5.6	90	1.20
Lodge Bus User	49.4	38.6	4.8	7.2	83	1.52
All Users	64.4	26.2	5.0	4.4	656	1.38
x. Degradation of the wilderness character of the Denali Park Road (e.g., by buildings and human presence)						
Camper Bus User	64.6	25.7	8.3	1.4	144	1.43
General Bus User	68.2	22.4	5.7	3.6	192	1.35

Tundra Wilderness Tour	74.6	16.6	6.5	2.4	169	1.30
Natural History Tour	77.8	15.6	2.2	4.4	90	1.21
Lodge Bus User	65.1	26.5	4.8	3.6	83	1.38
All Users	70.1	21.1	5.9	2.9	662	1.34
y. Not having binoculars						
Camper Bus User	66.4	16.8	15.4	1.4	143	1.48
General Bus User	66.8	16.8	15.3	1.1	190	1.48
Tundra Wilderness Tour	70.4	16.0	13.0	0.6	169	1.42
Natural History Tour	70.0	17.8	10.0	2.2	90	1.39
Lodge Bus User	70.2	14.3	10.7	4.8	84	1.38
All Users	68.5	16.3	13.5	1.6	669	1.44
z. Poor weather						
Camper Bus User	76.9	16.8	4.2	2.1	143	1.26
General Bus User	67.2	22.2	8.5	2.1	189	1.40
Tundra Wilderness Tour	74.7	16.5	8.8	0.0	170	1.34
Natural History Tour	73.6	16.5	9.9	0.0	91	1.36
Lodge Bus User	65.1	24.1	7.2	3.6	83	1.40
All Users	71.8	19.0	7.8	1.5	670	1.35
aa. Smoke from wildfires						
Camper Bus User	88.0	4.2	0.7	7.0	142	1.06
General Bus User	89.7	2.6	1.0	6.7	194	1.05
Tundra Wilderness Tour	91.7	3.0	0.6	4.7	169	1.04
Natural History Tour	90.0	1.1	1.1	7.8	90	1.04
Lodge Bus User	83.3	4.8	1.2	10.7	84	1.08
All Users	89.2	3.1	0.9	6.9	636	1.05
bb. Feeling unsafe traveling along the road						
Camper Bus User	90.9	7.0	1.4	0.7	143	1.10
General Bus User	86.1	10.8	1.5	1.5	194	1.14
Tundra Wilderness Tour	81.8	15.9	2.4	0.0	170	1.21
Natural History Tour	94.5	5.5	0.0	0.0	91	1.05
Lodge Bus User	74.1	18.8	5.9	1.2	85	1.31
All Users	85.7	11.5	2.0	0.7	682	1.16
cc. Brush along the road obscured view of wildlife						
Camper Bus User	84.7	13.9	1.4	0.0	144	1.17
General Bus User	75.4	21.5	2.6	0.5	195	1.27
Tundra Wilderness Tour	71.2	23.5	4.7	0.6	170	1.33
Natural History Tour	83.5	13.2	1.1	2.2	91	1.16
Lodge Bus User	60.0	34.1	3.5	2.4	85	1.42
All Users	75.5	20.9	2.8	0.9	683	1.27

Standards of Quality

A primary purpose of the survey was to address standards of quality for indicator variables identified in Phase 1 of the study. Those variables include 1) number of buses on the Denali Park Road, 2) number of buses stopped at the same place to observe wildlife, 3) number of buses and people stopped at a rest area, 4) wait time at wildlife stops to see wildlife and, 5) percent chance of seeing a grizzly bear.

The first three of these variables were addressed through a series of photographic simulations to depict a range of use levels and associated impacts. For each series of photographs, respondents were asked a battery of evaluative questions. Respondents were first asked to evaluate the acceptability of each of the study photographs (termed "acceptability"). Acceptability was measured using a nine-point Likert-type scale ranging from -4 ("Very Unacceptable") to 4 ("Very Acceptable"). Zero represented the middle of this scale or the point of indifference. The second question in the series asked respondents to report the photograph that showed the number of buses they would prefer to see (termed "preference"). A third question asked visitors to report which photograph showed the condition that would be so unacceptable that they would not longer use the Denali Park Road (termed "displacement"). Further, respondents were given the opportunity to indicate that, "none of the photographs are so unacceptable that I would no longer use the Denali Park Road." The forth question asked visitors to report the photograph representing the highest level of visitor use they though the National Park Service should allow, or the point at which the number of buses should be restricted (termed "management action"). Additionally, respondents were given the opportunity to report that none of the photographs show a high enough level of use to restrict use or that use should not be restricted at all. The fifth question referred to existing conditions (termed

"typically seen"). Respondents were asked to report the photograph that best represented the condition they "typically saw today" while traveling on the Denali Park Road.

For the variables wait time at wildlife stops to see wildlife and percent chance of seeing a grizzly bear, a range of conditions was described numerically. Respondents were asked to evaluate the acceptability of the numerical options. Acceptability was again measured using a nine-point Likert-type scale ranging from -4 ("Very Unacceptable") to 4 ("Very Acceptable"). Zero represented the middle of this scale or the point of indifference. The findings for each variable follow.

Number of Buses on the Denali Park Road

Standards of quality for the number of buses on the Denali Park Road were measured using a series of seven study photographs as described in Chapter 2 and shown in Appendix C and D. The number of buses in the photographs ranged from 0 to 10. Table 4-10 shows the mean acceptability rating for each seven study photographs for each of the five types of bus users and for all respondents combined. Figure 4-1 shows the social norm curve derived from these data for all five types of bus users and for all respondents combined. These findings show that increasing numbers of buses are generally found to be increasingly unacceptable, and that this pattern holds across all five types of bus users. Camper bus users and lodge bus users appear to be a little more sensitive to this indicator variable. For all respondents, mean acceptability ratings fall out of the acceptable range and into the unacceptable range at 5.5 buses. Agreement about acceptability ratings for the study photos is generally high, though this agreement is more pronounced at lower levels of use. For example, 84.3% of respondents rated Photo 1 (0 buses) at acceptability level 4 suggesting a very high level of agreement. Photo 2 (1 bus) was rated at acceptability levels 3 or 4 by 81.7% of respondents. Photo 7 (10 buses) was rated at

acceptability level -4 by 69.1% of respondents. The lowest levels of agreement were associated with study photos that showed intermediate levels of use.

Findings for the other dimensions of preference, management action, displacement, and typically seen are presented in Table 4-11 through 4-14 and are summarized (along with the above findings on acceptability) in Table 4-15. For all respondents, visitors would prefer to see 2.1 buses, feel the NPS should take management action to limit use when the number of buses reaches 5.5, would no longer use the Denali Park Road when the number of buses reaches 7.8, and reported typically seeing 3.6 buses. Differences among the values reported by the five types of bus users are not large, though camper and lodge bus users are often somewhat more sensitive to increasing use levels.

Table 4-10: Acceptability rating for number of buses at one time on the Denali Park Road

Q5a. We would like to know how many buses you think could use the Denali Park Road without you feeling too crowded. To help judge this, we have a series of photographs that show different numbers of buses on the Denali Park Road.

	Very Unacceptable							Very Acceptable		N	Mean
	-4	-3	-2	-1	0	+1	+2	+3	+4		
Photo 1 (0 buses)											
Camper Bus User	1.9	0.9	0.0	0.0	1.9	0.9	0.0	0.9	93.4	106	3.67
General Bus User	4.1	0.0	0.0	0.7	2.1	.7	2.1	3.4	87.0	146	3.46
Tundra Wilderness Tour	3.2	0.0	1.6	0.0	1.6	2.4	4.0	8.0	79.2	125	3.35
Natural History Tour	3.1	0.0	0.0	0.0	4.7	4.7	1.6	1.6	84.4	64	3.38
Lodge Bus User	7.5	0.0	0.0	0.0	4.5	1.5	4.5	3.0	79.1	67	3.06
All Users	3.9	0.1	0.3	0.7	2.5	1.5	2.1	4.5	84.3	667	3.39
Photo 2 (1 bus)											
Camper Bus User	1.9	1.0	0.0	0.0	1.0	0.0	6.7	25.0	64.4	104	3.36
General Bus User	0.7	2.1	0.0	0.0	2.1	2.8	2.1	17.2	73.1	145	3.42
Tundra Wilderness Tour	1.6	0.8	1.6	0.0	0.8	4.0	4.0	19.4	67.7	124	3.29
Natural History Tour	3.1	0.0	0.0	0.0	1.6	6.3	3.1	9.4	76.6	64	3.34
Lodge Bus User	3.0	0.0	0.0	3.0	1.5	3.0	4.5	13.6	71.2	66	3.23
All Users	1.4	1.4	0.6	0.8	1.4	2.6	4.8	18.2	68.9	660	3.31
Photo 3 (2 buses)											
Camper Bus User	1.0	1.0	1.0	2.9	7.8	11.8	26.5	26.5	21.6	102	2.19
General Bus User	0.7	1.4	0.7	0.7	3.5	2.1	15.3	27.1	48.6	144	2.99
Tundra Wilderness Tour	1.7	1.7	1.7	0.8	0.0	6.6	10.7	24.8	52.1	121	2.95
Natural History Tour	3.2	0.0	1.6	0.0	3.2	6.3	20.6	22.2	42.9	63	2.70
Lodge Bus User	3.0	0.0	1.5	1.5	4.5	9.0	10.4	25.4	44.8	67	2.69
All Users	1.2	0.9	1.4	1.7	3.4	6.3	16.2	24.8	44.1	653	2.77
Photo 4 (4 buses)											
Camper Bus User	2.9	6.7	2.9	14.3	21.9	20.0	12.4	6.7	12.4	105	0.63
General Bus User	3.4	3.4	2.7	6.2	9.6	16.4	19.2	15.8	23.3	146	1.60
Tundra Wilderness Tour	4.1	5.7	4.1	4.1	8.9	13.0	11.4	16.3	32.5	123	1.69
Natural History Tour	4.7	1.6	4.7	4.7	10.9	17.2	26.6	12.5	17.2	64	1.39

Lodge Bus User	6.2	3.1	1.5	15.4	13.8	12.3	7.7	18.5	21.5	65	1.17
All Users	3.7	3.5	3.7	9.1	11.6	16.0	14.9	13.4	24.2	657	1.41
Photo 5 (6 buses)											
Camper Bus User	22.1	9.6	20.2	17.3	9.6	8.7	1.0	3.8	7.7	104	-1.22
General Bus User	18.1	4.2	10.4	12.5	14.6	6.9	11.1	6.9	15.3	144	-0.07
Tundra Wilderness Tour	11.5	11.5	11.5	9.0	7.4	10.7	11.5	13.9	13.1	122	0.16
Natural History Tour	7.9	17.5	11.1	14.3	11.1	9.5	11.1	6.3	11.1	63	-0.25
Lodge Bus User	12.5	20.3	9.4	12.5	7.8	12.5	7.8	7.8	9.4	64	-0.53
All Users	15.2	10.6	13.7	14.1	10.0	8.6	8.1	8.1	11.7	652	-.38
Photo 6 (8 buses)											
Camper Bus User	44.2	27.9	11.5	2.9	3.8	1.9	1.0	1.9	4.8	104	-2.58
General Bus User	27.1	13.9	18.1	9.0	3.5	4.9	7.6	6.3	9.7	144	-1.17
Tundra Wilderness Tour	23.8	20.5	9.8	9.0	4.9	7.4	7.4	6.6	10.7	122	-1.01
Natural History Tour	33.3	7.9	23.8	6.3	3.2	9.5	1.6	3.2	11.1	63	-1.44
Lodge Bus User	33.3	21.2	15.2	6.1	6.1	4.5	4.5	1.5	7.6	66	-1.85
All Users	31.4	19.6	14.5	7.6	4.4	5.3	5.0	4.4	7.8	657	-1.61
Photo 7 (10 buses)											
Camper Bus User	75.2	8.6	5.7	1.9	1.9	0.0	1.9	1.9	2.9	105	-3.19
General Bus User	47.6	15.2	7.6	5.5	3.4	6.9	4.1	2.8	6.9	145	-2.06
Tundra Wilderness Tour	45.9	9.8	5.7	9.8	4.1	5.7	4.9	4.1	9.8	122	-1.67
Natural History Tour	53.1	14.1	1.6	4.7	10.9	1.6	1.6	1.6	10.9	64	-2.09
Lodge Bus User	58.8	13.2	5.9	4.4	5.9	1.5	1.5	2.9	5.9	68	-2.54
All Users	56.6	12.5	5.4	5.4	4.2	3.8	3.5	2.1	6.5	664	-2.37

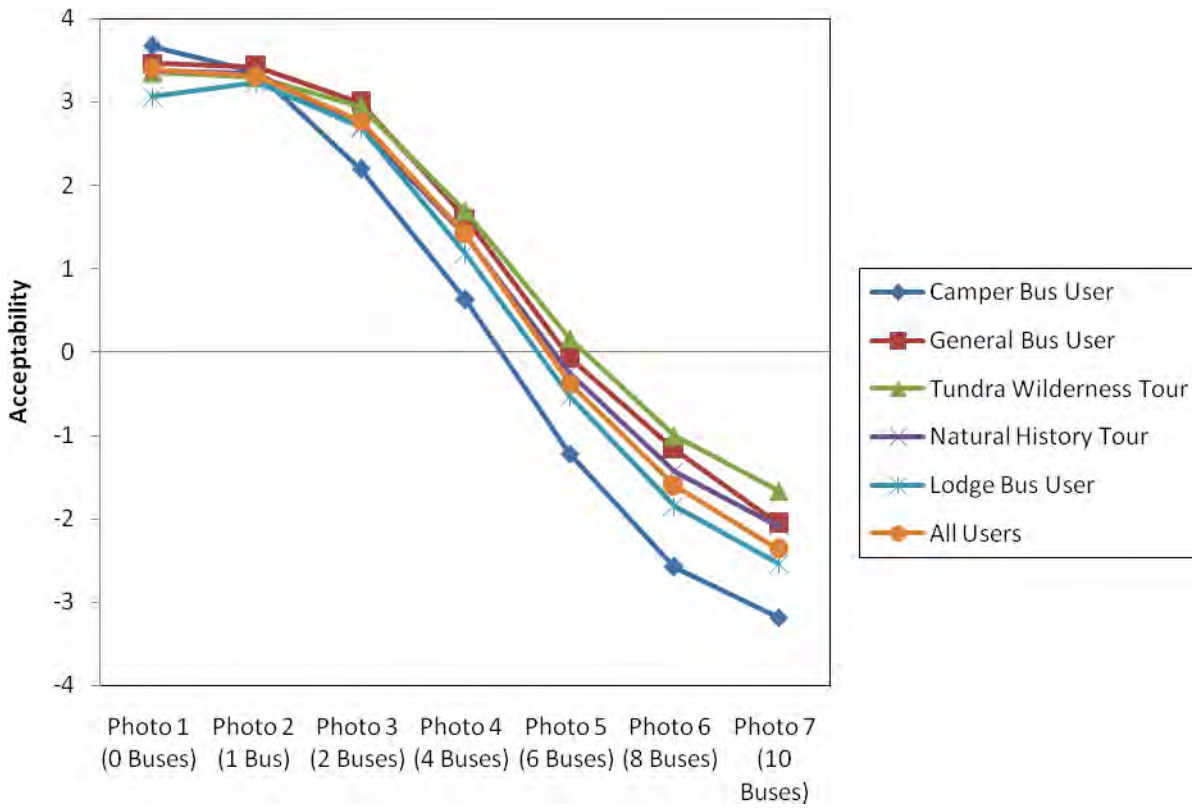

Figure 4-1: Social Norm Curve for Number of Buses at One Time on the Denali Park Road

Table 4-11: Number of buses preferred at one time on the Denali Park Road

Q5b. Which photograph shows the level of use you would prefer to see?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	44.3	26.2	15.2	25.4	28.6	26.5
Photo 2 (1 bus)	27.4	15.4	22.0	25.4	17.1	20.8
Photo 3 (2 buses)	17.9	27.5	22.0	23.8	31.4	25.6
Photo 4 (4 buses)	5.7	19.5	27.3	14.3	18.6	18.2
Photo 5 (6 buses)	2.8	5.4	4.5	4.8	1.4	4.1
Photo 6 (8 buses)	0.9	3.4	6.1	1.6	2.9	2.9
Photo 7 (10 buses)	0.9	2.7	3.0	4.8	0.0	1.9
N	106	149	132	63	70	683
Mean (buses)	1.20	2.34	2.81	2.19	1.86	2.1

Table 4-12: Tolerance for number of buses at one time on the Denali Park Road

Q5c. Which photograph shows the level of use that is so unacceptable that you would no longer use the Denali Park Road?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	1.0	0.0	0.8	0.0	0.0	0.6
Photo 2 (1 bus)	0.0	0.7	0.0	1.6	0.0	0.4
Photo 3 (2 buses)	1.0	0.7	0.0	1.6	1.5	0.7
Photo 4 (4 buses)	13.3	4.9	6.9	4.8	9.0	7.1
Photo 5 (6 buses)	24.8	12.7	10.7	12.9	19.4	15.0
Photo 6 (8 buses)	14.3	12.7	9.2	8.1	13.4	13.5
Photo 7 (10 buses)	24.8	31.7	37.4	24.2	28.4	31.1
None of the photographs are so unacceptable that I would no longer use the Denali Park Road.	21.0	36.6	35.1	46.8	28.4	31.5
N	105	142	131	62	67	679
Mean (buses)	7.16	8.12	8.16	7.73	7.63	7.80

Table 4-13: Management level for number of buses at one time on the Denali Park Road

Q5d. Which photograph shows the highest level of use that the National Park Service should allow on the Denali Park Road? In other words, at what point should buses be restricted from using the road?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	0.9	0.7	0.0	0.0	0.0	0.4
Photo 2 (1 bus)	4.7	1.4	2.3	3.1	2.9	3.0
Photo 3 (2 buses)	11.3	14.9	16.8	9.4	15.9	12.7
Photo 4 (4 buses)	28.3	22.3	22.9	14.1	36.2	25.3
Photo 5 (6 buses)	19.8	14.9	20.6	26.6	17.4	19.9
Photo 6 (8 buses)	8.5	13.5	9.9	14.1	8.7	11.1
Photo 7 (10 buses)	16.0	10.8	9.2	12.5	13.0	12.8
None of the photographs show a high enough level of use to restrict	7.5	18.9	15.3	20.3	5.8	12.7

buses from using the road.						
Vehicle use should not be restricted on the road	2.8	2.7	3.1	0.0	0.0	2.0
N	106	148	131	64	69	688
Mean (buses)	5.48	5.48	5.13	6.04	5.14	5.50

Table 4-14: Number of buses typically seen

Q5e. Which photograph looks most like the number of buses you typically saw on the Denali Park Road today?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	4.0	2.8	0.0	0.0	0.0	1.4
Photo 2 (1 bus)	13.9	10.3	8.9	9.7	16.2	11.7
Photo 3 (2 buses)	50.5	33.1	25.8	32.3	26.5	34.4
Photo 4 (4 buses)	24.8	37.9	37.1	38.7	27.9	32.9
Photo 5 (6 buses)	5.9	6.9	10.5	17.7	10.3	9.7
Photo 6 (8 buses)	0.0	5.5	13.7	0.0	10.3	6.4
Photo 7 (10 buses)	1.0	3.4	4.0	1.6	8.8	3.6
N	101	145	124	62	68	660
Mean (buses)	2.59	3.48	4.22	3.51	4.13	3.60

Table 4-15: Summary Table

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Acceptability	4.7	5.9	6.3	5.7	5.5	5.5
Preference	1.2	2.3	2.8	2.2	1.9	2.1
Management Action	5.5	5.5	5.1	6.0	5.1	5.5
Displacement	7.2	8.1	8.2	7.7	7.6	7.8
Typically seen	2.6	3.5	4.2	3.5	4.1	3.6

Number of Buses Stopped to Observe Wildlife

Standards of quality for the number of buses stopped to observe wildlife on the Denali Park Road were measured using a series of eight study photographs as described in Chapter 2 and shown in Appendix F. The number of buses in the photographs ranged from 0 to 12. Table 4-16 shows the mean acceptability rating for each eight study photographs, for each of the five types of bus users, and for all respondents combined. Figure 4-2 shows the social norm curve derived from these data for all five types of bus users and for all respondents combined. These findings show that increasing numbers of buses are generally found to be increasingly

unacceptable, and that this pattern holds across all five types of bus users. For all respondents, mean acceptability ratings fall out of the acceptable range and into the unacceptable range at 4.7 buses. Agreement about acceptability ratings for the study photos is generally high, though this agreement is more pronounced at lower levels of use. For example, 87.2% of respondents rated Photo 1 (0 buses) at acceptability level 4 suggesting a very high level of agreement. Photo 2 (1 bus) was rated at acceptability levels 3 or 4 by 85.7% of respondents. Photo 8 (12 buses) was rated at acceptability level -4 by 82.6% of respondents. The lowest levels of agreement were associated with study photos that showed intermediate levels of use.

Findings for the other dimensions of preference, management action, displacement, and typically seen are presented in Table 4-17 through 4-20 and are summarized (along with the above findings on acceptability) in Table 4-21. For all respondents, visitors would prefer to see 1.6 buses, feel the NPS should take management action to limit use when the number of buses reaches 5.5, would no longer use the Denali Park Road when the number of buses reaches 7.9, and reported typically seeing 2.8 buses. Differences among the values reported by the five types of bus users are not large.

Table 4-16: Acceptability for number of buses stopped to observe wildlife on the Denali Park Road

Q6a. We would like to know how many buses you think can be stopped at the same place to observe wildlife on the Denali Park Road without you feeling too crowded. To help judge this, we have a series of photographs that show different numbers of buses stopped to observe wildlife on the Denali Park Road. Please look at the photographs on Poster B.

	Very Unacceptable							Very Acceptable		N	Mean
	-4	-3	-2	-1	0	+1	+2	+3	+4		
Photo 1 (0 buses)											
Camper Bus User	2.9	0.0	0.0	0.0	1.5	0.0	0.0	1.5	94.1	136	3.69
General Bus User	3.7	0.0	0.5	1.1	3.2	2.1	2.1	2.1	85.1	188	3.36
Tundra Wilderness Tour	3.3	0.7	0.7	0.7	1.3	0.7	2.0	6.6	84.2	152	3.44
Natural History Tour	3.6	0.0	0.0	0.0	2.4	2.4	0.0	3.6	88.0	83	3.51
Lodge Bus User	7.5	0.0	1.3	0.0	2.5	0.0	2.5	0.0	86.3	80	3.18
All Users	4.0	0.2	0.5	0.5	2.2	1.1	1.4	3.0	87.2	643	3.44
Photo 2 (1 bus)											
Camper Bus User	0.7	0.0	0.0	0.7	0.7	3.0	10.4	25.2	59.3	135	3.33
General Bus User	0.5	0.5	0.0	2.6	.5	4.2	8.5	14.8	68.3	189	3.32
Tundra Wilderness Tour	0.6	0.6	0.6	0.0	.6	1.3	3.9	20.6	71.6	155	3.52

Natural History Tour	2.4	1.2	0.0	0.0	1.2	4.8	8.3	22.6	59.5	84	3.14
Lodge Bus User	2.5	0.0	1.3	1.3	1.3	2.5	6.3	10.1	74.7	79	3.30
All Users	1.1	.5	.3	1.1	.8	3.1	7.4	18.7	67.0	646	3.35
Photo 3 (2 buses)											
Camper Bus User	1.5	0.0	3.8	2.3	5.3	14.3	31.6	22.6	18.8	133	2.05
General Bus User	2.1	1.1	1.1	3.7	6.4	11.8	16.6	21.4	35.8	187	2.35
Tundra Wilderness Tour	1.4	0.7	2.7	0.7	1.4	5.5	19.2	26.7	41.8	146	2.77
Natural History Tour	1.2	2.5	2.5	1.2	2.5	21.0	17.3	23.5	28.4	81	2.21
Lodge Bus User	3.8	2.5	1.3	5.1	5.1	7.6	17.7	26.6	30.4	79	2.14
All Users	1.9	1.1	2.2	2.5	4.3	11.4	20.5	24.0	32.1	630	2.35
Photo 4 (4 buses)											
Camper Bus User	3.0	3.8	8.3	24.2	15.2	18.9	10.6	7.6	8.3	132	0.32
General Bus User	8.1	2.7	8.6	9.7	9.2	18.4	17.8	9.2	16.2	185	0.79
Tundra Wilderness Tour	8.8	5.4	4.1	8.8	8.8	15.6	17.0	19.7	11.6	147	0.86
Natural History Tour	4.8	1.2	12.0	14.5	18.1	10.8	15.7	10.8	12.0	83	0.61
Lodge Bus User	10.0	5.0	7.5	13.8	10.0	11.3	18.8	11.3	12.5	80	0.49
All Users	7.0	3.6	7.8	13.6	11.6	15.8	16.2	11.9	12.5	631	.66
Photo 5 (6 buses)											
Camper Bus User	20.0	15.6	20.0	14.1	11.9	8.1	3.7	2.2	4.4	135	-1.41
General Bus User	26.4	9.9	13.7	16.5	8.2	8.2	6.6	4.4	6.0	182	-1.20
Tundra Wilderness Tour	21.8	14.1	10.6	17.6	2.1	9.9	10.6	8.5	4.9	142	-0.92
Natural History Tour	8.4	18.1	18.1	14.5	13.3	14.5	6.0	3.6	3.6	83	-0.87
Lodge Bus User	28.9	6.6	19.7	10.5	13.2	11.8	6.6	0.0	2.6	76	-1.50
All Users	21.9	12.7	15.6	15.3	8.8	10.0	6.9	4.2	4.7	622	-1.17
Photo 6 (8 buses)											
Camper Bus User	47.4	18.2	15.3	10.2	4.4	0.0	0.7	2.2	1.5	137	-2.72
General Bus User	45.1	14.8	14.3	7.7	5.5	3.8	4.9	2.7	1.1	182	-2.35
Tundra Wilderness Tour	36.7	17.3	14.0	6.7	4.0	9.3	6.7	3.3	2.0	150	-1.93
Natural History Tour	35.3	15.3	15.3	8.2	11.8	3.5	5.9	4.7	0.0	85	-1.96
Lodge Bus User	44.7	13.2	18.4	11.8	9.2	1.3	0.0	1.3	0.0	76	-2.62
All Users	42.1	16.1	15.1	8.5	6.3	3.9	3.9	2.8	1.1	634	-2.31
Photo 7 (10 buses)											
Camper Bus User	77.4	13.1	4.4	0.7	2.9	0.0	0.7	0.0	0.7	137	-3.54
General Bus User	61.9	18.0	5.8	5.3	2.6	2.1	2.6	1.6	0.0	189	-3.06
Tundra Wilderness Tour	56.9	18.3	7.2	7.2	1.3	3.3	2.0	2.0	2.0	153	-2.83
Natural History Tour	62.4	15.3	3.5	5.9	4.7	4.7	3.5	0.0	0.0	85	-2.96
Lodge Bus User	64.1	17.9	10.3	5.1	2.6	0.0	0.0	0.0	0.0	78	-3.36
All Users	64.4	16.6	6.2	4.8	2.6	2.0	1.9	0.9	0.6	646	-3.13
Photo 8 (12 buses)											
Camper Bus User	90.6	4.3	0.0	1.4	2.2	0.0	0.7	0.7	0.0	139	-3.73
General Bus User	80.0	6.3	2.6	3.2	2.1	2.1	2.1	1.6	0.0	190	-3.36
Tundra Wilderness Tour	78.6	3.2	5.2	4.5	1.3	2.6	1.3	1.9	1.3	154	-3.23
Natural History Tour	79.1	4.7	4.7	2.3	2.3	3.5	2.3	1.2	0.0	86	-3.30
Lodge Bus User	86.1	5.1	6.3	1.3	1.3	0.0	0.0	0.0	0.0	79	-3.73
All Users	82.7	4.8	3.4	2.8	1.8	1.7	1.4	1.2	0.3	652	-3.45

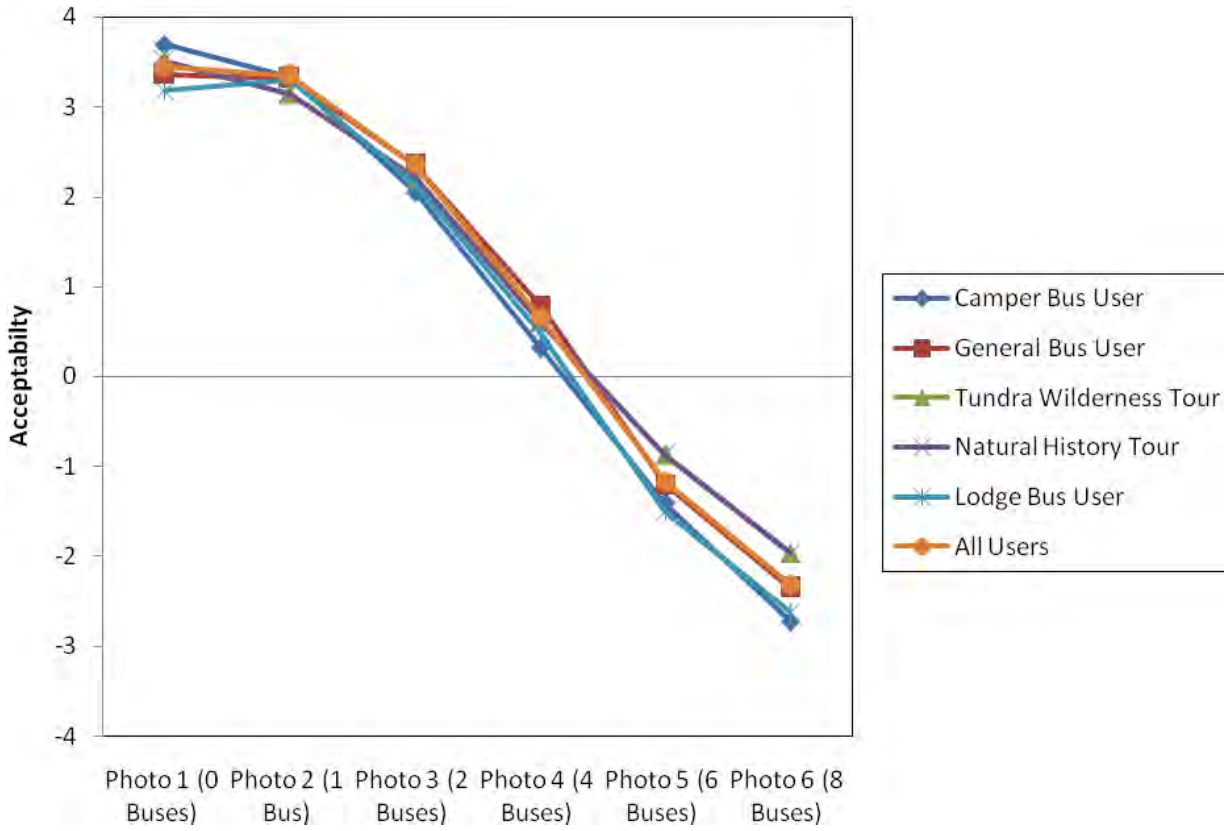

Figure 4- 2. Social Norm Curve for Number of Buses at one Time Stopped to Observe Wildlife on the Denali Park Road

Table 4-17: Preferred number of buses stopped to observe wildlife on the Denali Park Road

Q6b. Which photograph shows the number of buses stopped to observe wildlife that you would prefer to see?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	47.5	26.7	11.5	41.9	22.6	28.7
Photo 2 (1 bus)	20.1	26.2	26.7	20.9	22.6	23.8
Photo 3 (2 buses)	22.3	36.6	40.6	18.6	41.7	33.0
Photo 4 (4 buses)	5.0	8.9	14.5	15.1	10.7	10.6
Photo 5 (6 buses)	2.2	0.5	4.8	1.2	1.2	2.1
Photo 6 (8 buses)	1.4	1.0	0.6	0.0	1.2	0.9
Photo 7 (10 buses)	1.4	0.0	0.6	1.2	0.0	0.6
Photo 8 (12 buses)	0.0	0.0	0.6	1.2	0.0	0.3
N	139	191	165	86	84	669
Mean (buses)	1.24	1.47	2.13	1.51	1.65	1.6

Table 4-18: Tolerance for number of buses stopped to observe wildlife on the Denali Park Road

Q6c. Which photograph shows the number of buses stopped to observe wildlife that is so unacceptable that you would no longer use the Denali Park Road? (If none of the photographs represent this condition, you may indicate that.)

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	0.0	0.5	0.6	1.2	1.2	0.6
Photo 2 (1 bus)	0.0	1.1	0.0	0.0	0.0	0.3
Photo 3 (2 buses)	0.7	2.6	3.7	3.5	2.4	2.5
Photo 4 (4 buses)	14.5	11.6	11.0	8.2	14.5	12.0
Photo 5 (6 buses)	27.5	22.6	16.5	16.5	20.5	21.0
Photo 6 (8 buses)	21.0	17.9	23.2	14.1	21.7	20.1
Photo 7 (10 buses)	15.2	12.1	9.8	9.4	13.3	12.0
Photo 8 (12 buses)	12.3	16.8	18.3	16.5	16.9	16.3
None of the photographs are so unacceptable that I would no longer use the Denali Park Road.	8.7	14.7	17.1	30.6	9.6	15.3
N	138	190	164	85	83	668
Mean (buses)	7.59	7.68	7.83	7.90	7.68	7.7

Table 4-19: Management level for number of buses stopped to observe wildlife on the Denali Park Road

Q6d. Which photograph shows the highest level of use that the National Park Service should allow on the Denali Park Road? In other words, at what point should buses be restricted from using the road?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	0.0	0.0	0.6	0.0	0.0	0.2
Photo 2 (1 bus)	3.7	4.4	3.1	0.0	6.3	3.5
Photo 3 (2 buses)	15.7	15.8	13.7	11.6	10.0	13.7
Photo 4 (4 buses)	32.8	29.5	29.2	24.4	38.8	30.5
Photo 5 (6 buses)	23.1	18.0	16.1	17.4	18.8	18.6
Photo 6 (8 buses)	12.7	11.5	14.9	24.4	10.0	14.0
Photo 7 (10 buses)	5.2	4.4	11.8	8.1	5.0	7.0
Photo 8 (12 buses)	3.7	6.6	5.0	4.7	8.8	5.8
None of the photographs show a high enough level of use to restrict buses from using the road.	1.5	8.2	3.7	8.1	2.5	5.3
Vehicle use should not be restricted on the road	1.5	1.6	1.9	1.2	0.0	1.4
N	134	183	161	86	80	656
Mean (buses)	5.19	5.32	5.75	6.20	5.42	5.5

Table 4-20: Number of buses typically seen stopped to observe wildlife on the Denali Park Road

Q6e. Which photograph looks most like the number of buses you typically saw stopped to observe wildlife on the Denali Park Road today?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	2.6	2.6	0.7	1.6	6.7	2.5
Photo 2 (1 bus)	15.4	20.0	14.9	21.9	12.0	16.7
Photo 3 (2 buses)	51.3	45.2	38.3	32.8	46.7	43.3
Photo 4 (4 buses)	23.9	24.5	30.5	31.3	28.0	27.3

Photo 5 (6 buses)	5.1	3.2	5.0	6.3	1.3	4.3
Photo 6 (8 buses)	0.0	4.5	7.1	4.7	5.3	4.3
Photo 7 (10 buses)	1.7	0.0	2.8	0.0	0.0	1.1
Photo 8 (12 buses)	0.0	0.0	0.7	1.6	0.0	0.4
N	117	155	141	64	75	556
Mean (buses)	2.61	2.64	3.37	3.06	2.68	2.8

Table 4-21: Summary Table

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Acceptability	4.4	4.8	5.0	4.8	4.5	4.7
Preference	1.2	1.5	2.1	1.5	1.7	1.6
Management Action	5.2	5.3	5.8	6.2	5.4	5.5
Displacement	7.6	7.7	7.8	7.9	7.7	79
Typically seen	2.6	2.6	3.4	3.1	2.7	2.8

Number of Buses at a Rest Area Along the Denali Park Road

Standards of quality for the number of buses at a rest stop along the Denali Park Road were measured using a series of eight study photographs as described in Chapter 2 and shown in Appendix E. The number of buses in the photographs ranged from 0 to 12. Table 2-22 shows the mean acceptability rating for each eight study photographs, for each of the five types of bus users, and for all respondents combined. Figure 4-3 shows the social norm curve derived from these data for all five types of bus users and for all respondents combined. These findings show that increasing numbers of buses are generally found to be increasingly unacceptable, and that this pattern holds across all five types of bus users. Camper bus users and lodge bus users appear to be a little more sensitive to this indicator variable. For all respondents, mean acceptability ratings fall out of the acceptable range and into the unacceptable range at 4.7 buses. Agreement about acceptability ratings for the study photos is generally high, though this agreement is more pronounced at lower levels of use. For example, 89.4% of respondents rated Photo 1 (0 buses) at acceptability level 4 suggesting a very high level of agreement. Photo 2 (1 bus) was rated at

acceptability levels 3 or 4 by 89.9% of respondents. Photo 8 (12 buses) was rated at acceptability level -4 by 83.5% of respondents. The lowest levels of agreement were associated with study photos that showed intermediate levels of use.

Findings for the other dimensions of preference, management action, displacement, and typically seen are presented in Table 4-23 through 4-26 and are summarized (along with the above findings on acceptability) in Table 4-27. For all respondents, visitors would prefer to see 2.1 buses, feel the NPS should take management action to limit use when the number of buses reached 5.5, would no longer use the Denali Park Road when the number of buses reaches 7.9, and reported typically seeing 3.6 buses. Differences among the values reported by the five types of bus users are not large, though camper and lodge bus users are often somewhat more sensitive to increasing use levels.

Table 4-22: Acceptability rating for number of buses stopped at a rest area on the Denali Park Road

Q8a. We would like to know how many buses you think can be stopped at a rest area along the Denali Park Road without you feeling too crowded. To help judge this, we have a series of photographs that show different numbers of buses at a rest area on the Denali Park Road. Please look at the photographs on Poster C.

	Very Unacceptable							Very Acceptable		N	Mean
	-4	-3	-2	-1	0	+1	+2	+3	+4		
Photo 1 (0 buses)											
Camper Bus User	1.5	0.0	0.0	0.0	1.5	0.0	1.5	2.2	93.4	136	3.77
General Bus User	2.8	0.0	0.6	0.0	1.7	0.6	2.2	1.7	90.4	178	3.60
Tundra Wilderness Tour	0.7	0.7	0.7	0.0	2.0	0.7	3.9	3.9	87.5	152	3.64
Natural History Tour	4.8	0.0	0.0	0.0	2.4	1.2	1.2	3.6	86.9	84	3.43
Lodge Bus User	6.5	0.0	1.3	0.0	2.6	0.0	2.6	1.3	85.7	77	3.23
All Users	2.7	0.2	0.5	0.0	1.9	.5	2.4	2.5	89.4	630	3.58
Photo 2 (1 bus)											
Camper Bus User	0.0	0.0	0.0	0.0	1.5	1.5	6.9	17.6	72.5	131	3.58
General Bus User	0.6	1.1	0.6	0.6	0.0	0.0	5.6	13.6	78.0	177	3.56
Tundra Wilderness Tour	0.7	0.0	1.3	0.0	1.3	0.7	3.9	15.1	77.0	152	3.57
Natural History Tour	2.4	0.0	0.0	1.2	1.2	3.5	5.9	10.6	75.3	85	3.38
Lodge Bus User	2.6	0.0	2.6	0.0	2.6	0.0	6.6	13.2	72.4	76	3.26
All Users	1.0	0.3	0.8	0.3	1.1	1.0	5.6	14.3	75.6	624	3.51
Photo 3 (2 buses)											
Camper Bus User	0.0	0.0	0.8	0.0	3.8	9.9	22.1	22.1	41.2	131	2.84
General Bus User	0.6	0.6	1.7	0.6	1.7	3.9	15.2	21.3	54.5	178	3.08
Tundra Wilderness Tour	1.3	0.7	0.7	0.0	4.0	2.6	13.2	24.5	53.0	151	3.06
Natural History Tour	0.0	1.2	0.0	0.0	3.6	11.9	17.9	26.2	39.3	84	2.80
Lodge Bus User	1.3	0.0	0.0	5.1	6.4	3.8	14.1	26.9	42.3	78	2.72
All Users	0.6	0.5	0.8	0.8	3.5	5.9	16.5	23.5	47.8	625	2.94
Photo 4 (4 buses)											

Camper Bus User	1.5	1.5	0.8	15.3	22.1	19.1	19.8	6.9	13.0	131	1.04
General Bus User	2.9	2.3	2.3	5.2	4.1	18.0	29.7	13.4	22.1	172	1.77
Tundra Wilderness Tour	4.0	4.0	2.0	4.6	6.0	15.2	24.5	19.2	20.5	151	1.68
Natural History Tour	2.5	3.8	1.3	6.3	17.5	11.3	35.0	11.3	11.3	80	1.30
Lodge Bus User	6.7	5.3	4.0	10.7	9.3	9.3	34.7	12.0	8.0	75	0.85
All Users	3.3	3.1	2.0	8.0	10.9	15.7	27.5	13.1	16.5	612	1.42
Photo 5 (6 buses)											
Camper Bus User	9.8	11.4	18.2	16.7	22.0	10.6	6.1	3.0	2.3	132	-0.86
General Bus User	18.6	4.7	8.1	23.3	14.0	11.0	8.7	6.4	5.2	172	-0.59
Tundra Wilderness Tour	10.3	11.0	9.6	17.1	15.8	14.4	11.0	8.2	2.7	146	-0.38
Natural History Tour	13.3	6.0	9.6	19.3	19.3	15.7	9.6	3.6	3.6	83	-0.49
Lodge Bus User	28.0	14.7	6.7	16.0	12.0	12.0	6.7	1.3	2.7	75	-1.45
All Users	15.1	9.0	10.6	19.1	16.5	12.4	8.7	5.1	3.4	611	-0.69
Photo 6 (8 buses)											
Camper Bus User	35.9	20.6	21.4	11.5	3.1	2.3	1.5	3.1	0.8	131	-2.42
General Bus User	33.3	16.1	21.8	9.8	7.5	2.9	5.2	1.7	1.7	174	-2.10
Tundra Wilderness Tour	28.2	19.5	17.4	12.1	8.7	4.0	7.4	0.7	2.0	149	-1.89
Natural History Tour	30.6	14.1	22.4	9.4	11.8	3.5	4.7	2.4	1.2	85	-1.94
Lodge Bus User	48.7	17.9	15.4	7.7	6.4	1.3	0.0	2.6	0.0	78	-2.78
All Users	34.0	17.7	20.2	10.3	7.4	2.9	4.2	1.9	1.3	620	-2.18
Photo 7 (10 buses)											
Camper Bus User	68.9	19.7	2.3	3.0	2.3	0.8	0.0	2.3	0.8	132	-3.32
General Bus User	60.2	17.0	7.4	5.7	5.1	0.6	1.7	1.1	1.1	176	-3.01
Tundra Wilderness Tour	57.9	16.4	9.9	5.3	2.6	5.3	2.0	0.0	0.7	152	-2.94
Natural History Tour	58.1	17.4	10.5	2.3	3.5	4.7	3.5	0.0	0.0	86	-2.97
Lodge Bus User	73.1	17.9	3.8	2.6	0.0	0.0	1.3	1.3	0.0	78	-3.50
All Users	62.7	17.7	7.0	4.1	3.0	2.2	1.6	1.0	0.6	627	-3.11
Photo 8 (12 buses)											
Camper Bus User	88.1	4.4	0.7	2.2	1.5	0.0	0.7	1.5	0.7	135	-3.61
General Bus User	81.6	5.6	3.9	2.2	2.2	1.1	2.2	0.6	0.6	179	-3.44
Tundra Wilderness Tour	79.2	6.5	4.5	2.6	2.6	2.6	1.3	0.6	0.0	154	-3.41
Natural History Tour	79.3	4.6	4.6	1.1	4.6	5.7	0.0	0.0	0.0	87	-3.74
Lodge Bus User	92.3	2.6	2.6	0.0	0.0	0.0	0.0	2.6	0.0	78	-3.49
All Users	83.5	5.0	3.3	1.9	2.2	1.7	1.1	0.9	0.3	636	-3.50

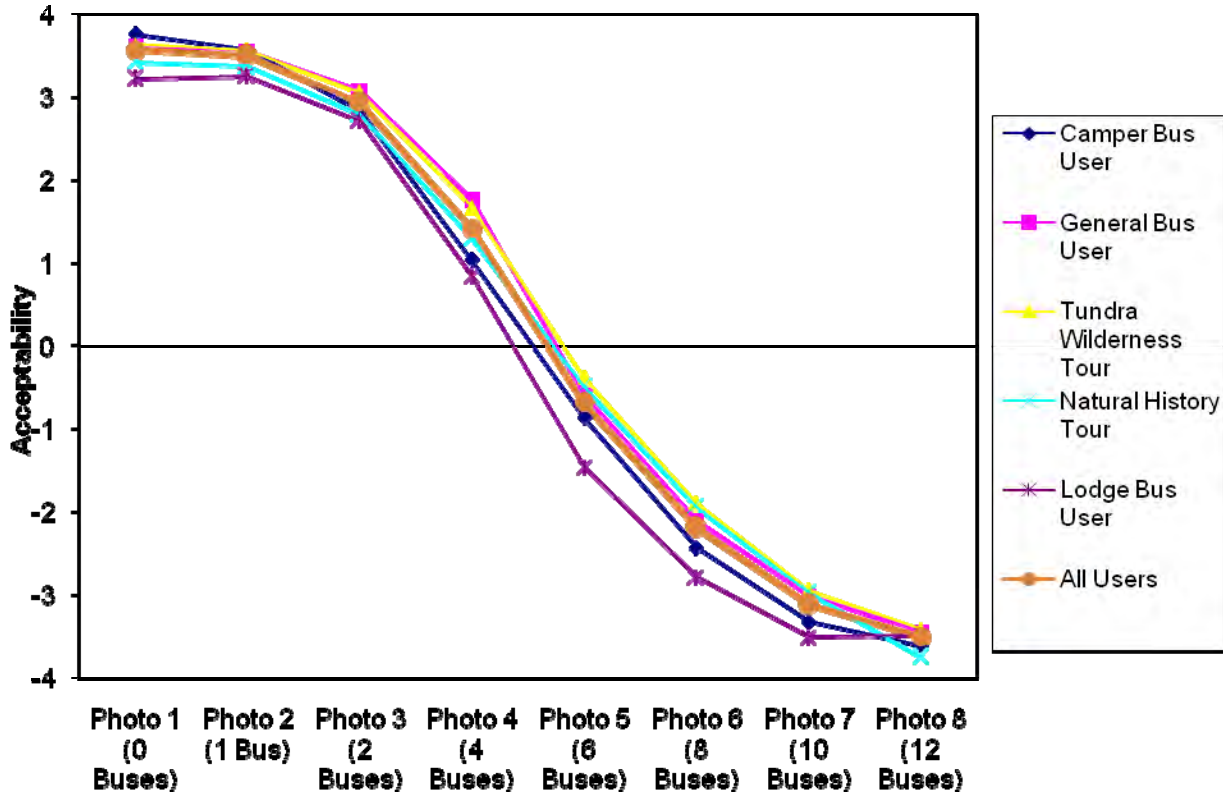

Figure 4-3. Social Norm Curve for the Number of Buses Stopped at a Rest Area on the Denali Park Road

Table 4-23: Preferred number of buses stopped at arrest area on the Denali Park Road

Q8b. Which photograph shows the number of buses at a rest area that you would prefer to see?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	29.5	15.4	6.3	22.6	15.2	17.1
Photo 2 (1 bus)	20.5	15.4	11.9	23.8	32.9	18.8
Photo 3 (2 buses)	34.1	46.3	49.1	34.5	27.8	40.8
Photo 4 (4 buses)	12.9	19.4	30.2	11.9	21.5	19.9
Photo 5 (6 buses)	0.8	2.9	1.3	1.2	2.5	1.7
Photo 6 (8 buses)	1.5	0.6	0.6	1.2	0.0	0.8
Photo 7 (10 buses)	0.8	0.0	0.0	0.0	0.0	0.2
Photo 8 (12 buses)	0.0	0.0	0.6	4.8	0.0	0.8
N	132	175	159	84	79	633
Mean (buses)	1.64	2.07	2.51	2.14	1.90	2.1

Table 4-24: Tolerance for number of buses stopped at a rest area on the Denali Park Road

Q8c. Which photograph shows the number of buses at a rest area that is so unacceptable that you would no longer use the Denali Park Road? (If none of the photographs represent this condition, you may indicate that.)

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	0.0	0.6	0.0	0.0	1.3	0.3
Photo 2 (1 bus)	0.0	0.0	1.3	0.0	0.0	0.3
Photo 3 (2 buses)	0.0	1.7	0.6	2.4	3.9	1.4
Photo 4 (4 buses)	7.0	10.9	12.1	13.3	9.1	10.5
Photo 5 (6 buses)	30.2	24.0	19.1	14.5	28.6	23.5
Photo 6 (8 buses)	24.0	20.6	21.0	10.8	20.8	20.2
Photo 7 (10 buses)	18.6	12.0	14.6	10.8	14.3	14.1
Photo 8 (12 buses)	7.8	14.3	17.2	25.3	11.7	14.8
None of the photographs are so unacceptable that I would no longer use the Denali Park Road.	12.4	16.0	14.0	22.9	10.4	14.8
N	129	175	157	83	77	629
Mean (buses)	7.77	7.69	7.95	8.40	7.42	7.8

Table 4-25: Management level for number of buses stopped at a rest area on the Denali Park Road

Q8d. Which photograph shows the highest number of buses at a rest area that the National Park Service should allow on the Denali Park Road? In other words, at what point should buses be restricted from using the road? (If use should not be restricted at any point represented by the photographs, or not restricted at all, you may indicate that.)

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	0.0	0.0	0.0	0.0	0.0	0.0
Photo 2 (1 bus)	1.5	0.0	0.0	0.0	5.2	0.9
Photo 3 (2 buses)	11.5	9.0	11.4	14.5	6.5	10.5
Photo 4 (4 buses)	30.8	32.2	29.1	27.7	41.6	31.6
Photo 5 (6 buses)	23.1	23.2	26.6	19.3	19.5	22.9
Photo 6 (8 buses)	14.6	13.0	11.4	12.0	14.3	12.7
Photo 7 (10 buses)	9.2	6.8	8.9	7.2	3.9	7.5
Photo 8 (12 buses)	3.8	7.9	7.0	9.6	5.2	7.1
None of the photographs show a high enough number of buses at rest areas to restrict use on the Denali Park Road	3.1	5.1	4.4	6.0	3.9	4.7
Vehicle use should not be restricted on the road	1.5	0.0	0.0	0.0	5.2	2.0
N	130	177	158	83	77	637
Mean (buses)	5.69	6.04	5.95	6.10	5.38	5.9

Table 4-26: Number of buses typically seen stopped at a rest area on the Denali Park Road

Q8e. Which photograph looks most like the number of buses you typically saw at rest areas on the Denali Park Road today?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Photo 1 (0 buses)	2.3	0.0	0.6	0.0	0.0	.6
Photo 2 (1 bus)	7.7	4.0	1.9	11.3	11.8	6.1
Photo 3 (2 buses)	32.3	26.7	24.5	47.5	31.6	30.8
Photo 4 (4 buses)	39.2	53.4	53.5	33.8	42.1	46.5
Photo 5 (6 buses)	16.9	11.9	16.1	5.0	6.6	12.4
Photo 6 (8 buses)	0.8	4.0	3.2	1.3	7.9	3.2
Photo 7 (10 buses)	0.8	0.0	0.0	0.0	0.0	0.2
Photo 8 (12 buses)	0.0	0.0	0.0	1.3	0.0	0.2
N	130	176	155	80	76	614
Mean (buses)	3.45	3.74	3.88	2.96	3.46	3.6

Table 4-27: Summary Table

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Acceptability	4.4	4.8	5.0	4.8	4.5	4.7
Preference	1.6	2.1	2.5	2.1	1.9	2.1
Management Action	5.7	6.0	6.0	6.1	5.4	5.9
Displacement	7.8	7.7	8.0	8.4	7.4	7.8
Typically seen	3.5	3.7	3.9	3.0	3.5	3.6

Waiting Time to See Wildlife

Respondents were asked evaluate the acceptability of different waiting times to see wildlife when buses are stopped along the road. Respondents were presented a range between no wait time and a 15 minute wait. Table 4-28 shows the mean acceptability rating for each wait time, and Figure 4-4 shows the resulting social norm curve. Study findings suggest that longer wait times are found to be increasingly unacceptable, and that the mean acceptability rating falls out of the acceptability range and into the unacceptable range at 4.6 minutes. The acceptability ratings for the five types of bus users ranged from 4.3 minutes for general bus users to 6 minutes for Natural History Tour users. Agreement about acceptability ratings for wait time to see wildlife is generally high, though this agreement is more pronounced at short wait times. For

example, 91.9% of respondents rated no wait time at acceptability level 4 suggesting a very high level of agreement. Waiting 1 minute was rated at acceptability levels 3 or 4 by 87.9% of respondents. Waiting 15 minutes was rated at acceptability level -4 by 69.9% of respondents. The lowest levels of agreement were associated with intermediate levels of wait times.

Table 4-28: Acceptability ratings for wait time to see wildlife.

Q7. When buses are stopped to see wildlife, people often have to "wait their turn" to see the wildlife. What do you think is the maximum acceptable time that people should have to wait at wildlife stops to see wildlife? Please rate the acceptability of each of the following waiting times to see wildlife. A rating of "-4" means the waiting time is "very unacceptable" and a rating of "+4" means the waiting time is "very acceptable". (Circle one number for each waiting time.)

	Very Unacceptable							Very Acceptable		N	Mean
	-4	-3	-2	-1	0	+1	+2	+3	+4		
Not having to wait											
Camper Bus User	2.2	0.7	0.0	0.0	6.0	0.0	1.5	0.7	88.8	134	3.49
General Bus User	1.2	0.0	0.0	0.6	1.7	0.6	1.7	2.3	91.9	173	3.73
Tundra Wilderness Tour	0.0	0.0	0.0	0.0	0.7	0.7	1.4	2.8	94.4	144	3.90
Natural History Tour	1.2	0.0	0.0	0.0	1.2	2.4	1.2	2.4	91.6	83	3.73
Lodge Bus User	3.9	0.0	0.0	0.0	2.6	0.0	0.0	1.3	92.1	76	3.57
All Users	1.5	0.2	0.0	0.2	2.4	0.7	1.3	2.0	91.9	614	3.70
Waiting 1 minute											
Camper Bus User	0.8	0.0	1.6	0.8	4.7	2.3	5.4	16.3	68.2	129	3.28
General Bus User	0.6	0.6	0.6	1.8	3.0	1.2	4.2	20.4	67.7	167	3.34
Tundra Wilderness Tour	2.0	0.0	0.0	0.7	1.4	0.7	4.1	20.4	70.7	147	3.44
Natural History Tour	0.0	1.2	0.0	0.0	2.4	3.7	3.7	22.0	67.1	82	3.41
Lodge Bus User	2.7	1.3	0.0	1.3	4.0	1.3	2.7	22.7	64.0	75	3.15
All Users	1.2	.5	.5	1.0	3.0	1.7	4.3	19.9	68.0	604	3.34
Waiting 2 minutes											
Camper Bus User	0.8	0.0	3.1	1.6	8.7	4.7	15.7	15.0	50.4	127	2.72
General Bus User	2.4	1.8	1.8	1.2	4.8	3.0	18.2	24.2	42.4	165	2.62
Tundra Wilderness Tour	2.1	0.0	0.7	1.4	4.9	6.3	15.4	27.3	42.0	143	2.76
Natural History Tour	0.0	1.2	0.0	0.0	4.9	3.7	21.0	13.6	55.6	81	3.05
Lodge Bus User	2.7	0.0	2.7	1.4	6.8	0.0	20.5	21.9	43.8	73	2.64
All Users	1.7	.7	1.7	1.2	5.9	3.9	17.7	21.2	46.0	593	2.74
Waiting 3 minutes											
Camper Bus User	0.8	3.9	1.6	4.7	10.2	12.5	15.6	20.3	30.5	128	2.04
General Bus User	8.6	0.6	3.1	6.1	9.8	12.9	17.2	19.6	22.1	163	1.46
Tundra Wilderness Tour	3.4	0.7	4.1	3.4	8.9	14.4	19.2	21.2	24.7	146	1.88
Natural History Tour	0.0	0.0	2.5	3.7	11.1	9.9	18.5	13.6	40.7	81	2.42
Lodge Bus User	4.1	1.4	5.5	5.5	8.2	16.4	16.4	17.8	24.7	73	1.64
All Users	3.9	1.3	3.2	4.9	9.6	13.1	17.5	19.2	27.4	595	1.84
Waiting 4 minutes											
Camper Bus User	7.3	1.6	6.5	12.9	11.3	6.5	16.9	11.3	25.8	124	1.18
General Bus User	12.5	5.6	6.9	8.8	12.5	13.8	21.9	6.3	11.9	160	0.34
Tundra Wilderness Tour	8.7	5.4	5.4	9.4	10.7	14.1	16.8	12.1	17.4	149	0.83
Natural History Tour	6.5	1.3	1.3	9.1	9.1	13.0	16.9	13.0	29.9	77	1.64
Lodge Bus User	9.5	5.4	8.1	8.1	14.9	8.1	17.6	12.2	16.2	74	0.66
All Users	9.2	4.1	5.8	9.9	11.6	11.6	18.4	10.4	19.2	588	.86
Waiting 5 minutes											
Camper Bus User	15.9	9.5	13.5	8.7	11.9	9.5	4.0	4.8	22.2	126	-0.07
General Bus User	23.2	10.4	9.8	12.2	13.4	10.4	7.3	6.1	7.3	164	-0.83

Tundra Wilderness Tour	22.8	8.3	14.5	15.2	5.5	10.3	9.7	5.5	8.3	145	-0.81
Natural History Tour	11.3	3.8	13.8	10.0	13.8	6.3	12.5	8.8	20.0	80	0.44
Lodge Bus User	25.7	12.2	12.2	8.1	14.9	2.7	10.8	1.4	12.2	74	-0.95
All Users	20.1	9.1	12.5	11.5	11.3	8.8	8.3	5.4	13.2	593	-.50
Waiting 10 minutes											
Camper Bus User	48.1	13.2	13.2	4.7	8.5	0.8	2.3	0.8	8.5	129	-2.21
General Bus User	52.4	11.8	8.2	9.4	6.5	1.8	2.9	4.1	2.9	170	-2.39
Tundra Wilderness Tour	55.5	13.0	11.6	8.2	0.7	2.7	2.1	2.7	3.4	146	-2.64
Natural History Tour	38.3	11.1	17.3	8.6	2.5	1.2	8.6	4.9	7.4	81	-1.67
Lodge Bus User	52.8	20.8	8.3	5.6	5.6	4.2	0.0	0.0	2.8	72	-2.81
All Users	50.3	13.5	11.3	7.6	4.8	2.0	3.0	2.7	4.8	602	-2.37
Waiting 15 minutes											
Camper Bus User	67.2	4.7	7.0	3.9	6.3	0.8	1.6	0.0	8.6	128	-2.63
General Bus User	70.8	6.0	6.0	4.8	4.8	1.8	2.4	1.2	2.4	168	-2.98
Tundra Wilderness Tour	73.5	8.8	6.1	2.0	1.4	2.0	1.4	2.0	2.7	147	-3.13
Natural History Tour	55.6	9.9	6.2	7.4	2.5	3.7	6.2	3.7	4.9	81	-2.25
Lodge Bus User	81.1	4.1	4.1	2.7	2.7	2.7	0.0	0.0	2.7	74	-3.34
All Users	69.9	6.8	6.0	4.0	3.7	2.0	2.2	1.3	4.2	602	-2.89

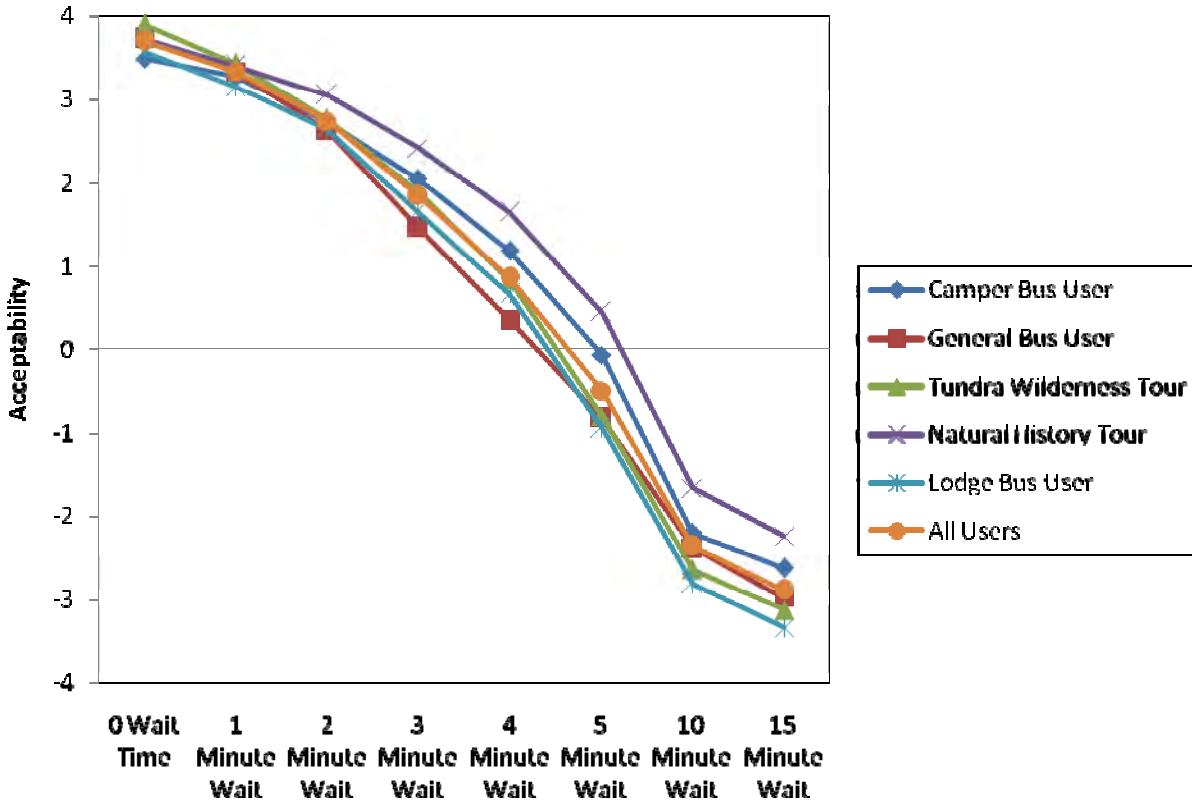

Figure 4-4. Social Norm Curve for the Wait Time to See Wildlife on the Denali Park Road

Percentage Chance of Seeing a Grizzly Bear

Respondents were asked to evaluate the acceptability of different percentage chances of seeing a grizzly bear along the Denali Park Road. Respondents were presented a range between a 0% chance of seeing a grizzly bear and a 100% chance of seeing a grizzly bear. Table 4-29 shows the mean acceptability rating for each percent chance of seeing a grizzly bear, and Figure 4-5 shows the resulting social norm curve. Study findings suggest that lower percent chances of seeing a grizzly bear are found to be increasingly unacceptable, and that the mean acceptability rating falls out of the acceptability range and into the unacceptable range at a 20.3% chance of seeing a grizzly bear. The minimum acceptability rating for the five types of buses users ranged from a 3.8% chance of seeing a grizzly bear for camper bus users to a 33.8% chance of seeing a grizzly bear for lodge bus users. Agreement about acceptability ratings for percent chance to see a grizzly bear is generally high, though this agreement is more pronounced at higher percent chances of seeing a grizzly bear. For example, 73.1% of respondents rated 100% chance of seeing a grizzly bear at acceptability level 4 suggesting a high level of agreement. A 75% chance of seeing a grizzly bear was rated at acceptability levels 3 or 4 by 70.5% of respondents. A 0% chance of seeing a grizzly bear was rated at acceptability level -4 by 40.2% of respondents. The lowest levels of agreement were associated with intermediate percent chances of seeing a grizzly bear.

Table 4-29: Acceptability rating for percent chance of seeing a grizzly bear

Q10. Please rate the acceptability of the following percent chances of a visitor seeing a Grizzly Bear along the Denali Park Road. A rating of "-4" means the chance of a visitor seeing a Grizzly Bear along the Denali Park Road is "very unacceptable", and a rating of "+4" means the chance of a visitor seeing a Grizzly Bear along the Denali Park Road is "very acceptable".

	Very Unacceptable							Very Acceptable		N	Mean
	-4	-3	-2	-1	0	+1	+2	+3	+4		
100% chance of seeing a bear											
Camper Bus User	2.3	1.5	0.0	0.8	11.5	1.5	3.1	0.8	78.5	130	3.09
General Bus User	4.1	1.2	0.6	1.2	4.7	2.9	6.4	4.1	75.0	172	3.06
Tundra Wilderness Tour	6.8	0.7	1.4	1.4	6.2	2.1	4.8	7.5	69.2	146	2.77
Natural History Tour	11.4	0.0	0.0	0.0	8.9	3.8	3.8	3.8	68.4	79	2.51

Lodge Bus User	5.3	0.0	0.0	0.0	4.0	2.7	9.3	6.7	72.0	75	3.09
All Users	5.6	0.8	0.5	0.8	6.9	2.5	5.3	4.5	73.1	606	2.92
75% chance of seeing a bear											
Camper Bus User	0.0	0.8	0.8	2.3	10.9	3.9	7.0	14.7	59.7	129	2.95
General Bus User	1.2	1.2	1.2	3.6	6.0	3.0	8.4	26.9	48.5	167	2.80
Tundra Wilderness Tour	2.8	2.8	1.4	2.8	4.9	7.6	9.0	27.1	41.7	144	2.49
Natural History Tour	5.1	3.8	0.0	1.3	10.3	3.8	16.7	20.5	38.5	78	2.19
Lodge Bus User	1.4	1.4	2.7	1.4	4.1	6.8	13.7	31.5	37.0	73	2.60
All Users	1.8	1.8	1.2	2.5	7.1	5.0	10.1	23.9	46.6	595	2.65
50% chance of seeing a bear											
Camper Bus User	2.3	0.0	3.1	0.8	19.2	6.9	19.2	10.0	38.5	130	2.13
General Bus User	3.0	0.0	1.8	5.4	15.1	8.4	25.3	12.7	28.3	166	1.89
Tundra Wilderness Tour	2.8	1.4	7.6	4.9	12.5	12.5	20.8	13.9	23.6	144	1.55
Natural History Tour	5.2	2.6	1.3	6.5	18.2	11.7	26.0	7.8	20.8	77	1.32
Lodge Bus User	1.4	2.7	6.8	9.6	21.9	16.4	9.6	6.8	24.7	73	1.18
All Users	2.9	1.0	4.0	5.1	16.5	10.4	20.9	11.1	28.1	594	1.70
25% chance of seeing a bear											
Camper Bus User	5.4	7.0	3.1	3.9	22.5	17.1	6.2	6.2	28.7	129	1.10
General Bus User	7.4	8.6	9.2	9.2	14.7	12.3	17.2	9.8	11.7	163	0.40
Tundra Wilderness Tour	11.4	9.3	12.9	13.6	9.3	14.3	11.4	7.1	10.7	140	-0.11
Natural History Tour	3.8	11.5	12.8	6.4	16.7	26.9	7.7	2.6	11.5	78	0.14
Lodge Bus User	17.8	16.4	13.7	12.3	5.5	8.2	6.8	2.7	16.4	73	-0.64
All Users	8.7	9.7	9.9	9.0	14.1	15.2	10.9	6.6	15.8	587	0.28
0% chance of seeing a bear											
Camper Bus User	27.3	4.5	3.8	3.8	25.8	5.3	3.8	2.3	23.5	132	-0.20
General Bus User	42.7	3.7	4.9	7.3	15.9	4.9	7.3	1.8	11.6	164	-1.27
Tundra Wilderness Tour	46.4	8.6	7.1	2.9	14.3	7.1	2.9	2.1	8.6	140	-1.75
Natural History Tour	33.3	7.7	7.7	3.8	20.5	12.8	6.4	0.0	7.7	78	-1.19
Lodge Bus User	51.4	6.9	8.3	2.8	11.1	2.8	0.0	1.4	15.3	72	-1.78
All Users	40.2	5.9	5.9	4.4	17.6	6.3	4.4	1.7	13.6	590	-1.20

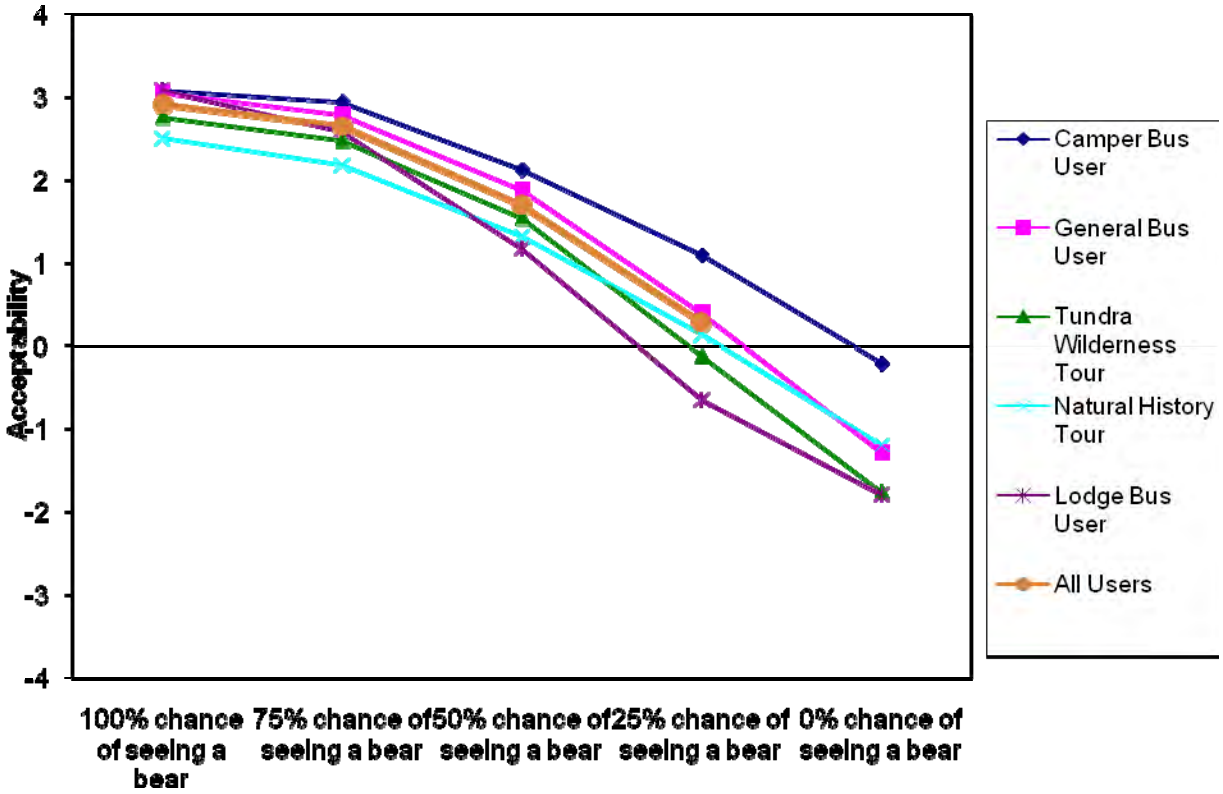

Figure 4-5. Social Norm Curve for Percent Chance of Seeing a Grizzly Bear on the Denali Park Road

Related Questions

Respondents were asked a battery of questions regarding wildlife that they might have seen while on the Denali Park Road and their satisfaction with the views of the wildlife. Respondents were asked about seeing grizzly bears, wolves, caribou, Dall sheep, moose, and other types of wildlife (Table 4-30). A majority of respondents (82.5%) saw a grizzly bear and 77.2% were satisfied with their views. A majority of all the user groups saw a grizzly bear and were satisfied with their views except for the Natural History Tour users. Only 17.5% of Natural History Tour users saw a grizzly bear and 18.7% were satisfied with their view while 26.7% were not satisfied. About a quarter of all respondents (26.8%) saw a wolf and 37.2% were satisfied with their views. Approximately 24% to 31% of all the user groups saw a wolf and a majority were satisfied with their views except for Natural History Tour users. Only 15% of Natural History

Tour users saw a wolf and only 17.3% were satisfied with their view while 28% were not satisfied. A majority of respondents (87.3%) saw a caribou and 79.9% were satisfied with their views. A majority of all the user groups saw a caribou and were satisfied with their views except for Natural History Tour users. Half of Natural History Tour users saw a caribou and 42.1% were satisfied with their view. A majority of respondents (81.5%) saw a Dall Sheep and 62.1% were satisfied with their views. A majority of all the user groups saw a Dall sheep and were satisfied with their views except for lodge bus users and Natural History Tour users. Half of lodge bus users that saw a Dall sheep were satisfied with their view while 40.8% were not satisfied. Less than half (40%) of Natural History Tour users saw a Dall sheep and 30.7% were satisfied with their view while 29.3% were not satisfied. Over half of the respondents (68.4%) saw a moose and 65.7% were satisfied with their views. Approximately half of all the user groups saw a moose and were satisfied with their views except for Natural History Tour users. Less than half (42.1%) of Natural History Tour users were satisfied with their view. A majority of respondents (96.6%) reported seeing other wildlife on the Denali Park Road and 91.6% were satisfied with their views.

Table 4-30: Wildlife seen and satisfaction with view

Q11a. We would like to know which types of wildlife you saw on the Denali Park Road today, and if you were satisfied with the views of each type of wildlife. Please circle "Yes", "No", or "Not Applicable" for Sections A and B for each type of wildlife listed below.

Type of Wildlife	**Section A**			**Section B**			
	Did you see this type of wildlife today?			Were you satisfied with your views of this type of wildlife today?			
	Yes	No	N	Yes	No	Not Applicable	N
Grizzly Bear							
Camper Bus User	93.1	6.9	131	90.8	6.7	2.5	120
General Bus User	88.5	11.5	183	86.4	8.9	4.7	169
Tundra Wilderness Tour	95.5	4.5	157	87.6	10.3	2.1	145
Natural History Tour	17.5	82.5	80	18.7	26.7	54.7	75
Lodge Bus User	91.3	8.8	80	73.7	22.4	3.9	76
All Users	82.5	17.5	635	77.2	12.7	10.0	589

Wolf							
Camper Bus User	29.1	70.9	127	37.8	8.1	54.1	111
General Bus User	31.8	68.2	176	43.2	14.2	42.6	155
Tundra Wilderness Tour	26.0	74.0	150	40.9	19.7	39.4	127
Natural History Tour	15.0	85.0	80	17.3	28.0	54.7	75
Lodge Bus User	24.0	76.0	75	36.1	13.1	50.8	61
All Users	26.8	73.2	612	37.2	16.0	46.8	532
Caribou							
Camper Bus User	91.7	8.3	132	90.0	4.2	5.8	120
General Bus User	91.9	8.1	185	88.4	7.9	3.7	164
Tundra Wilderness Tour	96.2	3.8	158	81.4	17.2	1.4	145
Natural History Tour	50.0	50.0	80	42.1	30.3	27.6	76
Lodge Bus User	90.0	10.0	80	80.8	15.1	4.1	73
All Users	87.3	12.7	639	79.9	13.2	6.9	582
Dall Sheep							
Camper Bus User	84.7	15.3	131	76.5	14.3	9.2	119
General Bus User	89.7	10.3	185	67.9	26.2	6.0	168
Tundra Wilderness Tour	91.6	8.4	154	65.8	27.4	6.8	146
Natural History Tour	40.0	60.0	80	30.7	29.3	40.0	75
Lodge Bus User	79.5	20.5	78	50.7	40.8	8.5	71
All Users	81.5	18.5	632	62.1	26.2	11.7	583
Moose							
Camper Bus User	65.6	34.4	128	68.6	10.2	21.2	118
General Bus User	69.4	30.6	180	67.5	21.0	11.5	157
Tundra Wilderness Tour	73.7	26.3	152	67.9	19.0	13.1	137
Natural History Tour	50.0	50.0	80	44.7	28.9	26.3	76
Lodge Bus User	77.5	22.5	80	73.5	16.2	10.3	68
All Users	68.4	31.6	624	65.7	18.6	15.7	560
Other types							
Camper Bus User	100.0	0.0	37	93.9	3.0	3.0	33
General Bus User	97.8	2.2	92	93.9	4.9	1.2	82
Tundra Wilderness Tour	100.0	0.0	84	95.8	1.4	2.8	72
Natural History Tour	87.5	12.5	40	76.3	7.9	15.8	38
Lodge Bus User	92.1	7.9	38	91.2	5.9	2.9	34
All Users	96.6	3.4	294	91.6	4.2	4.2	262

Respondents were asked to rate their satisfaction or dissatisfaction with their wildlife viewing experience on the Denali Park Road (Table 4-31). Overall, respondents were satisfied with 80.7% reporting being either satisfied or very satisfied. The percentage of bus users satisfied with their wildlife viewing experience ranged from a high of 89.6% for camper bus users to a low of 48.2% for Natural History Tour bus users.

Table 4-31: Satisfaction with wildlife viewing experience

Q11b. How satisfied or dissatisfied were you with the experience of viewing wildlife on the Denali Park Road today?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Very dissatisfied (-2)	0.0	2.7	5.7	8.4	5.0	3.9
Dissatisfied (-1)	3.7	3.8	5.1	27.7	6.3	7.5
Neither satisfied nor dissatisfied (0)	6.7	6.6	5.1	15.7	10.0	7.9
Satisfied (1)	35.1	35.5	37.3	28.9	41.3	35.8
Very Satisfied (2)	54.5	51.4	46.8	19.3	37.5	44.9
N	134	183	158	83	80	642
Mean	1.40	1.29	1.15	0.23	1.00	1.1

Respondents were also asked the extent to which they felt like they were travelling through wilderness while on the Denali Park Road. A five-point response scale was used that ranged from "I never felt like I was traveling through wilderness" (-2) to "I always felt like I was traveling through wilderness" (+2) (Table 4-32). Overall, respondents did feel like they were traveling through wilderness with an average rating of 1. Response scale ratings were highest for lodge bus users (1.25) and lowest for Natural History Tour bus users (0.70).

Table 4-32: Perception of wilderness on the Denali Park Road

Q12. To what extent did you feel you were traveling through wilderness while on the Denali Park Road today?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
-2 (I never felt like I was traveling through wilderness)	1.5	3.3	5.1	2.4	1.3	3.0
-1	2.3	3.8	6.4	13.4	5.1	5.5
0	17.4	15.8	10.3	24.4	8.9	15.1
1	42.4	41.0	35.3	31.7	36.7	37.9
2 (I always felt like I was traveling through wilderness)	36.4	36.1	42.9	28.0	48.1	38.5
N	132	183	156	82	79	636
Mean	1.10	1.03	1.04	0.70	1.25	1.0

Respondents were asked to rate their satisfaction or dissatisfaction with their overall experience on the Denali Park Road on a scale from 2 ("Very Satisfied") to -2 ("Very Dissatisfied") (Table 4-33). The average rating for all respondents was 1.4, indicating a

relatively high level of overall satisfaction. Satisfaction ratings were highest for camper bus users (1.57) and lowest for Natural History Tour bus users (1.19).

Table 4-33: Satisfaction with overall experience on the Denali Park Road

Q13. How satisfied or dissatisfied were you with your overall experience along the Denali Park Road today?

	Camper Bus User	General Bus User	Tundra Wilderness Tour	Natural History Tour	Lodge Bus User	All Users
Very dissatisfied (-2)	0.0	0.5	2.5	0.0	1.3	.9
Dissatisfied (-1)	0.0	1.6	3.2	4.8	5.3	2.5
Neither satisfied nor dissatisfied (0)	3.7	3.8	3.2	15.7	3.9	5.3
Satisfied (1)	35.1	38.6	39.2	34.9	43.4	38.2
Very Satisfied (2)	61.2	55.4	51.9	44.6	46.1	53.1
N	134	184	158	83	76	639
Mean	1.57	1.47	1.35	1.19	1.28	1.4

Visitors were asked about perceived crowding at various locations on the Denali Park Road. Respondents were asked about crowding along the Denali Park Road, at rest stops along the road, and while viewing wildlife along the road. Respondents were asked to report how crowded they felt using a response scale that ranged from 1 (“Not at all crowded”) to 9 (“Extremely crowded”) (Table 4-34). Respondents reported an average crowding rating of 2.92 while traveling the road, indicating that they were only slightly crowded. Crowding ratings varied from a low of 2.65 for Natural History Tour bus users to a high of 3.33 for camper bus users. Respondents reported an average crowding rating of 3.56 at rest stops, indicating that respondents were slightly to moderately crowded. Crowding ratings varied from a low of 3.13 for Natural History Tour bus users to a high of 4.07 for camper bus users. Respondents reported an average crowding rating of 2.97 while stopped to view wildlife, indicating that respondents were only slightly crowded. Crowding ratings varied from a low of 2.71 for general bus users to a high of 3.56 for camper bus users.

Table 4-34: Perceptions of crowding on the Denali Park Road

Q9. How crowded did you feel while at the following locations on the Denali Park Road today? (Circle one number for each location.)

	Not at all Crowded		Slightly Crowded		Moderately Crowded			Extremely Crowded			
	1	2	3	4	5	6	7	8	9	N	Mean
a. While traveling along the Denali Park Road?											
Camper Bus User	14.9	19.4	21.6	21.6	12.7	5.2	3.0	1.5	0.0	134	3.33
General Bus User	23.5	25.7	22.4	18.6	3.3	3.3	2.2	1.1	0.0	183	2.77
Tundra Wilderness Tour	23.1	24.4	19.2	18.6	5.1	7.1	1.3	0.6	0.6	156	2.92
Natural History Tour	21.4	29.8	25.0	11.9	9.5	2.4	0.0	0.0	0.0	84	2.65
Lodge Bus User	25.6	16.7	23.1	20.5	3.8	6.4	3.8	0.0	0.0	78	2.95
All Users	21.8	23.5	21.9	18.5	6.6	4.9	2.0	0.8	0.2	639	2.92
b. While at rest stops along the Denali Park Road?											
Camper Bus User	6.6	11.0	19.1	31.6	13.2	10.3	0.7	4.4	2.9	136	4.07
General Bus User	12.0	23.0	24.6	16.4	6.0	11.5	4.9	1.1	0.5	183	3.44
Tundra Wilderness Tour	11.6	18.1	29.7	12.3	11.0	12.3	3.2	1.9	0.0	155	3.52
Natural History Tour	10.7	29.8	31.0	10.7	4.8	9.5	2.4	1.2	0.0	84	3.13
Lodge Bus User	16.7	14.1	24.4	19.2	5.1	12.8	6.4	1.3	0.0	78	3.53
All Users	11.3	19.2	25.3	18.3	8.4	11.3	3.4	2.0	0.8	640	3.56
c. While stopped to view wildlife on the Denali Park Road?											
Camper Bus User	9.0	19.4	25.4	20.1	11.2	9.0	6.0	0.0	0.0	134	3.56
General Bus User	22.0	29.1	26.4	11.5	3.8	4.4	2.2	0.5	0.0	182	2.71
Tundra Wilderness Tour	18.6	28.2	28.2	12.8	4.5	2.6	4.5	0.0	0.6	156	2.86
Natural History Tour	17.1	30.5	29.3	9.8	4.9	4.9	2.4	1.2	0.0	82	2.85
Lodge Bus User	19.2	29.5	16.7	17.9	9.0	5.1	2.6	0.0	0.0	78	2.94
All Users	17.3	27.0	25.9	14.3	6.3	5.0	3.6	0.3	0.2	636	2.97

A final battery of questions asked respondents if their experience on the Denali Park Road had contributed to their understanding of five reasons for the establishment of Denali National Park (Table 4-35). The vast majority of respondents overall and for all of the five types of bus users reported that their experience on the road had contributed to their understanding of these reasons. The lowest percentages of affirmative responses were for the reason "to provide opportunities for mountain climbing, mountaineering, and other wilderness recreational activities."

Table 4-35: Respondent knowledge regarding the reasons for establishment of Denali National Park

Q14. Did your experience on the Denali Park Road today directly contribute to your understanding of any of the following reasons for why Denali National Park was established as a unit of the National Park System? (Circle "Yes" or "No" for each reason.)

Reasons for why Denali National Park was established as a unit of the National Park System.	Did your experience on the Denali Park Road contribute to your understanding of this reason for establishing the Park?		
	Yes	No	N
To protect and interpret Mt. McKinley (i.e., Denali) and additional scenic mountain peaks.			
Camper Bus User	93.3	6.7	134
General Bus User	89.3	10.7	178
Tundra Wilderness Tour	89.7	10.3	156
Natural History Tour	93.7	6.3	79
Lodge Bus User	88.2	11.8	76
All Users	90.6	9.4	627
To protect habitat for populations of fish and wildlife.			
Camper Bus User	94.7	5.3	133
General Bus User	94.9	5.1	178
Tundra Wilderness Tour	98.7	1.3	157
Natural History Tour	98.8	1.3	80
Lodge Bus User	93.4	6.6	76
All Users	96.2	3.8	628
To provide opportunities for mountain climbing, mountaineering and other wilderness recreational activities.			
Camper Bus User	80.5	19.5	133
General Bus User	82.5	17.5	177
Tundra Wilderness Tour	78.4	21.6	153
Natural History Tour	79.2	20.8	77
Lodge Bus User	73.7	26.3	76
All Users	79.5	20.5	620
To conserve scenery, natural and historic objects, and wildlife.			
Camper Bus User	96.2	3.8	132
General Bus User	97.2	2.8	179
Tundra Wilderness Tour	98.1	1.9	154
Natural History Tour	100.0	0.0	79
Lodge Bus User	89.3	10.7	75
All Users	96.6	3.4	623
To provide for public enjoyment of scenery, natural and historic objects, and wildlife in a manner that will leave these things unimpaired for enjoyment by future generations.			
Camper Bus User	96.9	3.1	131
General Bus User	98.3	1.7	178
Tundra Wilderness Tour	97.4	2.6	156
Natural History Tour	98.7	1.3	78
Lodge Bus User	94.7	5.3	75
All Users	97.4	2.6	622

Chapter 5

Conclusions and Recommendations

The primary purpose of this study was to support formulation of indicators and standards of quality for the visitor experience on the Denali Park Road. Two research approaches – qualitative interviews and a quantitative survey – were taken to help identify indicators of quality.

Phase 1 qualitative interviews indentified a number of issues that affected the quality of the visitor experience. However, some of these issues do not meet the criteria for good indicators of quality because they are not readily measureable, they are beyond the control of park staff to manage, and/or they are not related to visitor use levels. Examples include the quality of scenery, ability to see Mt. McKinley/Denali, the physical condition of buses, the quality of bus drivers and their commentary, and the long bus ride needed to travel to the interior of the park.

However, several issues do constitute potentially important indicators of quality, and these include the number and type of wildlife seen (especially wildlife seen close to the road and especially grizzly bears), the number of buses seen along the road, the number of buses at informal "wildlife stops", waiting time to see wildlife at informal wildlife stops, and the number of buses and people at rest stops. For example, many of the comments recorded in the interviews noted that seeing wildlife was one of the most enjoyable aspects of the trip along the Denali Park Road, while many other comments noted that not seeing much wildlife or that wildlife was too far from the road were the most disappointing elements of the trip. Moreover, many responses noted that little traffic along the road contributed to the feeling of being in the "wilderness", while the number of buses and people seen along the road sometimes detracted from the sense

of being in the “wilderness.” Most comments reflected support for the NPS limit on the number of buses that can use the road.

Findings from the phase 2 quantitative visitor survey generally corroborated the above conclusions. Issues that were rated by visitors as most problematic were not enough wildlife, wildlife not close enough to the road, and too many buses on the road.

Findings from the phase 2 visitor survey provide an empirical foundation to formulate standards of quality for several potential indicators of quality, including number of buses seen along the road, number of buses at informal wildlife stops, waiting time to see wildlife at informal wildlife stops, number of buses and people at rest stops, and percentage chance of seeing a grizzly bear. Visual simulations of a range of conditions for these indicators (percentage chance of seeing a grizzly bear and waiting time to see wildlife were addressed using more conventional numerical presentations) were included in the visitor survey and evaluated by respondents. Batteries of questions addressed several “evaluative dimensions”, including the condition visitors would prefer, the conditions they find minimally acceptable, the conditions they feel managers should maintain, and the conditions that are so unacceptable that they would no longer visit the park. Resulting data provide a range of potential standards of quality that might be formulated. Generally, there was considerable agreement about these potential standards across the five major types of bus users, though VTS camper bus users and Kantishna lodge bus users were often more sensitive to deteriorating conditions than were other types of bus users. There was less agreement about the percentage chance of seeing a grizzly bear among the five types of bus users. There was also a generally consistent relationship between what visitors experienced on the road and their evaluations of the study photographs. Generally, visitors saw more buses/people than they preferred, but fewer than they found minimally

acceptable and felt the NPS should manage for, and substantially fewer than would cause them to stop visiting the park.

In keeping with this latter pattern of findings, several general measures of the quality of the visitor experience were generally high. For example, most visitors saw grizzly bears and were generally satisfied with their overall wildlife viewing experience. Participants on Natural History Tours were an exception to this pattern as these respondents saw substantially less wildlife and were less satisfied with their wildlife viewing experience. Most visitors felt they were traveling through "wilderness" while on the road, reported only slight to moderate levels of crowding, and expressed high levels of overall satisfaction with their experience on the Denali Park Road.

In keeping with the NPS VERP framework, findings from this program of research should be combined with other information and used to formulate a series of indicators and standards of quality to define and guide management of the visitor experience on the Denali Park Road. Indicators should then be monitored and management actions taken to ensure that standards of quality are maintained. These indicators and standards of quality should also be incorporated into the simulation model of vehicle use of the road that is being developed in an effort to estimate the maximum number of vehicles that can be accommodated on the road without violating standards of quality.

As noted above, study data present a continuum of potential standards of quality that range from "preference" to "displacement." Selection of a standard of quality within this continuum should be based on management objectives for the Denali Park Road and other considerations. Generally, a standard of quality associated with "preference" will result in a very high quality visitor experience, but will probably result in some limitations on visitor levels. A

standard of quality associated with the other end of the continuum will allow more visitors to use the road, but will also result in a lower quality visitor experience. Consideration should be given to applying more than one standard of quality based on either spatial or temporal dimensions in order to create a range of visitor opportunities/experiences.

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Appendix A. Phase 1 Qualitative Interview Guide

DENALI NATIONAL PARK

GUIDING QUESTIONS FOR SEMI-STRUCTURED INTERVIEWS OF DENALI PARK ROAD VEHICLE USERS

2006

Interviewer should state the following:

Date: _____ Interview Number: _____

Time: _____

Type and subtype of Denali Park Road user:

Frontcountry Camper VTS Bus User Lodge Bus User Tour Bus User Other (specify type)

↓ ↓

Camper Bus User
General Bus User

Tundra Wilderness Tour
Natural History Tour

OMB Approval ##1024-0224 (NPS #06-022).
Expiration Date: 04/01/2007

Interviewer Script (italicized text):

Hi, my name is _____. I'm from the University of Vermont. We're helping the National Park Service gather information to manage vehicle use on the Denali Park Road. Could I ask you a few questions about your experience while on the park road? Participation is voluntary and your responses will be anonymous.

If No: OK. Thank you for your time. Have a good day.

If Yes: It should take about 30 minutes, and I'd like to tape record our conversation so I can remember it later on. Is this OK with you?

How long did you spend traveling along the Denali Park Road today?

How far into the park did you go today? How did you decide on how far into the park you would travel?

What are the three things you enjoyed <u>most</u> about your time on the Denali Park Road today?

What are the three things you enjoyed <u>least</u> about your time on the Denali Park Road today?

Is this your first trip on the Denali Park Road?

[If first time visitor] What did you expect your trip along the Denali Park Road to be like? How did you know what to expect? Was your trip better or worse than you expected?

[If repeat visitor] How many times have you been on the Denali Park Road? When was your first trip along the Denali Park Road? How has your experience on the Denali Park Road changed over the years?

Trips on the park road include three stages: traveling along the road, stopping at rest areas, and stopping to observe wildlife. Was there anything about each of these that was important in affecting the quality of your experience today?

What are the things that you'd need to see and do to say that you've had a great visit along the Denali Park Road?

Did you feel you were in the "wilderness" during your trip along the road? Why or why not?

[For VTS and tour bus riders] Generally, there are two types of buses that park visitors use: VTS buses – the green school buses that you can get on and off of at any time– and tour buses – that follow a set program and include a narrative talk about the park. Why did you choose the type you did?

[For VTS and tour bus riders] How did your bus driver affect the quality of your experience in the park?

[For VTS and tour bus riders] Did you find anything about the bus to be especially pleasing or annoying? [Follow-up probe] Was your experience affected by the number of people on your bus? [Follow-up probe] Was your experience affected by the physical characteristics of the bus such as the type of bus, size of the bus, or condition of the bus?

Did you see any visitors walking or biking along the road or hiking off the road? [If yes] Did that affect the quality of your experience in any way?

How did the number of vehicles on the Denali Park Road affect your enjoyment of visiting the park?

Did you experience any instances in which more than one bus was stopped to observe wildlife or to use the rest areas? [If yes] Did this affect the quality of your experience in any way?

Did you feel hurried at any point during your visit? If so, why? [Follow-up probe] Did you feel hurried when you were stopped to view wildlife and other natural features?

Did you know that the National Park Service limits the number of vehicles that travel the park road between the Savage River and Kantishna to protect park resources and to maintain high quality visitor experiences? Do you think having a limit on the number of vehicles is a good idea? Why or why not?

What do you think of the overall way the National Park Service manages the Denali Park Road?

Was there anything that detracted from your wildlife viewing experience along the Denali Park Road today?

Based on your observations, do you think the type and use levels of vehicles and visitors on the Denali Park Road is having any negative effects on wildlife or other resources in the park?

Based on your observations, do you think the type and use levels of vehicles and visitors on the Denali Park Road is having any negative effects on the quality of the visitor experience?

Now to finish, would you be kind enough to fill out this brief card? It will really help us with our survey. Thank you.

Before we end, do you have anything you might like to add – anything I should have asked you about or anything you forgot to tell me?

Well, that's it! Thank you very much for your time today!

PRIVACY ACT and PAPERWORK REDUCTION ACT statement:
16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. Your name is requested for follow-up mailing purposes only. When analysis of the questionnaire is completed, all

name and address files will be destroyed. Thus the permanent data will be anonymous. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.
BURDEN ESTIMATE STATEMENT: Public reporting burden for this form is estimated to average 30 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to:
Carol McIntrye
Denali National Park
P.O. Box 9
Denali Park, AK 99755-0009
Carol_McIntrye@nps.gov

Appendix B. Phase 2 Visitor Survey

OMB Number: 1024-0224 (NPS #07-042)

Expiration Date: 01/01/2008

Denali Park Road Visitor Survey 2007

ID_____ Date _____

Conditions:

Approximate temperature: _____ (degrees Fahrenheit)

(Please circle all that apply):

Cloudy Sunny Rainy Smokey Other:_____

Type of road user (please circle a user type):

RV User VTS Bus User Lodge Bus User Tour Bus User Other (specify type)

↓ ↓

Camper Bus User or General Bus User

Tundra Wilderness Tour or Natural History Tour

[This first page is for the surveyor to complete before giving the questionnaire to the respondent.]

1. How long did you spend traveling along the Denali Park Road today?

   Number of hours: _____

2. How far out on the Denali Park Road did you go on this trip? (Circle one number.)

   1. Savage River
   2. Sanctuary River
   3. Teklanika
   4. Polychrome Pass
   5. Toklat River
   6. Fish Creek
   7. Wonder Lake
   8. Other (please specify destination): _____
   9. Don't know

3a. Have you been on the Denali Park Road before today? (Circle one number.)

   1. Yes
   2. No (Skip to question 4.)

b. How many times have you been on the Denali Park Road before today?

   Number of times (not including this time): _____

c. In what year did you first travel on the Denali Park Road?

   Year: _____

4. Please indicate the extent to which you think the following issues are problems on the Denali Park Road. (Circle one number for each issue.)

	Extent of the Problem			
	Not a Problem	**Small Problem**	**Big Problem**	**Don't Know**
Vehicles on the Road				
a. Too many buses on the Denali Park Road	1	2	3	DK
b. Too many private cars/recreational vehicles (RVs) on the Denali Park Road	1	2	3	DK
Seeing Wildlife				
c. Not seeing enough wildlife	1	2	3	DK
d. Not seeing enough wildlife <u>close to the road</u>	1	2	3	DK
e. Too few animals along the road	1	2	3	DK

	Extent of the Problem			
	Not a Problem	**Small Problem**	**Big Problem**	**Don't Know**
f. Wildlife being scared away from the road by buses	1	2	3	DK
g. Other buses blocking views	1	2	3	DK
h. Too many buses at "wildlife stops"	1	2	3	DK
i. Visitors not following rules for observing wildlife while on the bus	1	2	3	DK
j. Bus drivers not providing enough time at "wildlife stops"	1	2	3	DK
The Buses				
k. Dust generated by buses	1	2	3	DK
l. Uncomfortable seating on buses	1	2	3	DK
m. Too many people on buses	1	2	3	DK
n. Bus noise along the road	1	2	3	DK
o. Noisy people on the bus	1	2	3	DK
p. Too many buses at rest stops	1	2	3	DK
q. Buses being poorly maintained	1	2	3	DK
r. Windows on buses not working properly	1	2	3	DK
s. Windows on buses are dirty	1	2	3	DK
t. Bus drivers not stopping when asked	1	2	3	DK
u. Lack of interpretive information provided on the bus	1	2	3	DK
Other				
v. Lack of visitor facilities (e.g., restrooms)	1	2	3	DK
w. Degradation of the quality of the Denali Park Road	1	2	3	DK
x. Degradation of the wilderness character of the Denali Park Road (e.g., by buildings and human presence)	1	2	3	DK
y. Not having binoculars	1	2	3	DK
z. Poor weather	1	2	3	DK
aa. Smoke from wildfires	1	2	3	DK
bb. Feeling unsafe traveling along the road	1	2	3	DK
cc. Brush along the road obscured view of wildlife	1	2	3	DK
dd. Other factors (please specify):				
_____	1	2	3	DK
_____	1	2	3	DK
_____	1	2	3	DK

5. We would like to know how many buses you think could use the Denali Park Road without you feeling too crowded. To help judge this, we have a series of photographs that show different numbers of buses on the Denali Park Road. Please look at the photographs on **Poster A**.

   a. Please rate each photograph by indicating how acceptable you think it is based on the number of buses shown. A rating of "-4" means the number of buses is "very unacceptable", and a rating of "+4" means the number of buses is "very acceptable". (Circle one number for each photograph.)

	Very Unacceptable						Very Acceptable		
Photo 1	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 2	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 3	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 4	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 5	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 6	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 7	-4	-3	-2	-1	0	+1	+2	+3	+4

   b. Which photograph shows the level of use you would prefer to see?

      Photo number: _____

   c. Which photograph shows the level of use that is so unacceptable that you would no longer use the Denali Park Road? (If none of the photographs represent this condition, you may indicate that.)

      Photo number: _____

      OR

      ❑ None of the photographs are so unacceptable that I would no longer use the Denali Park Road.

   d. Which photograph shows the highest level of use that the National Park Service should allow on the Denali Park Road? In other words, at what point should buses be restricted from using the road? (If use should not be restricted at any point represented by the photographs, or not restricted at all, you may indicate that.)

      Photo number: _____

      OR

      ❑ None of the photographs show a high enough level of use to restrict buses from using the road.

OR

❑ Vehicle use should not be restricted on the road.

e. Which photograph looks most like the number of buses you typically saw on the Denali Park Road today?

Photo number: _____

6. We would like to know how many buses you think can be stopped at the same place to observe wildlife on the Denali Park Road without you feeling too crowded. To help judge this, we have a series of photographs that show different numbers of buses stopped to observe wildlife on the Denali Park Road. Please look at the photographs on **Poster B**.

a. Please rate each photograph by indicating how acceptable you think it is based on the number of buses shown that are stopped to observe wildlife. A rating of "-4" means the number of buses is "very unacceptable", and a rating of "+4" means the number of buses is "very acceptable". (Circle one number for each photograph.)

	Very Unacceptable							Very Acceptable	
Photo 1	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 2	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 3	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 4	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 5	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 6	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 7	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 8	-4	-3	-2	-1	0	+1	+2	+3	+4

b. Which photograph shows the number of buses stopped to observe wildlife that you would prefer to see?

Photo number: _____

c. Which photograph shows the number of buses stopped to observe wildlife that is so unacceptable that you would no longer use the Denali Park Road? (If none of the photographs represent this condition, you may indicate that.)

Photo number: _____

OR

❑ None of the photographs are so unacceptable that I would no longer use the Denali Park Road.

d. Which photograph shows the highest number of buses stopped to observe wildlife that the National Park Service should allow on the Denali Park Road? In other words, at what point should buses be restricted from using the road? (If the number of buses should not be restricted at any point represented by the photographs, or not restricted at all, you may indicate that.)

Photo number: _____

OR

❑ None of the photographs show a high enough number of buses to restrict use of the road.

OR

❑ Vehicle use of the road should not be restricted.

e. Which photograph looks most like the number of buses you typically saw stopped to observe wildlife on the Denali Park Road today?

Photo number: _____

7. When buses are stopped to see wildlife, people often have to "wait their turn" to see the wildlife. What do you think is the maximum acceptable time that people should have to wait at wildlife stops to see wildlife? Please rate the acceptability of each of the following waiting times to see wildlife. A rating of "-4" means the waiting time is "very unacceptable" and a rating of "+4" means the waiting time is "very acceptable". (Circle one number for each waiting time.)

	Very Unacceptable								Very Acceptable
Not having to wait	-4	-3	-2	-1	0	+1	+2	+3	+4
Waiting 1 minute	-4	-3	-2	-1	0	+1	+2	+3	+4
Waiting 2 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4
Waiting 3 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4
Waiting 4 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4
Waiting 5 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4
Waiting 10 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4
Waiting 15 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4

8. We would like to know how many buses you think can be stopped at a rest area along the Denali Park Road without you feeling too crowded. To help judge this, we have a series of photographs that show different numbers of buses at a rest area on the Denali Park Road. Please look at the photographs on **Poster C**.

   a. Please rate each photograph by indicating how acceptable you think it is based on the number of buses shown at a rest area. A rating of "-4" means the number of buses is "very unacceptable", and a rating of "+4" means the number of buses is "very acceptable". (Circle one number for each photograph.)

	Very Unacceptable						Very Acceptable		
Photo 1	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 2	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 3	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 4	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 5	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 6	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 7	-4	-3	-2	-1	0	+1	+2	+3	+4
Photo 8	-4	-3	-2	-1	0	+1	+2	+3	+4

   b. Which photograph shows the number of buses at a rest area that you would <u>prefer</u> to see?

      Photo number: _____

   c. Which photograph shows the number of buses at a rest area that is <u>so unacceptable that you would no longer use the Denali Park Road</u>? (If none of the photographs represent this condition, you may indicate that.)

      Photo number: _____

      OR

      ❑ None of the photographs are so unacceptable that I would no longer use the Denali Park Road.

   d. Which photograph shows the highest number of buses at a rest area that <u>the National Park Service should allow on the Denali Park Road</u>? In other words, at what point should buses be restricted from using the road? (If use should not be restricted at any point represented by the photographs, or not restricted at all, you may indicate that.)

      Photo number: _____

      OR

      ❑ None of the photographs show a high enough number of buses at rest areas to restrict use on the Denali Park Road

      OR

      ❑ Vehicle use should not be restricted on the Denali Park Road.

e. Which photograph looks most like the number of buses you typically saw at rest areas on the Denali Park Road today?

Photo number: _____

9. How crowded did you feel while at the following locations on the Denali Park Road today? (Circle one number for each location.)

	Not at all Crowded		Slightly Crowded			Moderately Crowded		Extremely Crowded	
a. While traveling along the Denali Park Road?	1	2	3	4	5	6	7	8	9
b. While at rest stops along the Denali Park Road?	1	2	3	4	5	6	7	8	9
c. While stopped to view wildlife on the Denali Park Road?	1	2	3	4	5	6	7	8	9

10. Please rate the acceptability of the following percent chances of a visitor seeing a Grizzly Bear along the Denali Park Road. A rating of "-4" means the chance of a visitor seeing a Grizzly Bear along the Denali Park Road is "very unacceptable", and a rating of "+4" means the chance of a visitor seeing a Grizzly Bear along the Denali Park Road is "very acceptable".

	Very Unacceptable								Very Acceptable
100% chance of seeing a bear	-4	-3	-2	-1	0	+1	+2	+3	+4
75% chance of seeing a bear	-4	-3	-2	-1	0	+1	+2	+3	+4
50% chance of seeing a bear	-4	-3	-2	-1	0	+1	+2	+3	+4
25% chance of seeing a bear	-4	-3	-2	-1	0	+1	+2	+3	+4
0% chance of seeing a bear	-4	-3	-2	-1	0	+1	+2	+3	+4

11a. We would like to know which types of wildlife you saw on the Denali Park Road today, and if you were satisfied with the views of each type of wildlife. Please circle "Yes", "No", or "Not Applicable" for Sections A and B for each type of wildlife listed below.

Type of Wildlife	**Section A** Did you see this type of wildlife today?		**Section B** Were you satisfied with your views of this type of wildlife today?		
Grizzly Bear	Yes	No	Yes	No	Not Applicable
Wolf	Yes	No	Yes	No	Not Applicable
Caribou	Yes	No	Yes	No	Not Applicable
Dall Sheep	Yes	No	Yes	No	Not Applicable
Moose	Yes	No	Yes	No	Not Applicable
Other types (please specify): _____	Yes	No	Yes	No	Not Applicable

b. How satisfied or dissatisfied were you with the experience of viewing wildlife on the Denali Park Road today? (Please circle one number).

Very Dissatisfied	Dissatisfied	Neither Satisfied nor Dissatisfied	Satisfied	Very Satisfied
-2	-1	0	1	2

12. To what extent did you feel you were traveling through wilderness while on the Denali Park Road today? (Circle one number.)

I never felt like I was traveling through wilderness				I always felt like I was traveling through wilderness
-2	-1	0	1	2

13. How satisfied or dissatisfied were you with your overall experience along the Denali Park Road today? (Circle one number.)

Very Dissatisfied	Dissatisfied	Neither Satisfied nor Dissatisfied	Satisfied	Very Satisfied
-2	-1	0	1	2

14. Did your experience on the Denali Park Road today directly contribute to your understanding of any of the following reasons for why Denali National Park was established as a unit of the National Park System? (Circle "Yes" or "No" for each reason.)

Reasons for why Denali National Park was established as a unit of the National Park System.	**Did your experience on the Denali Park Road contribute to your understanding of this reason for establishing the Park?**	
To protect and interpret Mt. McKinley (i.e., Denali) and additional scenic mountain peaks	Yes	No
To protect habitat for populations of fish and wildlife	Yes	No
To provide opportunities for mountain climbing, mountaineering and other wilderness recreational activities	Yes	No
To conserve scenery, natural and historic objects, and wildlife	Yes	No
To provide for public enjoyment of scenery, natural and historic objects, and wildlife in a manner that will leave these things unimpaired for enjoyment by future generations	Yes	No

15. Do you live in the United States? (Circle one number.)

    1. Yes (What is your zip code? _____)
    2. No (What country do you live in? _____)

Thank you for your help with this survey! Please return it to the survey field staff.

PRIVACY ACT and PAPERWORK REDUCTION ACT statement:
16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary and anonymous. No action may be taken against you for refusing to supply the information requested. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

BURDEN ESTIMATE STATEMENT: Public reporting burden for this form is estimated to average 20 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to:
Laura Phillips
Denali National Park & Preserve
P.O. Box 9
Denali Park, AK 99755-0009
Laura_Phillips@nps.gov

Appendix C. Phase 2 Study Photos, Buses on Road

Past Toklat

Stoney Overlook

Poster A

Photo 1 (0 Buses)

Photo 2 (1 Bus)

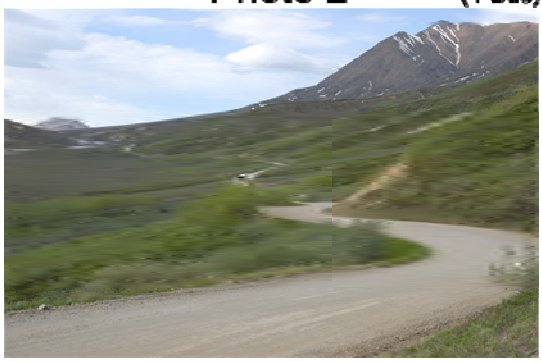


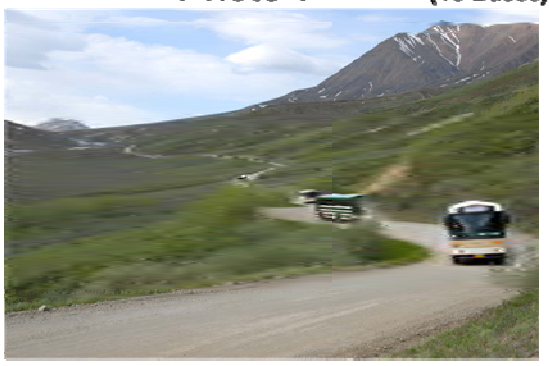
Photo 3 (2 Buses)

Photo 4 (4 Buses)

Photo 5 (6 Buses)

Photo 6 (8 Buses)

Photo 7 (10 Buses)



Poster A

Photo 1 (0 Buses)

Photo 2 (1 Bus)

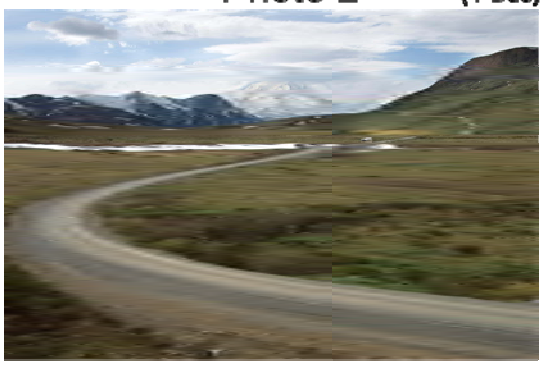


Photo 3 (2 Buses)

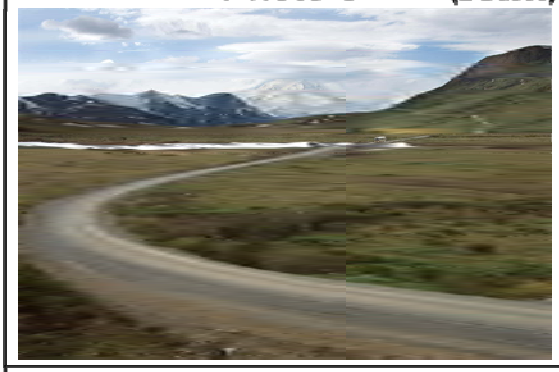


Photo 4 (4 Buses)

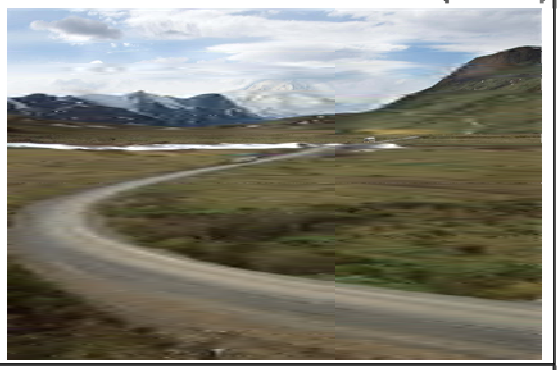


Photo 5 (6 Buses)

Photo 6 (8 Buses)

Photo 7 (10 Buses)

Appendix D. Phase 2 Study Photos, Buses on Road with Dust

Poster A

Photo 1 (0 Buses)

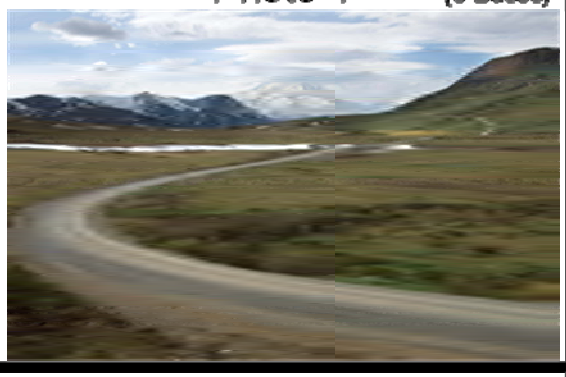


Photo 2 (1 Bus)

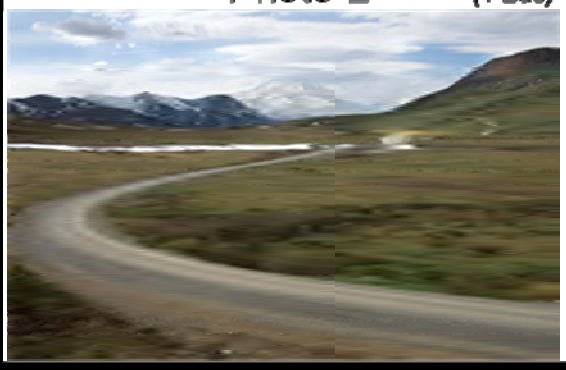


Photo 3 (2 Buses)

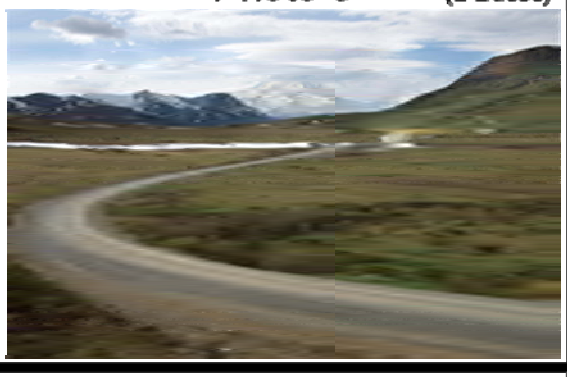


Photo 4 (4 Buses)

Photo 5 (6 Buses)

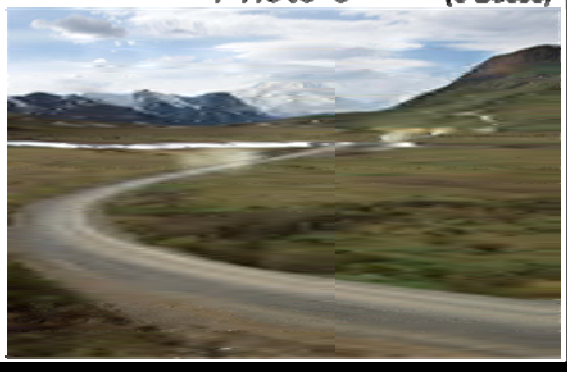


Photo 6 (8 Buses)

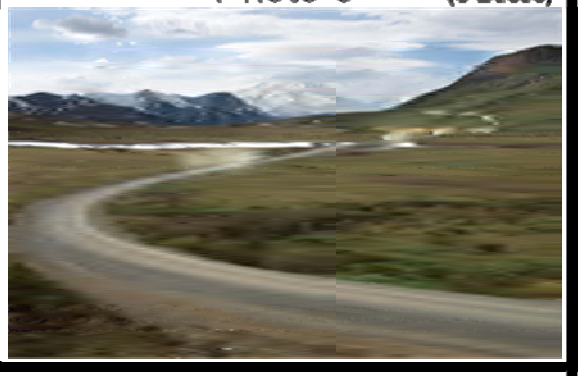
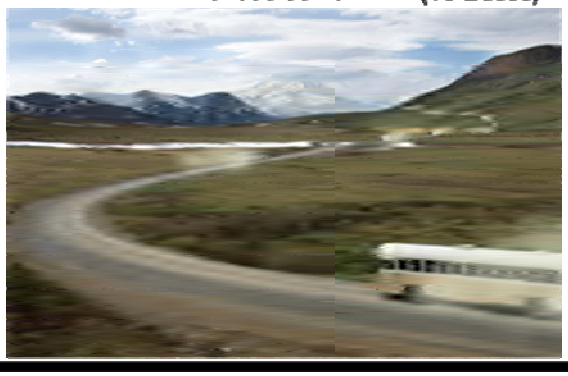


Photo 7 (10 Buses)



Appendix E. Phase 2 Study Photos, Buses at Rest Stop

Poster C

Photo 1 (0 Buses)

Photo 2 (1 Bus)

Photo 3 (2 Buses)

Photo 4 (4 Buses)

Photo 5 (6 Buses)

Photo 6 (8 Buses)

Photo 7 (10 Buses)

Photo 8 (12 Buses)

Appendix F. Phase 2 Study Photos, Buses at Wildlife Stop

Poster B

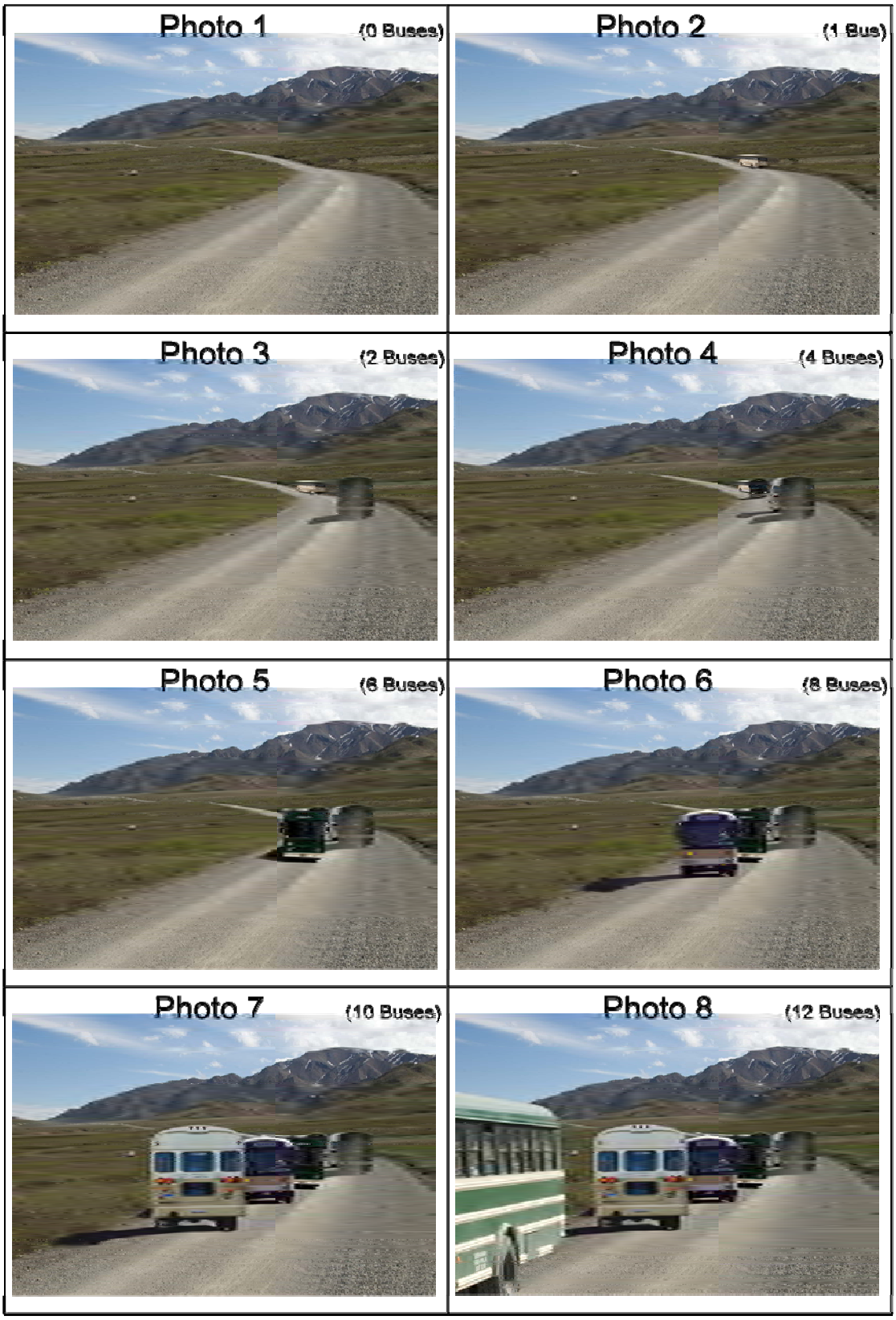


Photo 1
(0 Buses)
Photo 2
(1 Bus)
Photo 3
(2 Buses)
Photo 4
(4 Buses)
Photo 5
(6 Buses)
Photo 6
(8 Buses)
Photo 7
(10 Buses)
Photo 8
(12 Buses)