PLANNING FOR POSITIVE OUTCOMES: TESTING METHODS FOR MEASURING OUTDOOR RECREATION PREFERENCES ON PUBLIC LANDS

By

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Abstract

Outcomes-Focused Management is based on the idea of four levels of demand for recreation: demand for recreation activities, recreation settings, recreation experiences, and lasting benefits of recreation. Public lands can provide the setting, and thus the opportunity for people to engage in meaningful outdoor recreation activities to realize desired experiences and lasting benefits. Implementation of this management framework requires identifying desired outcomes and understanding how management of public lands recreation settings affects visitors' ability to realize them. This thesis addresses the two tasks.

The Fairbanks Community Recreation Study investigated current methods of identifying demands for different types of recreation trips, revealing two key shortcomings. First, demand studies often rely solely on activity participation data and thus fail to account for latent demand and desires for meaningful experiences and benefits. Second, data from demand studies are either too general to be useful in site management, or too specific to one site to account for the range of needs within a community. An online survey was developed to characterize salient and latent demands for outdoor recreation in the context of the greater Fairbanks, Alaska community. A unique survey format allowed respondents to describe their hypothetical "ideal" outdoor recreation trips, the required setting characteristics, and what actual places in the region might realistically provide such a trip. Trip profiles yielded a typology of desired recreation for the region. By connecting these types of trips to real places, local land managers can identify which demands they are uniquely equipped to provide for and how to better cater to latent demands.

To address the task of measuring the effectiveness of outcomes-focused management practices, an exploratory factor analysis was conducted on data from 13 recreation benefits surveys collected at recreation areas in three western states. Factor structures among individual studies converged on two primary domains of Personal Benefits of recreation and Community Benefits from recreation, each containing a number of potential subdimensions. By identifying latent factors of the recreation benefits construct the study brings research closer to developing and validating a survey instrument to measure lasting beneficial recreation outcomes to individuals and their communities.

Key words: Outcomes-focused management, benefits of recreation, community-based management, recreation demand, latent demand, outdoor recreation management, regional recreation planning, exploratory factor analysis, construct validity, scale development.

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Chapter 1: General Introduction

There is growing interest in and acknowledgment of the positive impact that outdoor recreation has on the quality of our lives. People want to spend their leisure time recreating outdoors and are actively investing in outdoor pastimes (Outdoor Foundation, 2018; Outdoor Industry Association, 2017). They choose an activity, a place to go, and hope that by doing so they'll have a good experience and maybe even accrue lasting health and psychological benefits. And indeed, more and more research show that long term benefits can result from leisure-time recreation activities (Lee, et al., 2014; Alberta Parks and Recreation Association, 2016). Public lands can provide the setting, and thus the opportunity for people to engage in meaningful outdoor recreation. The land manager is then tasked to ensure that recreation settings are cared for in a way that facilitates public realization of desired experiences and benefits sustainably throughout time.

While studies of the benefits associated with recreation and evidence of public demand for recreation each do their part to support providing public access to recreation opportunities, they do not provide much in terms of guidance for how best to manage public land resources to make them available. How do managers know what settings to provide, or how much? And once they know what to provide, how should those resources be managed to ensure people realize the benefits they desire? This thesis is concerned with these two questions. Chapter 2 addresses the first question by investigating current methods of understanding and planning for demands for different types of recreation. Chapter 3 addresses the second question via a meta-analysis of 13 studies of desirability of recreation outcomes. The study is meant to bring research closer to developing and validating a survey instrument to measure long-term beneficial recreation outcomes to individuals and their communities. An overall conclusion of both studies and their potential application to contemporary recreation managers is provided in Chapter 4.

1.1 A community level survey of desired recreation trips: Fairbanks, Alaska case study

Literature has suggested that current methods of assessing demand may leave a gap in knowledge between what people want to do, and what people actually do. Furthermore, researchers and planners have for decades called for a more regionally focused planning approach that reflects how the visitor makes decisions about where to recreate in their community: one that is not limited by jurisdictional boundaries or individual sites, but that is confined by the realities of time and travel limitations around their community.

To address these issues, we designed a survey to capture salient demands (those that are most important, noticeable or obvious, whether or not they are acted upon) and latent demands

(those existing, but not yet acted upon due to circumstance) for outdoor recreation in the context of the greater Fairbanks, Alaska community. A uniquely flexible survey was designed and implemented to allow respondents to describe their "ideal" outdoor recreation trips in a number of self-selected scenarios. Respondents described the hypothetical situations by detailing the specific social, physical, and managerial setting characteristics that would be necessary to achieve the perfect trip of that type. Then they connected that hypothetical trip to real places within the greater Fairbanks area and evaluated the ability of those places to realistically provide such a trip. Details about trip characteristics, most important factors, and barriers to success yielded a typology of desired recreation for the region. By connecting these types and their qualities to real places, local land managers can identify which salient demands they are best equipped to provide for and how to better cater to latent demands. This chapter was written in preparation for submission to *Journal of Outdoor Recreation and Tourism.*

1.2 Testing the construct validity of tools measuring recreation outcomes

Chapter 2 asks 'what do people want'; Chapter 3 asks 'how can management ensure people get it?' Since the 1970's researchers have sought to evolve recreation management from the contemporary activity-based approach, which only considers the visitor's choice of activity, to one based on the experiences and beneficial outcomes of recreation (Driver & Brown, 1975; Moore & Driver, 2005). And while the concept of benefits of recreation is not new, an "Outcomes Focused Management" (OFM, originally coined Benefits Based Management) approach to recreation has only recently been institutionalized by a federal land management agency. In 2014 the Bureau of Land Management (BLM) adopted and began utilizing OFM as their recreation management framework (U.S. Bureau of Land Management, 2014).

OFM is built on the idea of four levels of recreation demand: activities, settings, experiences, and benefits (Driver, 2008). In this framework, public lands provide a recreation setting where visitors come to participate in their chosen activity. Their participation is motivated by and culminates in certain positive experiences (e.g., getting exercise, releasing stress, spending time with family and friends, connecting with nature, etc.) that can lead to lasting benefits to the individual (e.g., improved physical fitness, mental health, and job performance), to society and beyond (e.g., reduced childhood obesity, improved local economy).

Successful implementation of OFM requires that managers understand how management of different recreation settings contributes to or detracts from an individual's ability to realize their desired experiences and benefits. This is only verifiable by monitoring whether the targeted experiences and benefits are being realized by recreationists. The BLM's Handbook 8320

establishes procedures for gathering data on attainment of desirable outcomes and for monitoring the effectiveness or attainment of outcomes-focused objectives. Managers are told to design surveys around a list of benefits associated with recreation, the "Experience and Benefit Checklist," (EBC) adopted from Driver and Bruns' (1999) list of potential beneficial outcomes of recreation (U.S. Bureau of Land Management, 2014, Appendix 2).

Unfortunately, "…natural resource social science scholarship has not sufficiently developed a standardized evaluation tool through which resource managers can systematically identify the benefits resource users and local community members desire" (Smith, Anderson, Davenport, & Leahy, 2013). The EBC has not been evaluated for reliability and validity as a measurement tool, it is nevertheless being used by the only federal agency currently actively managing for a broad spectrum of recreation resources benefits. If OFM is to continue trying to measure, monitor and manage for the construct of lasting benefits of recreation, the construct needs to be understood and a standard measurement tool needs to be tested and validated. Psychometric theory gives researchers a method to identify, develop, and validate measurable scales of an abstract construct like lasting personal and societal benefits of outdoor recreation. Part of this method involves identifying latent subdimensions of the construct. Few other researchers have investigated the recreation benefits construct with such methods. While they produced a few similar results, overall findings and study designs revealed important inconsistencies and thus warranted further investigation.

This study explored potential subdimensions of the benefits construct by conducting exploratory factor analysis on data from 13 onsite benefits studies conducted between 1997 and 2017. Studies took place at BLM recreation areas in Alaska, Colorado and New Mexico. We hypothesized that latent factors would emerge from the list of benefits around the categories of benefit recipients, and that, between different datasets, common individual measurement items will load highly on similar distinct factors. Insights from this analysis will help guide future efforts to identify potential measurement items that can be tested as valid measures of established subdimensions within the benefits construct. Operationalizing the lasting benefits of recreation through this process will be essential for creating a measurement instrument that can facilitate the OFM framework. The third chapter was written in preparation for submission to *Journal of Leisure Research.*

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Chapter 2: Identifying Recreation Preferences at a Community Scale: Fairbanks, Alaska Community Recreation Survey Case Study [1]

Abstract

Managing the supply of public lands recreation requires understanding public demand for recreation activities, settings, experiences and lasting benefits. Two primary methods of assessing demand, general population surveys and site-specific surveys, gather data at vastly different scales and rely mostly on participation tallies to describe demand trends. But participation is limited to what opportunities are currently available and may not capture latent demand. The broad scale of data from general population surveys does not assist in making site-level management decisions about what kind of setting to provide and how much. Meanwhile data from site-specific surveys are typically limited to one agency or recreation area and fail to take into account what other recreation opportunities are available nearby. Researchers and planners have for decades called for more coordinated planning at a regional or community level. To address these issues, a unique online survey was developed to characterize salient demands, including latent desires, for outdoor recreation in the context of the greater Fairbanks, Alaska community. The flexible survey format allowed respondents to describe their "ideal" outdoor recreation trips in a number of self-selected scenarios. Respondents described the hypothetical situations by detailing the specific social, physical and managerial setting characteristics that would be necessary to achieve the perfect trip of that type. Then they connected that hypothetical trip to real places within the greater Fairbanks area and evaluated the ability of those places to realistically provide such a trip. Details about trip characteristics, most important factors, and barriers to success yielded a typology of desired recreation for the region. By connecting these types and their qualities to real places, local land managers can identify which demands they are best equipped to provide for and how to better cater to latent demands that typically go unnoticed.

Key words: Community-based management, recreation demand, latent demand, outdoor recreation management, regional recreation planning, landscape planning.

[1] Wright, R. B., Fix, P. J. Identifying recreation preferences at a community scale: Fairbanks, Alaska community recreation survey case study. In preparation for submission to *Journal of Outdoor Recreation and Tourism.*

2.1 Introduction & Literature Review

2.1.1 Introduction

Although components of outdoor recreation planning can be traced to the early part of the 20th century (Marshall, 1933; Meinecke, 1928) the genesis of contemporary research and planning can be attributed to the Outdoor Recreation Resources Review Commission (ORRRC) (Manning, 2011a; Moore & Driver, 2005). In 1958, Congress tasked the ORRRC to (1) determine current demand and project future wants and needs for outdoor recreation in America, (2) inventory the resources currently available, and (3) recommend policies and programs to adequately and efficiently meet these needs. Two important planning legacies emerged from the 1962 report's suggestions (Outdoor Recreation Resources Review Commission, 1962). The first was the practice of surveying the public to study trends in recreation participation. This began as the National Survey on Recreation, has since evolved into the National Survey on Recreation and the Environment (NSRE) (Cordell, et al., 1991), and influenced other general population studies (Manning, 2011a). The second legacy suggested utilizing a recreation setting classification system to maintain a steady and diverse supply of opportunities to meet public demand. This helped pave the way for future planning frameworks such as the widely-applied Recreation Opportunity Spectrum (ROS), originally developed by the US Forest Service (USFS) and since adopted by many agencies (Manning, 2011b).

In their contemporary applications, however, these two strategies fall short of achieving the ORRRC's original three-tiered mission. Current survey and demand assessment methods rely solely on participation levels and may only capture a limited characterization of demand that is not particularly useful to recreation managers (Manning, 2011a). And current recreation setting classification frameworks are not utilized to their full potential because managers struggle to plan and act at a regional or community scale (McCool & Cole, 2001). A gap in research exists for how to identify salient recreation needs, including unfulfilled or latent desires, and to measure them at a community level, between a national and site-specific scales.

2.1.2 Literature Review

Current Demand Assessment Efforts

A number of national policies direct federal agencies to study trending demands for public land resources and to measure how well land managers are providing for them (Cordell & Bergstrom, 1991; Graefe, Absher, & Burns, 2001). Notable nationwide or statewide efforts to measure recreation participation include the NSRE (Cordell & Green, 2002); the National Survey of

Fishing, Hunting and Wildlife Associated Recreation (U.S. Fish and Wildlife Service & U.S. Census Bureau, 2018); Statewide Comprehensive Outdoor Recreation Plans implemented under the Land and Water Conservation Act (U.S. National Park Service, 2016); the USFS National Visitor Use Monitoring program (English, Kocis, Zarnoch, & Arnold, 2002); and the National Park Service Visitor Use Statistics office (U.S. National Park Service, 2017). These programs either survey households about current and future participation in recreation activities, or tally basic onsite visitation statistics and repeat studies in regular frequencies over time. The approach helps identify behavioral trends and indicate broadly popular activities, but its usefulness for site management is limited in a number of respects.

The second major issue, shared by general population studies and site-specific studies, stems from measuring demand solely through participation. Haas et al. (2007, p. 7) characterize recreation demand as "estimated number of people who are projected to participate in a particular recreation opportunity at some predetermined future time and location." But participation is limited by what recreation options are available and does not necessarily represent what recreationists most desire to do. Focusing only on participation fails to account for unexpressed, latent demand. Fredman et al. (2012, p. 3) explain the concept of latent demand as the "…distinction between the actual participation taking place and what people would ideally want (prefer) to do." Whereas effective demand is met with adequate supply, latent demand reflects the portion that remains unsatisfied (Pigram & Jenkins, 2006) and should thus be a prime target of managers attempting to assess and meet demand (Haas, Wells, Lovejoy, & Welch, 2007). When visitors' preferences cannot be expressed in behavior, whether due to some constraint or lack of opportunity, those preferences may not be captured by typical demand studies that ask about current participation. Visits to a recreation area, for example, would typically be interpreted as an expression of demand for that setting. But visitors' choices are constrained by what is currently available, which may be limited. A visitor may yet have unfulfilled desires that cannot be expressed because the resource is not available. Furthermore, displacement theories suggest that onsite studies would not capture the demands of those for whom there is no available, desirable setting, as they would not show up in the study sample. This may be evidenced by the generally high satisfaction rates found in site-specific studies.

Even if assuming one is participating in precisely the trip they desire, recreation participation numbers alone are not a complete measure of demand (Manning, 2011a). The tallied "visit" is only one element of participation in a dynamic recreation experience that includes anticipation of the trip, travel to a site, on-site experiences, return travel, and recollection (Clawson

& Knetsch, 1966; Loomis & Walsh, 1997) and lasting beneficial outcomes (Driver, 2008). Knetsch (1969) argues that planners need to know more about the "nature of the recreation and facility demand" than just how many are participating. And although some general population surveys ask about preferences for activities, sampling participants and non-participants, Manning (2011) warns that focusing solely on preferences for activities fails to account for the meaning of the activities, the motivations behind them, and substitutability of other activities. Relying on activity participation as the primary measure of demand essentially succumbs to pitfalls of activity-based management rather than incorporating advantages of experience-based management.

The participant also has a key role in the production of the recreation opportunity and cannot be characterized simply as a "consumer" as in a traditional economic model of supply and demand (Cordell & Bergstrom, 1991). Instead, the recreation production process follows more of a household production economic model of supply and demand where the recreationist co-produces a recreation opportunity given the availability of a public land recreation setting (Loomis & Walsh, 1997). Planning to supply settings to meet recreation demand based on participation alone, without considering the visitor's inputs into the production process, may lead to a misallocation of resources and risk encouraging an endlessly increasing supply (Chappelle, 1973).

Failure to Plan and Act at a Community Scale

Second is a problem of scope. The very broad scope and general nature of the information from population-level studies may not be particularly applicable to managing specific recreation sites. General population studies cover a range beyond that within which most recreationists likely plan their regular recreation. The very general nature of results from these studies are thus not especially useful to managers trying to meet demands specific to their community or recreation site (Manning, 2011a).

Site specific information is instead gathered via onsite surveys that relate visits in a specific recreation area to chosen activities, available settings and facilities, and desired recreation experiences and outcomes. But narrowing the study scope also comes with limitations. Site-specific studies are typically confined to individual agencies, jurisdictions or recreation areas (Manning, 2011a). This approach may miss understanding how visits to one area are influenced by other opportunities nearby. The economic theory of a rational consumer suggests that a visitor, looking to meet his or her idiosyncratic recreation needs for some particular trip, would consider the full variety of recreation opportunities available in the region, irrespective of jurisdictions. Thus, a person's visit to one site is influenced by their knowledge of what is available nearby. Matching the study or planning scope to the range at which the recreationist regularly makes his or her decisions

would be more relevant to the typical needs of the recreationist (i.e., what someone would do on a regular basis such as a weekday or weekend versus a once-in-a-lifetime trip). But coordinated, cross-jurisdictional studies at the community-level are largely missing from typical demand assessment methods.

For decades, recreation professionals have suggested that planning should occur within a regional or community context in order to conserve a diversity of recreation opportunities (Haas, 2001; McCool & Cole, 2001; Warzecha & Lime, 2001), accommodate changing preferences (Ballman, Knopp, & Merriam, 1981; Brown & Haas, 1980; Hautaluoma & Brown, 1979; Manfredo & Larson, 1993; Shafer, 1969; Wagar, 1966), and acknowledge that management of one area can impact opportunities in other nearby areas (Clark & Stankey, 1979; McCool, 2001; McCool & Cole, 2001; Schreyer, 1977). By planning within a community context, managers can understand and focus on sought-after experiences their area is best equipped to provide (Brown, Driver, & McConnell, 1978). And those experiences can be further optimized by understanding an area's uniqueness relative to other nearby services (McCool & Cole, 2001). So diverse recreation experiences are made available through coordinated planning and market specialization rather than by burdening any single agency with the expectation to offer every type of recreation opportunity, thus risking overlapping, homogenous opportunities.

The USFS ROS provides a framework for comparing preferences across different sites, or even across jurisdictions, and is slated as a tool for preserving recreation diversity (Haas, 2001; Manning, 2011b). Moore & Driver (2005, p. 173) explain the ROS with an example map centered on a city, showing how one's community could be zoned based on the opportunities available in relation to the population center. But in practice, its application is still typically focused on the area of interest to managers and is confined within a single jurisdictional area (Manning, 2011b). Though some studies have attempted larger-scale analyses of regional recreation opportunities, they have still only been able to include areas under the same agency. For example, Bruns (1984) studied recreation on BLM riverways in Colorado and Warzecha et al. (2001) studied hiking in National Park Service-managed areas in the Colorado Plateau region. Depending on regional or community characteristics, this approach may miss important context about how participation might be influenced by other relevant offerings from different service providers nearby. Extending the scale of the ROS framework to encompass the same range at which visitors are making their

recreation decisions (and especially across jurisdictional boundaries) would help mangers identify unique niches that their recreation areas might offer to a given community. [2]

But getting managers to think on a regional or community level may be challenging. McCool and Cole (2001) highlight barriers such as the number and variety of agencies serving a community, lack of awareness of consequences of management choices that affect other managers, institutional environments that do not encourage thinking outside of one's own agency, and inadequate social science research methods to position local management to cater to unique needs within a community.

Examples of federal efforts toward coordinated, cross-jurisdictional planning for public recreation have focused on only one kind of activity or resource (Interagency Wild and Scenic Rivers Coordinating Council, 1999; Landres, et al., 2008; National Recreation Lakes Study Commission, 1999) or taken a very broad scope (Interagency Visitor Use Management Council, 2016). Because of the limited scope, their approach may not be especially useful for planning for and assessing demand for recreation holistically at the regional or community level.

A comprehensive understanding of a community's recreation desires will help many managers focus on the most relevant needs in a community and improve capacity to deliver relevant services. Scott and Mowen (2010) suggest that improved management strategies can target unfulfilled desires and provide for them. But without planning at the appropriate scale, managers cannot develop specific guidelines for how to best meet recreation demand, including latent desires. The recreation management field needs more case studies exemplifying coordinated demand assessments at a community level. Studies should be cross-jurisdictional, encompass the same geographic context within which a community makes their recreation decisions, and take efforts to measure unfulfilled desires and understand barriers to their realization.

2.1.3 Fairbanks, Alaska Case Study

This paper summarizes a 2014 study of desired recreation opportunities in the greater Fairbanks, Alaska community. This study was initiated under the Bureau of Land Management's 2014-2019 Connecting to Communities Recreation Strategy (U.S. Bureau of Land Management, 2014b) and applied elements of this and other national partnership strategies toward community level recreation planning.

[2] This study focused on people who already participate in outdoor recreation. While there is likely a great need and demand for recreation in underserved urban populations, this study did not focus on that particular unmet need.

With this research we aimed to better understand the nature of the community's preferences for outdoor, nature-based recreation, including unfulfilled, latent demand for recreation in the greater Fairbanks, Alaska community. The study took a novel approach by asking what recreationists ideally want to do and in what kind of setting, irrespective of current management conditions or jurisdictional boundaries, rather than simply asking what activities they currently participate in and where. This study also inventoried and categorized the types of constraints that Fairbanks area residents may need to negotiate when trying to recreate locally. This will help local public recreation providers focus their management strategies to target those desires and negotiate the barriers that inhibit participation. The research was intended to identify existing recreation areas best equipped to meet certain needs, areas that need improvement, specific characteristics required for successful trips of various types, and potential areas for further collaboration among agencies. From design to implementation, the project was collaborative among the public recreation providers in and around the greater Fairbanks region.

Fairbanks, Alaska is an ideal location to study and benefit from coordinated, community-based recreation planning. The Fairbanks area hosts an array of geographically unique recreation areas, from urban to wilderness settings, and a diversity of service providers, from municipal to federal. For successful recreation planning on a regional level there must be some effort to distinguish which agencies and what locations are best-suited to cater to certain local recreation preferences, including unfulfilled desires. In addition, an effort needs to be made to inquire about what recreationists really want to do, and not rely solely on participation as a complete expression of demand.

2.2 Methods

2.2.1 Survey Instrument

Collaborative Approach

Planning and design for this study brought together leadership staff from the key public land recreation providers in the area: The Bureau of Land Management Alaska Eastern Interior Field Office, Alaska State Parks Northern Region, the Fairbanks North Star Borough Parks and Recreation Department and Land Management Department, the University of Alaska Fairbanks Department of Recreation and Wellness, and the U.S. Army Garrison Fort Wainwright. Through several meetings and presentations, study goals were collaboratively established.

Survey Development

An online survey was developed based on pilot interviews with focus groups. Focus group participants highlighted three key questions when considering their trip choices: "what to do," "who to do it with," and "for how much time?" Responses provided the desired detail into trip considerations, but conversations often became tangential and were time consuming. An online survey was developed to allow the respondents a similar level of freedom to express salient trip needs, but record them in a more systematic and time efficient manner. The online survey method simplified analysis, allowed a larger potential sample size, and yielded more focused and individualized trip narratives.

The 40-question survey gathered information about "ideal outdoor recreation trips" within interior Alaska (Appendix A: Questionnaire). An "ideal trip" was defined as a hypothetical recreational outing that would successfully meet the needs of its participants, whether or not the opportunity currently exists to do so. A "trip" could be as short as a half hour or as long as many days. An ideal trip description was only limited in that it must take place outdoors (excluding organized field sports) on public lands within interior Alaska and be within the realistic monetary, temporal, and skill-level limits of its participants.

Describing a trip mostly without limits would help describe that demand that might have been unfulfilled otherwise. Respondents constructed an ideal recreation trip by detailing the trip activities, companions, timeframe, setting characteristics, desired onsite experiences, and important lasting outcomes. The survey then asked about local places they would consider for such a trip and how this trip would compare to personal recreation patterns. Participants were encouraged to take the survey more than once to describe multiple types of trips that they desired. Individual trips were treated independently in trip analysis.

Key Trip Planning Characteristics

Respondents began the survey by organizing their ideal trip around three critical variables identified in the pilot interviews and focus groups: primary activity; trip duration; and other participants or companions on the trip (in this section the survey also asked during what season this trip would occur and whether dogs would be present). The survey allowed respondents to select the first variable by which to design the ideal trip. The respondent was then prompted for the next variable to define the trip, and finally the remaining third question. For example, if a respondent first selected "companions," they would choose their companions (e.g. with friends) and then be asked whether they would next like to select "activity" or "time." If "time" was chosen next,

they would choose a trip duration (e.g. two hours). Finally, in this scenario, the last question would allow them to select a primary "activity" (e.g. cross-country skiing). A primary activity was chosen from a fixed list of 23 activities or entered manually if "other." Trip duration could be as short as less than one hour and as long as many days. Trip participants referred to the type of companions (friends, family, organized club or mixed) or if the respondent would go alone, or entered manually if "other." This process created a trip title such as *"A Cross-Country Skiing Trip with Friends for 2 Hours"* that would preface each question as they proceeded through the survey.

Setting Characteristics

Respondents were asked about physical, social, and managerial characteristics of a hypothetical setting that would facilitate a respondent's ideal trip of a certain type (Table 1). After selecting characteristics, the survey asked respondents to describe which characteristics were the most important factors in making a successful trip.

Table 1. Setting Characteristics Studied in Survey

Characteristic Type:	*Specific Examples:*
Physical Setting & Facility Needs	Parking, trails, toilets, boat launches, campsites or sleeping facilities, onsite info.
Social & Managerial Setting	Encounters with others, limits on other allowable uses, and level of staffing or law enforcement.
Setting Proximity	Travel distance to setting, travel distance at setting, setting proximity to road.
Other Activities	Activities engaged in during trip in addition to primary activity.

Experiences and Outcomes

Respondents were presented with lists of onsite-experiences and possible longer-term outcomes associated with their ideal trip. Respondents rated the importance of achieving certain on-site experiences during the trip, and the level of influence certain potential lasting outcomes would have on their trip choices. The experiences and longer-term outcomes were taken from the BLM's Handbook 8320-1 (U.S. Bureau of Land Management, 2014a) and are comparable to the outcomes-focused methods used in previous studies in the region (Fix, Carroll, & Harrington, 2013; Harrington & Fix, 2009). All response options are available in the final study report (Wright & Fix, 2016).

Personal Recreation Patterns and Planning

Respondents noted when during the week and how often would they engage in such a trip. The survey also asked about the respondent's level of experience with an activity and experience in Alaska. The survey asked how the respondent would prefer to gather information about their

desired recreation and why and about the quality and accessibility of information from public agencies.

2.2.2 Sampling

The greater Fairbanks community has active clubs or other organizations for most types of regular outdoor recreation activities. The survey was sent to seventeen community organizations during May and June of 2014. Respondents consisted of residents, aged eighteen or older, of the greater Fairbanks North Star Borough (FNSB) area. It is important preface findings by noting that, because a random sample was not conducted, results are not generalizable across any population. Descriptive statistics and profiles of potential recreation trip types are not representative of the population nor do they indicate the level of demand for particular trip characteristics. Rather, *results and conclusions are meant to highlight the range of needs that may exist in the Interior population.* Sampling methods, survey timing and the solicitation of activity-oriented community organizations may have influenced results, especially related to season and activity.

2.2.3 Analysis

We profiled hypothetical trips in two ways: based on chosen primary activity and based on preferred trip setting. For either independent variable, groups were examined in search of key dependent variables which may distinguish distinct types of trips within a single category of activity or setting. Key dependent variables were identified by examining trip factors commonly cited as most important or that appeared to provide obvious distinctions. Typological analyses such as Manfredo and Larson's (1993) example of a Wildlife Viewing Opportunity Typology in Colorado provided inspiration and guidance on which variables might exhibit distinctions between types.

Analysis of Activity Types:

Individual profiles were created for up to three trip types within each activity (e.g. skiing trips profiled by trip duration include single-day ski trips and multiple-day ski trips). Profiles describe physical, social, and managerial characteristics of the trips, important onsite experiences, and influential lasting outcomes. Also included in the profile were possible places where the ideal trips could occur. Place preferences within a trip type would be used to identify a potential niche or distinct provisions of a certain area, and identify potentially substitutable areas for a type of trip. Based on key setting requirements and characteristics, all trip types could be ultimately be associated with a Recreation Setting Characteristic class.

Analysis of existing Interior settings:

Respondents described actual areas within the Interior such as trails, recreation areas, rivers and other features where they would consider going for this kind of trip, whether or not their ideal could be achieved there, and why or why not. Responses were gathered in an open-ended format. Existing places mentioned by respondents were recoded and categorized into five "Place Groups" based on management authority, level of development of recreation facilities and proximity to the City of Fairbanks. For analysis a single trip could be placed in multiple Place Groups, so long as the place was considered either "ideal" for such a trip or "considered for the trip, but has some limitations," but not "poor" for the trip Place Groups were analyzed as independent variables by which trip characteristics (such as important factors, important onsite experiences and influential outcomes, and constraints to successful trips) were compared in order to connect setting preferences to actual places.

2.3 Results

2.3.1 Overall Results

Two hundred seventy-six "ideal trip" profiles resulted. These profiles collectively described twenty-seven different primary activities (Table 2). Responses indicated that an individual respondent may desire multiple types of trips: 20.5% of study participants responded multiple times (an average of almost 3 times each) to describe unique "ideal trips" based on different key factors such as available time, season, chosen activity, and desires for different experiences. Given the choice to begin with the variable of primary activity, trip duration, or trip companions, 47.5% of trip descriptions began around a primary activity, 41% began by selecting the trip's duration, and 11% began by selecting the trip's participants.

By examining patterns that emerged in the profiles, analysis identified different types of trips that are demanded by FNSB residents, and the settings where they might occur. This information was used to characterize the niche that each different recreation area could serve. Ideal trip durations ranged from under one hour to more than five nights, with 2-3 nights being the most-often selected trip duration (21.4%). Trip participants were mostly characterized as "friends" (26.8%) or "friends and family" (26.8%). Summer was the most often selected season (68%), followed by fall (35%), winter (29%) and spring (25%) and 8.3% of trips would take place year-round.

2.3.2 Typological Analysis

Analysis by Activity

Of the 27 activities listed by respondents, 9 activities with n>=10 were selected for further typological analysis. To form the activity groups, some similar activities were combined. For example, "hiking" and "backpacking" were combined, mountain biking and road cycling were combined into "cycling," "packrafting" and other types of floating or paddling were combined into "non-motorized boating."

Table 2. A Typology of Recreation Trips by Primary Activity

Primary Activity • *Distinguishing Variable*	*Type Categories*	*Characteristics of Possible Sub Types*
Hiking & backpacking • Duration of trip	1. Single-day hiking trips 2. Few-day (1-3 nights) hiking trips 3. Long, multiple day (more than 4 nights) hiking trips	• Campsite type (for multi-day) • Trail development • Level of experience
Non-motorized boating • Duration of trip	1. Single-day paddling trips 2. Few-day (1-3 nights) paddling trips 3. Long, multiple day (more than 4 nights) paddling trips	• Type of equipment • Level of experience
Cross-country skiing • Duration of trip	1. Single-day cross country skiing trips 2. Multi-day cross country skiing trips	• Trail type or level of development
Camping • Resources required	1. Water-dependent camping trips 2. Non-water-dependent camping trips	• Campsite type • Companions
Cycling • Resources required; style	1. Road-oriented cycling trips 2. Trail-oriented cycling trips	• Season (winter biking) • Duration (single and multi-day "bikepacking")
Trail running • Frequency of participation	1. "Regular" runs (more than once per week; n=9) 2. "Occasional runs" (a few times per month or less; n=4)	
Hunting • Distance from road or "remoteness"	1. Hunting near road (within 5 miles) 2. Hunting far from road (further than 5 mile)	• Mode of travel • Companions • Game type • Available time
Off-highway vehicle (OHV) riding • Duration of trip	1. Single-day OHV trips 2. Multi-day OHV trips	• Type of equipment (4x4, 4-wheeler, side-by-side, dirtbike, etc.) • Companions
Dog mushing trips • N/A	N/A	• Duration of trip • Frequency • Campsite type (for multi-day trips) • Proximity • Team experience and condition

Table 2 shows each of the 9 activities along with the main distinguishing trip characteristic used for typological analysis. More detailed profiles for each activity are available in the final study report (Wright & Fix, 2016). Results showed that even within a single activity type, unique types of trips could be distinguished based on other key variables, especially trip duration, specific setting features, frequency of participation, and remoteness. Across different values for these characteristics, respondents described considerably different trips in terms of other setting qualities, important onsite experiences, and influential lasting outcomes.

2.3.3. Analysis by Existing Interior Setting Place Groups

Respondents referred to more than eighty different areas within interior Alaska (Table 3). Results show that respondents would consider existing places more or less suitable for their trip based on key important priorities.

Table 3. Groups of Existing Places Mentioned as Potential Setting for the Trip

Management Agency or Category	**Sample Size**	**No. of specific places mentioned**
Bureau of Land Management (BLM)	n=129	11 specific places
Alaska State Parks (AK PARKS)	n=126	14 specific places
Regional, Undeveloped, Mixed-Management (RUMM)	n=71	30 specific places
Fairbanks, Developed, Mixed-Management (FDMM)	n=68	25 specific places
University of Alaska Campus (UAF)	n=19	2 specific places

These places were referenced in trip descriptions as somewhere respondents would consider going for the trip. Not all places would be equally ideal. Each place was coded as "ideal for trip," "considered for trip but limiting in some way," or "poor for trip."

For every Place Group, "trails" was the setting attribute most frequently identified as highly important to the success of ideal trips to that area (Table 4). Respondents mentioned several important considerations regarding trails such as their overall availability, seasonality, maintenance levels, and allowed uses. Managing for an appropriate use designation was an important consideration of its own. Many non-motorized activity trips pointed to the importance of avoiding use conflicts between motorized and non-motorized uses. Easy, convenient and time-saving accessibility to ideal trip opportunities would be a deciding factor for many trips. Places like the UAF trails and more developed recreation areas near Fairbanks are prime to focus on short-duration skiing, running, hiking and paddling trips due to their proximity to home or work.

Table 4. Most Important Factors for Ideal Trips to 5 Local Place Groups

Most important factor**	Bureau of Land Management	AK State Parks	Regional, undeveloped, mixed-management	Fairbanks, developed, mixed-management	University of Alaska Campus
Trails	*32.56%	34.92%	25.35%	54.41%	57.89%
Other Uses	20.16%	15.08%	25.35%	27.94%	36.84%
Proximity	10.85%	15.08%	14.08%	27.94%	36.84%
Campsite	26.36%	21.43%	15.49%	10.29%	0.00%
Encounters	17.05%	15.87%	21.13%	11.76%	0.00%
Parking	10.85%	13.49%	15.49%	10.29%	10.53%
Other Activities	13.18%	13.49%	18.31%	8.82%	5.26%
Water Access	10.08%	13.49%	15.49%	13.24%	0.00%

*Values represent, among trips that could occur at a site in this Place Group, the percentage that identified this factor as one of the most important for the success of the trip.

**Most important factors which were mentioned by more than 13% of respondents for at least one Place Group are shown in this table.

Longer duration trips, when longer distance routes and choice of campsite types are important and accessibility less important, favored more distal areas associated with State Parks and BLM Place Groups. In particular, longer winter trips that would require overnight camping described the availability of public use cabins with wood stoves as essential to a successful trip. These facilities, found at the State Recreation Area and the BLM recreation areas, would make such trips possible. This unique feature of Fairbanks area winter recreation came up frequently.

Limits of existing places:

While the question about constraints was asked separately from important factors and was completely open-ended, many of the most frequently mentioned constraints also reflected the most important factors (Table 5). Limits of existing trails and trail systems were especially felt by trips within the developed Fairbanks area and were generally due to an insufficient quantity (particularly of summer-suitable trails), proximity to town (rural, undeveloped areas and near-Fairbanks developed areas), lack of connectivity of local trails, and maintenance for or protection from OHV use and damage. Perceived conflicts between motorized and non-motorized users also manifest as the "Other Uses" category. Many respondents felt accessibility was limited by lack of information about recreation opportunities. Ideal trips may generally be more likely realized with easier access to information (usually online) such as maps of trails and facilities, land ownership and location of public easements, and stream and trail conditions, and public use cabin availability.

Table 5. Constraints to Successful Trips to Place Groups

Constraint Type	Bureau of Land Management	AK State Parks	Regional, undeveloped, mixed-management	Fairbanks, developed, mixed-management
Trails	21.88%	27.78%	18.18%	50.00%
Other Uses	18.75%	16.67%	18.18%	17.86%
Info	15.63%	19.44%	18.18%	10.71%
Access			31.82%	14.29%
Crowding		11.11%		14.29%
Proximity		11.11%		10.71%
Quantity	18.75%			
Watercraft Access				14.29%
Parking				10.71%

*Only constraints mentioned by at least 10% of respondents for at least one Place Group are shown in this table.

UAF Campus Place Group had very few constraint responses so is omitted.

Access for floating trips in areas not developed specifically for recreation may be limited by a lack of boat launches or public access to river shoreline for put-ins and take-outs. Accessibility could be a barrier to some trips. This could manifest more specifically as proximity issue,

particularly a lack of good trails near town, or as lack of accessibility to the trails that do exist near town due to insufficient parking or wayfinding for local trailheads.

2.3.4. Possible Recreation Setting Class for Trip Types and Place Groups

Table 6 matches each unique trip type with the recreation setting classes (RSC) that might provide the opportunity to realize that kind of ideal trip. The RSCs are inspired by those described in the US Forest Service Recreation Opportunity Spectrum guide book (Clark & Stankey, 1979).

The RSC table shows that Semi-Primitive and Primitive setting characteristics would cater to multi-day types of trips while areas closer to the Urban end of the spectrum were better suited for day trips. Trips that would occur more regularly or during the week where factors like close proximity (i.e. minimal travel time), accessibility, and overall convenience were especially important and more often aligned with Urban, Rural and Roaded-Natural area setting characteristics.

Certain types of trips that occur within a single day, such as hikes, floats and cross-country ski trips, could occur at a wide range of setting types. The degree to which accessibility was important, whether the trip would last for many hours or just a short time, and whether it would occur on a weekday or the weekend may determine how urban or primitive the trip should be. This is indicative of even more variety of needs within individual trip types, as seen in the third column of Table 2. The greatest variety or number of trip types could occur in a Roaded-Natural or Semi-Primitive type setting.

Place Groups are matched with specific types of trips and their associated characteristics or defining factors and setting class in Table 6. Similar to the activity types, the greatest variety of trip types appear to provide opportunities in the Roaded-Natural and Semi-Primitive setting classes.

2.4 Discussion & Conclusions

2.4.1 Survey Method Advantages

The survey method was able to gather unique insights about recreation desires that are not captured by typical onsite or census style surveys. The “ideal trip” scenario and open-ended questions allowed respondents the creative freedom to describe nuances and details of trip types that may not have been accounted for otherwise. Armed with documented characteristics of desirable types of recreation trips (Table 2), what factors would be most important to facilitating them (Table 4), and where they might occur (Table 3), local recreation managers can better target opportunities for the kinds of trips desired within the community.

Table 6. Suggested Recreation Setting Classes for Trip Types and Associated Place Groups

ROS Class	**Urban**	**Rural**	**Roaded Natural**	**Semi Primitive Motorized**	**Semi Primitive Non-Motorized**	**Primitive Motorized**	**Primitive Non-Motorized**
Types of ideal trips described	• XC Ski (single day) • Cycling (Road) • Trail Run (Regular) • Paddling (Day)	• Hike (Day) • XC Ski (single day) • Cycling (Road) • Cycling (Mountain) • Trail Run (Regular) • Trail Run (Occasional) • Paddling (Day)	• Hike (Day) • XC Ski (single day) • Camping • Cycling (Road) • Cycling (Mountain) • Trail Run (Regular) • Trail Run (Occasional) • Hunting (Near road) • Paddling (Day) • Dog Mushing	• Hike (Day) • XC Ski (single day) • XC Ski (Multi-day) • Camping • Cycling (Mountain) • Trail Run (Regular) • Trail Run (Occasional) • Hunting (Near road) • Paddling (Day) • OHV Riding • Dog Mushing	• Hike (Day) • Hike (1-3-night) • Camping • Cycling (Mountain) • Trail Run (Regular) • Trail Run (Occasional) • Hunting (Near road) • Paddling (Day) • Paddling (1-3 night) • Paddling (4+ night)	• XC Ski (Multi-day) • Hunting (Remote) • OHV Riding • Dog Mushing	• Hike (1-3 night) • Hike (4+ night) • Paddling (1-3 night) • Paddling (4+ night)
Defining trip factors	• Accessibility & convenience • Highly developed trails and other facilities, often specific to an activity • Proximity to home • Day trips, some less than few hours • Frequent participation • Exercise and health oriented • Accepting of encounters with others	• Accessibility & convenience • Proximity to home • Close to road • Trails and facilities designed/managed for specific activity • Connectivity important for some • Distance traveled onsite range from short to long • Exercise and health oriented	• Accessibility • Mixed level of development needs • Mostly day trips, but some multi-day • Some developed camping • Connectivity important for some • Distance traveled range from short to long	• Camping/overnight opportunities; varied camping styles • Diverse opportunity; engage in other activities • Few encounters with others • Range of trip durations (single day, few days, many day) • Mixed preferences for motorized/non-motorized. Non-motorized trails and rivers very important for some. • Mixed level of development needs • Generally willing to travel to setting, but some desire closer • Traveling medium to long distances (15 or more miles)		• Remoteness • Far from road • Very few encounters with others • Mostly very long trips (4 or more nights) • Cabin facility or undeveloped dispersed camping important • Mixed preference for motorized/non-motorized. Non-motorized trails and rivers very important for some. • Likely willing to travel to setting • Traveling very long distances (>30 miles)	
Place groups that might provide trip opportunity	• UAF Trails • Fairbanks DMM	• UAF Trails • Fairbanks DMM	• Fairbanks DMM • Rural Mixed MGMT • Alaska State Parks • Bureau of Land Management	• Rural Mixed MGMT • Alaska State Parks • Bureau of Land Management		• Rural Mixed MGMT • Alaska State Parks • Bureau of Land Management	

Data that are Relevant at a Community Level

The community-level scale of the study yielded results that are more relevant to the community of recreationists as well as various local public recreation area managers. The scope was small enough that it could be tailored to the greater Fairbanks community and the recreation settings most meaningful to them, yet wide enough in that it encompassed the range of options regularly considered by that population. Information was specific enough about actual sites to connect desires back to settings and be useful to recreation managers in the area. Yet it provided additional context by incorporating multiple jurisdictions in the study; results can help identify which local recreation providers are more or less equipped to provide certain types of trips. For example, the most defining trip characteristics (duration, companions, experience level, proximity to home, frequency of participation, distance traveled on site, and remoteness) were used to match Place Groups (and associated managing agencies) and trip types with recreation setting classes as seen in Table 6. And while the recreation setting classes are inspired by those described in the US Forest Service Recreation Opportunity Spectrum guide book (Clark & Stankey, 1979), standards for different classes can be catered to the study area (this is suggested by the guide). This study found that trip types in the greater Fairbanks community may be skewed more toward the "primitive" end of the spectrum compared to typical RSC standards. Surveying to find the range of trip types desired in the Fairbanks community highlighted the nuance between trip types, the risks of lumping distinct trips into the same categories, and how the scale in one community might be shifted due to its unique characteristics. Applying trip types to a ROS-style framework helped organize comparisons and respondent feedback into Table 7, showing suggested improvements, potential challenges, and other considerations for managing different classes of settings.

Identify Service Niches and Focus Management Roles

A key takeaway for local land managers is to understand their potential market and specialize. The Fairbanks community indicated desires for a diverse range of recreation opportunities across the spectrum, and showed clear distinctions among agencies that are best suited to provide the necessary settings. Managers of these areas should be weary of the temptation to 'be all things to all people.' As forecasted by other researchers (Haas, 2001; McCool & Cole, 2001), data from this community study supports the provision of settings all along the spectrum. Managers may feel pressured by participation-oriented performance metrics to cater more and more tastes for highly developed facilities that yield the most numerous visits. But details from this study suggest this can threaten the availability of equally important opportunities that may necessarily require fewer visitors per acre, especially toward the primitive end of the spectrum

Table 7. Suggestions and Considerations for Fairbanks Community Recreation Setting Classes

ROS Class	**Urban**	**Rural**	**Roaded Natural**	**Semi Primitive Motorized**	**Semi Primitive Non-Motorized**	**Primitive Motorized**	**Primitive Non-Motorized**
Suggested improvements:	• Increase opportunities and trails near town. • Make trails more activity specific. • Improve searchable and onsite information on trails locations, rights of way and property ownership. • Improve connectivity of existing trails to allow longer and more varied trips. • Maintain and increase access to rivers via parking and trails.			• Increase trail quantity, particularly more semi-primitive trail opportunities near town. • Improve trail quality for summer uses. • Improve trails for OHV use; provide more non-motorized-only for hiking. • Improve accessibility and currency of information about trail and stream conditions. • Improve searchable and onsite information on trails locations, right of ways and property ownership, particularly for less developed areas. • Maintain and increase access to rivers via parking and trails. • Improve connectivity of existing trails to allow longer and more varied trips.		• Improve trail quality for summer uses. • Improve accessibility and currency of information about trail and stream conditions. • Improve searchable and onsite information on trails locations, rights of way and property ownership, particularly for less developed areas.	
Considerations and challenges	• Improving connectivity may require extensive cooperation with multiple land owners. Encroachments of trail users on private property and vice-versa must be considered. • Addressing information and access needs for some while maintaining the needs of existing users who require low development and traffic.			• Greatest diversity of trip types may seek semi-primitive setting. Demand for specific setting needs should be assessed and potential incompatibilities between trip types should be planned for. Identify best locations for specific trip types. • Some trips may require semi-primitive setting and short time duration, but distance from home of existing settings and lack of nearby settings may displace. • Meeting information and access needs for some while maintaining the needs of existing users who require low development and traffic.		• Currently, same places may be managed as semi-primitive. Crowding, highly developed facilities, human impact and/or motorized traffic may displace trips looking for a more primitive experience. • Meeting information and access needs for some while maintaining the needs of existing users who require low development and traffic.	
Overall summary and suggestions	• When questioning whether to develop trails or increase access, must look at setting demands for all trip types across sub-regions. This will better direct allocation; where and who can best supply the opportunity. • For example, variety is important for day and few-day trips. These trips may be looking for front-country opportunities all over, close to home and farther away. Before managers of more distal lands develop more front-country opportunities, and risk displacing primitive opportunities, consider potential unmet demand for more proximal, front country settings. Can more and better-connected trails nearby population centers have a greater impact on meeting demand for more varied opportunities? Is there setting potential for proximal semi-primitive opportunities? What impact would further development and traffic have on existing proximal primitive/semi-primitive trips? Cooperation will continue to be key for assessment and future allocation decisions.						

(Manfredo & Larson, 1993; McCool, 2001). Equipped with a better understanding of what opportunities may be offered nearby, managers can use results like these to justify their market specialization.

Highlight Key Recreation Needs in the Community

The survey method identified salient issues throughout the local recreation community. The most notable takeaway in terms of setting management was that locals want more trails in closer proximity to where they live and work (especially for summer use); for those trails to be managed to avoid conflicts between user groups; and for the trails to be made more accessible through improved trail quality, trailhead development, facilitated parking, and better access to maps and information about local recreation opportunities. But by gathering this information within a broader context, such needs can be interpreted by managers relative to their management niche. For example, trail needs were largely centered around having more proximal and convenient access to good trails. Developing more and more trails at the more distal areas managed by State Parks and BLM will not likely remedy this trail access problem. Furthermore, those agencies may be amiss to allocate substantially more resources to developing new trails if the trail needs are already being met in those locations.

Identify Latent Recreation Demands

The hypothetical survey format also allowed respondents to express their latent trip desires that may not have surfaced if measuring current participation on site. New insight about constraints to ideal trips at various existing settings (Table 5) informs managers what to change about the physical, social, and managerial setting to help visitors realize these latent desires. In some cases, the answer might be to better coordinate with other local recreation providers to send visitors to an area that is better suited to facilitate the trip they want.

Highlight Diversity in Demand for Recreation

The survey found that while choice of primary activity is an important and defining trip characteristic, there was considerable variation in styles and types of trips within each activity category (e.g. there are many types and styles of paddling trips) based on other trip characteristics as shown in Table 2. And although the typological analysis was ultimately built around activities, more than half of the trips described were built around the trip's duration or their chosen companions as the primary defining trip characteristic, with activity being a secondary or tertiary consideration. Preliminary focus group interviews suggested that available time would be a defining factor for trip planning, and accordingly 41% of respondents chose to begin their ideal trip

description by selecting its intended duration. The diversity of trip types described in this study and the expressed importance of factors like trip duration bolsters the argument that recreation planners should go beyond identifying the kinds of activities desired and also identify the different styles with which visitors might want to engage in that activity. For example, looking just at the activity, it is evident that most of the cross-country skiing trips described would require winter trails. But when time was considered, a skiing trip during a short period of time is more likely to specifically require well-maintained and groomed ski trails. A longer, multiday ski trip may care less about the trail maintenance, but would consider the availability of public use cabins to be essential.

2.4.2 Study Limitations

This study was not positioned to estimate what the level of demand may be for different types of trips, but rather to glean a better understanding of the types of trips that are in demand. Sampling may have influenced results, so generalized interpretations should be made cautiously. For example, the survey asked about nature-based outdoor recreation. Insights into needs of indoor recreation, recreation programs, youth sports, and more urban cultural or historical facilities were not identified in this study. Also, the survey sampled heavily from local recreation clubs. Many of the clubs' recreation activities are trail-oriented, so it is no surprise that trail-related issues were mentioned more often than other issues.

When asking about an "ideal," respondents are likely to describe a much higher quality than when asked about an acceptable range (Manning, 2011a). Preferred values from "ideal trip" scenarios such as numbers of encounters with others should not be interpreted as suggested standards for management. Instead, differences between ideal levels can be used to understand the relative importance of certain characteristics to different types of trips.

2.4.3 Conclusions and Suggestions for Future Research

Results from this study highlight potential shortcomings of activity-based management and advocate for adoption of experience-based or outcomes-focused approaches to management. The nature and variety of trip characteristics, and not just primary activity, should be considered in planning for providing recreation opportunities. Parry et al. (2014) describe goals to "develop a tool in which an individual's recreation style… can be determined with the administration of a 20-25 item survey" (p. 241). Results here showed that an individual's style or preferred type of trip was subject to change based on a number of factors and considerations, but particularly with whom they will go and how much time will be available. This study's results would suggest caution when

assigning a single style to individuals. On the other hand, once a survey of probable styles of trips is collected for an area, as was done here, a more efficient and repeatable instrument could be developed that can be used onsite or in future planning efforts that more efficiently identifies the types of trips people want or are participating in. Our survey required 10-20 minutes from the respondent, and the open-ended responses and breadth of information collected were time consuming for the researcher. But the information gleaned about most important factors for different trip types and constraints could be used to simplify survey design for future analyses. Communities looking for baseline information may want to begin with a more flexible, open-ended model like this case study. Once key types of trips, their important factors and critical issues faced by them are identified for that community, that information can steer local recreation planners toward the most important issues, as well as develop more streamlined and targeted questionnaires.

Again, this study was not positioned to estimate what the level of demand may be for different types of trips, but rather to glean a better understanding of the types of trips that are in demand. From here, the next step in understanding the community's needs would be to survey the population to see how desirable these trip types are to help managers further prioritize their resources to the most in-demand trip types. Future research could apply an "importance-performance" framework to further evaluate the important factors found from this study (Hendricks, Schneider, & Budruk, 2004). Manning (2011a, p. 151) says measuring norms should focus on the aspect most important and relevant to visitors. Knowing which trip characteristics were most important to certain trip types can help understand associated norms and better develop effective indicators and standards for management.

This study's approach would be most relevant for communities where not much is already known about local demand for recreation and visitor needs (Haas, Wells, Lovejoy, & Welch, 2007). Several recreation providers in the Fairbanks area lack updated recreation planning documents and survey research budgets. When funds do become available for research, information from a study like this can help maximize impacts of future efforts. One important step will be to specifically define one's "community," getting the appropriate scope for such a study.

This case study would be incomplete without highlighting the real challenge faced by agencies to plan in a more community-based context (McCool & Cole, 2001). Partnering with other agencies and expending agency resources beyond borders may still be difficult and unlikely. This project was spearheaded by the BLM Alaska Eastern Interior Field Office. Justification for the collaborative nature was made under the 2014 Connecting with Communities national recreation

strategy. Survey work was paid for by an America's Great Outdoors grant. The willingness of other recreation managers to regularly meet and compare needs and issues was paramount to success. Results aside, that the survey development process regularly brought the "who's-who" of recreation managers together to share and strategize was a positive outcome of its own.

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Chapter 3: Searching for Subdimensions of the Recreation Benefits Construct: Comparing Factor Structures in 13 Benefits Studies[3]

Abstract

While the concept of beneficial outcomes of recreation is not new, an outcomes-focused management approach has only recently been institutionalized by a federal land management agency. In 2014 the Bureau of Land Management adopted and began utilizing Outcomes-Focused Management framework for recreation services. Successful implementation of the framework requires understanding how management at recreation settings contributes to or detracts from visitors' ability to realize their desired experiences and benefits. In the Bureau of Land Management's procedures for identifying desirable outcomes and monitoring the effectiveness outcomes-focused objectives, managers are directed to draw from a list of potential recreation benefits to design surveys to measure desirability and attainment of recreation benefits. Surveys utilizing that list have not been evaluated; the use of that list as a psychometric scale has not been adequately evaluated for reliability and validity.

Psychometric theory provides a method to identify, develop, and validate measurement scales of abstract constructs that require identifying potential latent subdimensions. Few researchers have investigated the benefits measures with such methods. This study explored potential subdimensions of the benefits construct by conducting exploratory factor analysis on data from 13 onsite benefits studies from different Bureau of Land Management recreation areas in three western states. Factor structures of benefit items from each study converged on two primary domains. Analysis revealed four subdimensions within the first domain, Personal Benefits: Endogenous Personal Benefits, Exogenous Personal Benefits, Personal Health Benefits, and Interpersonal Relationship Benefits. Within the second domain, Community Benefits, analysis revealed three subdimensions: Community Social Cohesion and Identity, Community Resource Protection, and Community Economic Benefits. Results indicate a likely scale structure to be tested in future research, highlight the need to address inconsistent approaches to studying benefits, and provide direction for continued effort to validate an instrument to measure the recreation benefits construct.

Key words: Outcomes-focused management, benefits of recreation, exploratory factor analysis, construct validity, scale development, meta-analysis.

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3.1 Introduction

3.1.1 Managing for Beneficial Outcomes of Recreation

Perhaps Alan Wagar (1966) put it best, or at least most simply, when he said "the sole purpose of all land management is to provide benefits for people." Indeed, today's policies guiding the management and conservation of public land resources are aimed at producing benefits for the American people (U.S. Department of the Interior, 2018; U.S. Forest Service, 2015). But management requires measurement. Resource managers must rely on scientific information about desired benefits, what resources produce those benefits, and the effectiveness of management protocols in making those resources available to realize important benefits. More tangible resources such as timber, fisheries, rangelands, and clean water and air have relatively quantifiable and widely accepted measures of benefits (Millennium Ecosystem Assessment, 2005). But natural resources managed for recreation are primarily concerned with providing positive social and psychological experiences for visitors (Driver, 2008) and such abstract constructs are more difficult to observe and quantify (Vaske, 2008).

This challenge has occupied recreation professionals and researchers for decades. In the 1970's researchers grew interested in evolving the contemporary activity-based approach to recreation management to one based on the experiences and beneficial outcomes of recreation (Moore & Driver, 2005). And while the concept of benefits of recreation is not new, an "Outcomes Focused Management" (OFM, originally coined Benefits Based Management) approach to recreation has only recently been institutionalized by a federal land management agency. In 2014 the Bureau of Land Management (BLM) adopted and began utilizing OFM as their recreation management framework (U.S. Bureau of Land Management, 2014).

OFM is built on the idea of four levels of recreation demand: demand for activities, settings, experiences, and benefits (Driver, 2008). In this framework, public lands provide a recreation setting where visitors come to participate in their chosen activity. Their participation is motivated by and culminates in certain positive experiences (e.g. getting exercise, releasing stress, spending time with family and friends, connecting with nature, etc.) that can lead to lasting benefits to the individual (e.g. improved physical fitness, mental health, and job performance), to society and beyond (e.g. reduced childhood obesity, improved local economy).

Successful implementation of OFM first requires information on the public's preferences at each level of demand. Then managers must understand how different levels of demand are interrelated: how do management decisions and different recreation settings contribute to or detract from an individual's ability to realize their desired experiences and benefits? With that

information, managers can better target desired activities, settings, experiences, and benefits, and evaluate the effectiveness of their actions. Lastly, implementing OFM requires monitoring whether the targeted experiences and benefits are being realized by recreationists. Unfortunately, "…natural resource social science scholarship has not sufficiently developed a standardized evaluation tool through which resource managers can systematically identify the benefits resource users and local community members desire" (Smith, Anderson, Davenport, & Leahy, 2013).

The BLM's Handbook 8320 'Planning for Recreation and Visitor Services' (H-8320) recommends gathering data on benefits to develop objectives and monitor the effectiveness of management practices in meeting them (U.S. Bureau of Land Management, 2014). Protocols suggest gathering data on *desirability* of benefits to identify management prescriptions and gathering data on *attainment* of benefits for monitoring management effectiveness. For either process the procedure specifically suggests using items from the "Experience and Benefit Checklist," adopted from Driver and Bruns' (1999) list of benefits associated with recreation. Surveys would directly ask self-assessment questions about whether recreation contributes to a benefit from that list.

There remains doubt about whether or not respondents have sufficient information or expertise to answer questions about these conditions, especially for questions meant to assess beneficial outcomes to society, the environment, and the local economy (More & Kuentzel, 1999). For example, questions asked have included perceptions of a community's attainment of economic benefits, increased protection of wildlife habitat, and overall health of a community. If OFM is to continue trying to measure, monitor and manage for the construct of lasting benefits of recreation, the construct needs to be defined and the validity of the tools used to measure it needs to be tested.

3.2 Literature Review

3.2.1 Developing a Valid Benefits Measurement Instrument

Psychometric theory provides a framework to develop scales meant to measure abstract constructs by examining the validity of items meant to describe them. According to Nunnally and Bernstein (1994) and Bollen (1989), psychometric scales intended to measure an unobserved construct should be developed through a four-step process of (1) defining the meaning of the construct, (2) identifying the potential latent subdimensions that make up the construct, (3) establishing items to measure each dimension, and (4) developing and evaluating a model to relate measurement items to latent variables that define the construct.

To satisfy the first step, Driver (2008) defines a beneficial outcome of recreation as an improvement of an existing condition, prevention of an unwanted condition, or the maintenance or

attainment of a desired condition, and realization of satisfying experiences. At the experience level of recreation demand, this process was used to transform a list of experiences into a measurement instrument called the Recreation Experience Preference (REP) scales (Manfredo, Driver, & Tarrant, 1996). The REP scales have since been used extensively to study interrelationships between activities, settings and experiences (Backlund & Stewart, 2012; Fix, Carroll, & Harrington, 2013; Manfredo & Larson, 1993; Stein & Lee, 1995; Taylor, Fix, & Richotte, 2007). But the structural relationship between recreational settings, activities, and lasting off-site benefits has received little attention (Parry & Gollob, 2018; Parry, Gollob, & Frans, 2014; Pierskalla, Lee, Stein, Anderson, & Nickerson, 2004; Stein, Anderson, & Thompson, 1999; von Lindern, 2015; Walker, Hull, & Roggenbuck, 1998). This is perhaps owed to the lack of a standardized benefits measurement instrument on par with that of the REP scales.

A handful of researchers have attempted to develop a measurement tool by identifying subdimensions of the benefits construct. Driver (2008) and others (Alberta Parks and Recreation Association, 2016; Haas, Driver, & Brown, 1980) categorized the exhaustive list of benefits based on their recipients: 1) Personal/Individual Benefits, 2) Social/Community Benefits, 3) Economic Benefits, and 4) Ecological Benefits. Adding to this definition, Driver (1994) proposed these types of benefits are related to one another hierarchically in the so-called "benefits chain of causality." Similar to the 4 levels of recreation demand, this model focuses on a hierarchy within just the benefits of recreation: benefits occur first to the individual before extending beyond to influence their community, environment and economy. But like the relationships between activities, settings, experiences and benefits, the structural relationship between these hierarchical categories of benefits have not been thoroughly investigated and validated.

3.2.2 Validating Outcomes-Focused Management

The "…all-inclusive conceptualization of the benefit construct" has brought criticism to the OFM, for it appears "…as the benefits approach infinity, the concept loses meaning, rendering it of very limited use for both management and research" (More & Kuentzel, 1999, pp. 2-3). And according to Bollen (1989), a good and operational definition of a construct "…provides the meaning of the concept, links a term to a specific concept, identifies its dimensions and the number of latent variables, and sets a standard by which to select measures" (Bollen, 1989). Validating the recreation benefits construct as one that can be measured will require identifying subdimensions (types of benefits) and specific items (key benefits representative of a certain types) that indicate that a benefit of recreation is realized.

In attempts to develop and validate different lists of recreation benefits, some researchers have tried to identify latent subdimensions of the benefits construct through factor analysis and principal components analysis. But their application to recreation benefits have yielded inconsistent results. Walker, Hull and Roggenbuck's (1998) factor analysis of recreation benefits yielded 4 latent off-site benefit factors: 1) Higher Meaning, 2) Activity-Focused, 3) Greater Knowledge, 4) Social Interaction. No community dimension was found, yet Smith et al. (2013) singled out a community benefit dimension for their analysis. Using exploratory and confirmatory factor analysis they developed a set of five community benefit dimensions, empirically tested for measurement reliability and validity: 1) Ecological, 2) Economic, 3) Quality of Life, 4) Physical and Aesthetic, and 5) Social Solidarity. Parry, Gollob, and Frans (2014) attempted to reduce an even greater list of benefits. Principal component analysis performed on 77 benefit items revealed 7 core outdoor recreation benefit dimensions: 1) Community Cohesion, 2) Economic Benefits, 3) Relationship with Nature, 4) Physical Enhancement, 5) Interpersonal Relations, 6) Mental Serenity, 7) Independence.

A comparison of subdimension identified by Smith's, Parry's and Walker's studies and the categories suggested by Driver and the Experience Benefits Checklist reveals some similarities, but not complete convergence. Common themes include community benefits (i.e. societal benefits received by the greater community, not just the recreationist), environmental benefits (i.e. benefits to natural systems or directly related to them), and economic benefits (i.e. societal benefits of a specifically economic nature). But there is considerable variety in the more individual or personal benefits (i.e. benefits received solely by the individual recreationist). Studies also used different lists and numbers of benefits. And while Smith et al.'s 2013 study focuses exclusively on benefits received by the community, Parry et al.'s 2014 study does not specify a benefit recipient. These inconsistencies and the low number of studies of this type warrant further investigation into the underlying structure of benefits lists such as the Experience Benefits Checklist.

This study refines the definition of the benefits construct by conducting exploratory factor analysis on a comprehensive list of recreation benefits adapted from the Experience Benefits Checklist. According to Gorsuch (2015, p. 4), the purposes of factor analysis, and our study, are to: 1) Minimize the number of variables for further research while maximizing the amount of information; a set of variables is reduced to those that account for the most reliable variance among the originals; 2) Explore large sets of data for possible distinctions and establish hypotheses and possible new constructs to be validated by further research; 3) Test hypothesized latent domains in the data and test if a variable is more closely related to one domain or the other. The study

compared responses from 13 studies that measured benefits desired by visitors to BLM-managed recreation areas in Alaska, Colorado and New Mexico.

The study hypothesized that latent factors would emerge from the list of benefits around the categories of benefit recipients, and that, between different datasets, common individual measurement items will load highly on similar distinct factors. This is an essential early step in the process of testing construct validity in order to develop a measurement instrument. Operationalizing the construct through this process is essential for creating a measurement instrument, and thus facilitating the OFM framework.

3.3 Methods

3.3.1 Data Sources

Study Locations

The 13 different studies were conducted at BLM managed areas in Alaska, Colorado and New Mexico. Eight studies of six Alaska locations (two locations were surveyed twice) were conducted by the University of Alaska Fairbanks between 2006 and 2013 (Harrington & Fix, 2009). The five Colorado studies were done between 1997 and 2007 (Virden, 2002; Virden, Budruk, & Ackerman, 2007a; Virden, Budruk, & Ackerman, 2007b; Virden, Budruk, & Ackerman, 2008; Virden, Knopf, & Larkin, 1998) by researchers at Arizona State University. Lastly, a study of visitor preferences at Organ Mountains-Desert Peaks in New Mexico was conducted in partnership by New Mexico State University and University of Alaska Fairbanks (Fix, Brown, Virden, & Casey, 2018). Data were collected using onsite questionnaires or from mail-back questionnaires that were provided to onsite visitors.

Recreation Benefits Questions

All the studies were similar in that they contained questions asking about desirability or attainment of experiences and lasting benefits in an attempt to connect perceived beneficial outcomes to each setting studied. They asked about personal benefits and about benefits to others, beyond the trip participants. There were several differences that limited the ability to combine datasets. The list of benefit items, numbers of benefit included, and question phrasings were different in a number of studies. Studies also varied in the way they characterized non-participant recipients of benefits. This could include the local community, the environment, or the local economy. Some studies also included benefits to one's household, which were considered different than personal benefits and benefits to others. The benefits were measured on slightly different scales depending on the study. Response scales might include "importance" of attainment,

"desirability" of achieving the benefit, "importance" of managing the area for certain benefits, "attainment" of benefits, or "contribution to obtainment." Likert scaling also varied with some studies using 5-point scales and some using 7-point scales.

3.3.2. Preparing for Factor Analysis

Minimizing List of Benefit Items

From all 13 studies a list of 95 unique benefit items was compiled. Primary reduction of variables took place under certain criteria in order to obtain the final list of variables for factor analysis. Two items from different studies were grouped together if they contained only slightly different wording (e.g. "childhood development" and "development for our children") or had synonymous verbs (e.g. "community engagement" and "community involvement"). Items were considered separate if the recipient is different (e.g. personal benefits of one type are separate from community benefits of the same type). Items were omitted if they were used in fewer than two surveys (in order to afford comparison between studies and geographic areas) or if they attempted to measure more than one non-synonymous construct[4]. Individual items that attempted to measure multiple synonymous constructs were retained (e.g. "heightened sense of community pride & satisfaction"). Lastly, an item had to have an overall total (from all studies combined) n of >300 (Comrey & Lee, 1992). Once poor or redundant candidates were removed based on the criteria above, a final list of 62 unique benefit items were retained for factor analysis.

Combining Datasets for Factor Analysis

Combining data would increase the *n* for each item, and perhaps more importantly, increase the ratio of *n* to the number of variables in order to reduce bias in factor analysis (Tabachnick & Fidell, 2007). Due to items not being consistently included in all studies, data could not be combined into a single dataset as numerous missing values would cause bias (Gorsuch, 2015). Where possible, data from individual studies were combined into larger groups based on whether or not they shared use of the same sets of items.

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[4]In one instance, a double-barrel item was included in the analysis: "Improved outdoor knowledge and self-confidence." This was because the two non-synonymous constructs ("outdoor knowledge" and "self-confidence") were measured separately in other studies. This was done to test whether these emerged into separate factors and verify whether "improved outdoor knowledge and self-confidence" was indeed a double-barrel.

Tabachnick and Fidell (2007) cautioned against grouping data from different samples for factor analysis and especially samples from the same area taken at different times. However, we determined that the risk of bias from having too small of sample size was greater, so we proceeded with two combinations: a group of six studies from unique Alaska locations along major highways, and a group of studies from three locations in western Colorado. To avoid as much bias as possible, the White Mountains Winter study and the Dalton Highway 2013 study were analyzed individually, since prior studies at those locations were included in a combination of Alaska studies. The 13 surveys yielded 9 analysis groups shown in Table 8 (the Kremmling, Colorado Field Office survey data were analyzed in Group 8 with other southwest Colorado studies and individually at Group 9 to compare results).

Table 8. Benefits Studies used in Analysis

Study site	***State***	***Year***	***Analysis Group***	***Benefit Recipients Studied***	***Response Scale***
White Mountains National Recreation Area – Winter recreation	AK	2008	1	"Individuals" & "Community"	"Importance"
White Mountains National Recreation Area / Steese National Conservation Area	AK	2006	2	"Personal" & "Community"	Individuals: "Desirability;" Community: "Importance"
Dalton Highway	AK	2007	2	"Individuals" & "Community"	Individuals: "Desirability;" Community: "Importance"
Denali Highway	AK	2007	2	"Individuals" & "Community"	"Importance"
Steese Highway Corridor	AK	2011	2	"Individuals" & "Community"	"Contribution to Obtainment"
Squirrel River	AK	2008	5	"You and/or Communities"	"Importance"
Dalton Highway	AK	2013	6	"You," "Your Household," "Local Environment and Communities"	You and Your Household: "Contribution to attainment;" Environment and Community: "Extent to which benefits result"
Alpine Loop	CO	1998	4	"Personal" & "Community"	Personal: "Desirability" & "Attainment;" Community: "Importance"
Gunnison Gorge	CO	2002	3	"Personal" & "Others"	Personal: "Desirability" & "Attainment;" Others: "Importance"
Gateway Canyons	CO	2007	8	"Personal" & "Community"	"Desirability" & "Attainment;"
Glenwood Springs	CO	2007	8	"Personal" & "Community"	"Desirability" & "Attainment;"
Kremmling Field Office	CO	2008	8, 9	"Personal" & "Community"	"Desirability" & "Attainment;"
Organ Mountains-Desert Peaks National Monument	NM	2017	7	"Personal," "Household," & "Community"	"Desirability" & "Attainment;"

Preparing Datasets for Factor Analysis

To meet criteria for factor analysis, each study's data were tested for univariate and multivariate normality (Child, 2006; Yong & Pearce, 2013). Testing for skewness found that the data were moderately positively skewed. Per instructions from IBM SPSS (International Business

Machines Corp, 2016) the data were transformed by reverse coding and taking the square root. This resulted in a normal distribution with acceptable value ranges for skewness (Gorsuch, 2015).

3.3.3. Exploratory Factor Analysis in SPSS

Extraction and Rotation

Exploratory factor analysis (EFA) was performed in SPSS. This was preferred over principal component analysis based on guidance from Costello & Osborne (2005). Because the data were normally distributed, the maximum likelihood extraction option was used (Costello & Osborne, 2005). Cases with missing data were deleted pairwise to retain as much data as possible.

An oblique rotation (Promax is the default oblique rotation technique in SPSS) was first selected because it allows factors to correlate, which is more realistic (Costello & Osborne, 2005). However, an orthogonal varimax rotation yielded more easily and clearly interpretable factor structures and was ultimately used to identify the structure. Cattell's (1973) scree test was used on each group to determine the best number of factors. If the number of factors to retain based on the scree test yielded a poor factor with two or fewer highly-loading variables, or if the solution with maximum suggested extractions yielded uninterpretable factors, a fixed extraction value at one factor less was chosen (Tabachnick & Fidell, 2007).

Factor Groupings

Comrey and Lee (1992) suggest that factor loadings greater than 0.71 (50% overlapping variance) are considered "excellent," greater than 0.63 "very good,", 0.55 "good," 0.45 "fair," and 0.32 "poor." Tabachnick and Fidell (2007) cite these values as guidelines, but yield to the researcher's preference to choose a cutoff that maximizes interpretability of the factors. At first, we planned to keep factors with loading of 0.50 or higher. But after review, we found that many items loading 0.45-0.50 fit thematically with the other items in the factor. Because factors should also be interpretable and meaningful (Yong & Pearce, 2013), we ultimately chose to include loadings of 0.45 or higher, considered "fair" or better by Comrey and Lee (1992).

Interpretation of Factors

Factors extracted from each study group were examined for thematic similarities and differences. Three researchers independently coded each factor grouping by assigning it a theme to check for inter-coder reliability. Each coder was not aware from which study each factor grouping originated. The coders then reviewed the themes each of them had conceived and came to consensus on an initial list of 14 possible dimensions. The 14 dimensions were then compared to

one another to look for similarities in benefit item composition and theme. Because so many of the dimensions were very similar in theme and composition, factors were ultimately collapsed and relabeled such that nine unique dimensions remained. Finally, dimensions from this study were compared to subdimensions found in the H-8320 and in recent similar analyses by Parry et al. (2014) and Smith et al. (2013).

3.4 Results

3.4.1 Overall Findings

Exploratory factor analysis produced multiple-factor solutions in each study group. This suggests, as hypothesized, that latent subdimensions among the list of benefit items existed within the data. Factor structures from each group ranged from 3-factor solutions (most common) to a 6-factor solution. The factors were judged to be valid because they were meaningful, easily interpretable, and had three or more items that loaded well on only one factor. All loadings were >0.45, considered "fair" (Comrey & Lee, 1992).

Factor structures show the different study groups converge around two distinct benefit domains: 1) Personal Benefits to the individual visitor and 2) Community Benefits to society, economy and environment (Table 10). While every group showed Community Benefits and Personal Benefits separating, the makeups of their domains vary in the items present and whether or not more distinct subdimensions emerge.

3.4.2 Interpretation of Latent Domains and Subdimensions

Personal Benefits

Within the Personal Benefits domain, all except Groups 1 and 2 suggested separation into two or more different subdimensions. Analysis across study groups revealed four distinct subdimensions: 1) Endogenous Personal Benefits, 2) Exogenous Personal Benefits, 3) Health and Wellness Benefits, and 4) Benefits to Interpersonal Relationships.

Endogenous Personal Benefits were characterized by improving the individual recreationist from within. Self-directed and self-sourced growth with themes of personal autonomy and aptitude prevailed. Key benefit items are: "enhanced sense of competence," "gained sense of independence," "enhanced sense of personal freedom," "increased self-confidence," and "improved outlook on life."

Exogenous Personal Benefits were characterized by improving the individual as a result of exposure to or awareness and appreciation of outside stimuli. This could be due to the natural or social environment. Key benefit items were: "improved opportunity to view wildlife up close,"

"greater respect for private property and local lifestyles," "increased opportunity for artistic expression," "greater aesthetic appreciation," "increased personal accountability to act responsibly on public lands," and "increased appreciation of the areas cultural history." Only Groups 5, 7, 8 and 9 contained items from this subdimension. The separate factor emerged from the Group 8 and 9 analyses whose studies contained the highest number of awareness/appreciation items.

Personal Health Benefits related to improvements or maintenance of physical or mental health or their indicators. Items ranged from fitness to stress reduction. For most groups that contained these items, factor extractions lumped health-related benefits with other Personal Benefits. Two Personal Benefit factors emerged in Group 7, with one centered around health and lifestyle items and the other combining Endogenous and Exogenous Personal Benefits. Curiously, *"improved health"* and *"improved mental health"* were also included respectively in the Interpersonal Relationships (in study Group 6) and Community Resource Protection (in study Group 1) subdimensions that emerged in other groups. No other health-related item was included in study Group 1 which may explain why a specific factor for personal health benefits did not emerge. Group 6 did include other health related items, but Personal Health items emerged in one factor with the other Personal Benefit items and the household health item went to another factor with other household benefit items.

An Interpersonal Relationship Benefits subdimension emerged in Groups 6, 7, 8 and 9 and included a number of very similar variables related to family, friends, and companions. Surveys used in Group 6 and Group 7 asked about benefits to one's "household" and the corresponding items emerged in this scale. Group 8 studies asked about very similar benefits, but phrased them as benefits to others or to the individual. Still, these family and relationship centered items emerged as a separate factor. Key items include: "improved family bonding," "developing stronger ties with my family and friends," and "recreation opportunities for your family." Some studies (Groups 2, 3, 4) asked whether "greater family bonding" was a benefit that the community would receive, but did not ask about any other benefits overtly related to family or other personal relationships. This likely explains why "greater family bonding" appears with Community Benefits factors in the analysis of those groups.

Community Benefits

All groups except Group 7 suggested separation of the Community Benefits into two or more different subdimensions. Within the greater Community Benefits domain were three distinct subdimensions or scales: 1) Social Cohesion and Identity, 2) Natural and Cultural Resource Protection, and 3) Benefits to Local Economies. The Community Benefits domain consists almost

entirely of benefit items whose recipient was described in the survey as someone or something other than the individual recreationist, with the exception of the "closer relationship with the natural world" and "enhanced work performance" items.

Social Cohesion/Community Identity, the broadest Community Benefits subdimension, contains items to do with community involvement, unique community character, and residents' satisfaction. This scale was identified in Group 9, the only group from which all three subdimensions of the Community Benefits domain emerged. Other groups only had two distinct community scales and lumped social cohesion benefit items with other resource protection and economic community benefit items. Key items in the Social Cohesion and Community Identity Benefits subdimension are: "greater community involvement in recreation and other land use decisions, "heightened sense of community pride & satisfaction," and "maintenance/preservation of distinctive community atmosphere."

The Resource Protection Subdimension referred to "protection," "preservation," and "stewardship" of shared natural, historical and cultural resources. This scale emerged in all but Groups 6 and 7, and among those except groups 1 and 9, it emerged alongside a general community benefits scale. Key benefit items include: "heightened awareness of the natural world," "greater protection of fish, wildlife, and plant habitat from growth, development, and public use impacts," "greater protection of cultural history and sites," and "greater community ownership and stewardship of recreation and natural resources." "Closer relationship to the natural world" was originally studied as an individual personal benefit. In this analysis it emerged in the Community Resource Protection subdimension in groups 1, 8, and 5, but emerged clearly as a personal benefit in groups 2, 7 and 9 (although in Groups 2 and 9 the item co-loads on the Community Resource Protection factor). Also group 8 shows this item co-loading well on both Endogenous Personal Benefits and Community Benefits, slightly favoring the Community Benefit category.

The Benefits to Local Economies subdimension contained items related to job productivity and local economic revenue generation or cost reduction. While all groups asked about multiple benefit items from this category, it only emerged in groups 1 and 9. Other groups lumped them more generally with Community Cohesion Benefits. Key benefit items include: "increased work productivity (among other community members)," "positive economic contribution to local communities," and "increased local tourism revenue."

Poorly Fitting or Unclear Items

Some benefit items were problematic in that they were associated with one domain in one study, and a different domain in another. For example, when surveys used "enhanced work

performance" they identified the benefit recipient as the individual recreationist, suggesting it would be a Personal Benefit. In this analysis it emerged in the Economic Benefits factor grouping in Group 1, but emerged clearly as an Endogenous Personal Benefit in Groups 3 and 7. Meanwhile, two other groups show this item co-loading well on both Endogenous Personal Benefits and as a Community Benefit (Group 2's factor extraction slightly favors placing this in the Personal Benefits domain while Group 5's slightly favors the Community Benefit domain). Either interpretation could be considered: The benefit clearly has economic connotations. But the source of the benefit is personal performance at an individual level. Other items that associated with both Community Benefits and Personal Benefits domains include: "increased appreciation of the area's cultural history," "closer relationship with the natural world," "greater understanding of the importance of

Table 9. Legend for Table 10

	Title of Dimension in Different Studies	*Table 10 Abbreviation*
Wright et al 2019	PERSONAL BENEFITS	PB
	ENDOGENOUS	PB-ENDO
	EXOGENOUS	PB-EXOG
	HEALTH	PB-HEAL
	INTERPERSONAL RELATIONSHIPS	PB-INTE
	COMMUNITY BENEFITS	CB
	SOCIAL COHESION & IDENTITY	CB-SOCI
	RESOURCE PROTECTION	CB-RESO
	ECONOMIC	CB-ECON
BLM H-8320, 2014	PERSONAL BENEFITS	
	BETTER MENTAL HEALTH & HEALTH MAINTENANCE	P-MENT
	PERSONAL DEVELOPMENT & GROWTH	P-DEV
	PERSONAL APPRECIATION & SATISFACTION	P-APP
	PSYCHOPHYSIOLOGICAL	P-PHYS
	HOUSEHOLD & COMMUNITY BENEFITS	H&C
	ECONOMIC BENEFITS	ECON
	ENVIRONMENTAL BENEFITS	ENVI
Parry et al., 2014	INDEPENDENCE	INDE
	MENTAL SERENITY	MENT
	PHYSICAL ENHANCEMENT	PHYS
	COMMUNITY COHESION	CC
	RELATIONSHIP WITH NATURE	NATU
	ECONOMIC BENEFITS	ECON
Smith et al., 2013	COMMUNITY ECOLOGICAL BENEFITS	*N/A*
	ENVIRONMENTAL QUALITY OF LIFE BENEFITS	ENVI
	AESTHETIC COMMUNITY BENEFITS	*N/A*
	COMMUNITY SOCIAL BENEFITS	SOCI
	COMMUNITY ECONOMIC BENEFITS	ECON

Intended Benefit Recipient
Benefits to Individual = I
Benefits to Others = O
Benefits to Household = H

** Items that load "fair" or better on another subdimension in the other domain*

***Items that load "fair" or better on another subdimension in the same domain*

Table 10. Comparative Factor Matrix of 9 Groups of Benefits Studies and Associated Subdimensions

Smith et al., 2013	Perry et al., 2014	IEMHE20, 2014	Wright, 2019	Benefit Item	Recipient	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
	INDE	H&C	PB-ENDO	Gained sense of independence	I	PB-ENDO	PB-ENDO	PB-ENDO		PB-ENDO	PB-ENDO			
		P-DEV	PB-ENDO	Enhanced sense of competence	I	PB-ENDO	PB-ENDO	PB-ENDO	PB-ENDO	PB-ENDO	PB-ENDO			
	INDE	P-DEV	PB-ENDO	Greater self-reliance	I			PB-ENDO	PB-ENDO				PB-ENDO	PB-ENDO
	INDE	P-DEV	PB-ENDO	Improved outdoor knowledge and self-confidence	I								PB-ENDO	PB-ENDO
	INDE	P-DEV	PB-ENDO	Improved outdoor recreation skills	I								PB-ENDO	PB-ENDO
	INDE	P-DEV	PB-ENDO	Increased self-confidence	I	PB-ENDO	PB-ENDO	PB-ENDO	PB-ENDO		PB-ENDO	PB		
		P-MENT	PB-ENDO	Improved outlook on life	I	PB-ENDO	PB-ENDO	PB-ENDO	PB	PB-ENDO*	PB-ENDO			
	MENT	P-APP	PB-ENDO	Enhanced sense of personal freedom	I	PB-ENDO*	PB-ENDO*				PB-ENDO	PB	PB-ENDO	PB-ENDO
	MENT	P-DEV	PB-ENDO	Spiritual growth	I			PB-ENDO	PB					
	MENT	P-DEV	PB-ENDO	Improved sense of control over my life	I								PB-ENDO	PB-ENDO
			PB-ENDO	Improved balance of work and play in my life	I								PB-ENDO	PB-ENDO
	NATU	P-DEV	PB-ENDO	Improving outdoor knowledge	I	PB-ENDO	PB-ENDO			CB-RESO*		PB		
		H&C	PB-ENDO	Lifestyle improvement or maintenance	O								CB	PB-ENDO
		P-APP	PB-EXOG	Improved opportunity to view wildlife up close	I								PB-EXOG	PB-EXOG
		P-APP	PB-EXOG	Greater respect for private property and local lifestyles	I								PB-EXOG	PB-EXOG
		P-DEV	PB-EXOG	Increased opportunity for artistic expression	I								PB-EXOG	
		P-DEV	PB-EXOG	Greater aesthetic appreciation	I								PB-EXOG	PB-EXOG
		P-DEV	PB-EXOG	Increased personal accountability to act responsibly on public lands	I								PB-EXOG	PB-EXOG
	CC	P-APP	PB-EXOG	Increased appreciation of the areas cultural history	I			PB-ENDO				PB	PB-EXOG	CB-ECON
	CC	P-APP	PB-EXOG	Greater understanding of the importance of wildlife to my quality of life	I					CB-RESO		PB	PB-EXOG*	PB-EXOG
	CC	P-APP	PB-EXOG	Improved ability to relate to local residents and their culture	I					CB		PB	PB-EXOG	CB-ECON
	MENT	P-MENT	PB-HEAL	Rest from mental stress/tension/anxiety	I			PB-ENDO	PB			PB-HEAL	PB-ENDO	PB-ENDO
	PHYS	P-PHYS	PB-HEAL	Improved physical fitness and health maintenance	I		PB-ENDO	PB-ENDO	PB-ENDO	PB-ENDO	PB-ENDO	PB-HEAL	PB-ENDO	PB-ENDO
	PHYS	P-PHYS	PB-HEAL	Improving/maintaining health	I							PB-HEAL		
	PHYS	P-PHYS	PB-HEAL	Restored my body from fatigue	I								PB-ENDO	
	PHYS	P-APP	PB-HEAL	Living a more outdoor-oriented lifestlye	I							PB-HEAL	PB-ENDO	PB-ENDO
	MENT	P-MENT	PB-HEAL	Improved mental health	I	CB-RESO*	PB-ENDO*	PB-ENDO	PB		PB-ENDO			
	PHYS	P-PHYS	PB-HEAL	Improved health	H						PB-INTE	PB-HEAL**		
		P-DEV	PB-INTE	Strengthened relationships with my companions	I				PB					
	CC	P-DEV	PB-INTE	Strengthening relationships with family and friends	O								PB-INTE	PB-INTE
		H&C	PB-INTE	Enhanced family relationships	I				PB					
		H&C	PB-INTE	Improved family bonding	H						PB-INTE	PB-INTE		
		H&C	PB-INTE	More well-rounded childhood development	H						PB-INTE	PB-INTE		
		P-DEV	PB-INTE	Developing stronger ties with my family or friends	I							PB-INTE	PB-INTE	PB-INTE
			PB-INTE	Recreation opportunities for your family	H						PB-INTE	PB-INTE		
	CC	H&C	PB-INTE	Greater household awareness of and appreciation for our cultural heritage	H						PB-INTE	PB		
SOCI		H&C	PB-INTE	Greater family bonding	O		CB	CB	CB				PB-INTE	PB-INTE
SOCI	CC	H&C	CB-SOCI	Greater community involvement in land use planning processes	O	CB-RESO	CB			CB				
	CC	H&C	CB-SOCI	Greater community involvement in recreation and other land use decisions	O			CB	CB		CB		CB	CB-SOCI
SOCI	CC	H&C	CB-SOCI	Heightened sense of community pride & satisfaction	O							CB	CB	CB-SOCI
SOCI	CC	H&C	CB-SOCI	Maintenance/preservation of distinctive community atmosphere	O								CB	CB-SOCI
		ECON	CB-SOCI	Increased desirability as a place to live or retire	O							CB		
		ENVI	CB-SOCI	Improved respect for privately-owned lands	O								CB	
		H&C	CB-SOCI	Providing recreation to local communities	O			CB	CB					
		H&C	CB-SOCI	Greater opportunities for youth	O		CB	CB	CB	CB				
ENVI	CC	ENVI	CB-RESO	Greater community ownership and stewardship of recreation and natural resources	O								CB-RESO**	CB-RESO
ENVI	CC	ENVI	CB-RESO	Preservation of the special landscape character of this place	O						CB			CB-RESO
ENVI	CC	P-DEV	CB-RESO	A deeper sensitivity to local cultures	O			CB-RESO	CB-RESO					
ENVI	NATU	ENVI	CB-RESO	Heightened awareness of natural world	O	CB-RESO	CB-RESO	CB-RESO	CB-RESO	CB-RESO				
ENVI		ENVI	CB-RESO	Increased awareness and protection of natural landscapes	O							CB	CB-RESO	CB-RESO
	NATU	ENVI	CB-RESO	Greater protection of cultural history/sites	O			CB-RESO	CB-RESO					
		ENVI	CB-RESO	Greater protection of fish, wildlife, and plant habitat from growth, development, and public use impacts	O	CB-RESO	CB-RESO			CB-RESO**	CB	CB	CB-RESO	CB-RESO
		ENVI	CB-RESO	Reduced negative human impacts such as litter, vegetative tramping and unplanned trails	O	CB-RESO	CB-RESO							
	NATU	P-APP	CB-RESO	Closer relationship with the natural world	I	CB-RESO	PB-ENDO*			CB-RESO		PB	CB-RESO*	PB-ENDO*
ECON	ECON	ECON	CB-ECON	Increased local tourism revenue	O							CB	CB	CB-ECON
	ECON	ECON	CB-ECON	Increased work productivity	O	CB-ECON	CB	CB	CB			CB	CB	CB-ECON
ECON	ECON	ECON	CB-ECON	Positive economic contribution to local communities	O	CB-ECON	CB	CB	CB	CB	CB			
	ECON	ECON	CB-ECON	Reduced health maintenance cost	O								CB	CB-ECON
	ECON	ECON	CB-ECON	Enhanced work performance	I	CB-ECON	PB-ENDO*	PB-ENDO		CB*	PB-ENDO			

wildlife to my quality of life," "improved ability to relate to local residents and their culture," "improving outdoor knowledge," and "improved mental health."

3.4.3 Comparing Results to Other Studies

The analysis allows comparisons with the "Experience and Benefit checklist" from the BLM's H-8320 handbook, Parry et al.'s 2014 analysis, and Smith et al.'s 2013 development of a community benefits instrument. Not all studies use the same list of benefits, so, where applicable, items from another list of benefits were matched with items used in this analysis. The corresponding dimension or scale title from the other study is shown alongside the label for this study in Table 9 and Table 10 to highlight differences and similarities.

Overall, this study confirms one key suggestion from the other studies and the benefits checklist: that respondents do indeed distinguish between benefits constructs based on their recipient, particularly between Personal Benefits and Community Benefits.

Community Benefits showed the most similarities between studies. The Benefits to Local Economies subdimension was supported by the Economic Benefits categories in H-8320, Parry et al. (2014) and Smith et al. (2013) Resource Protection items match H-8320's and Smith et al.'s (2013) Environmental subdimensions. The items span some of Parry et al.'s (2014) Relationship with Nature and Community Cohesion categories. Items from the Social Cohesion and Identity match with items from H-8320's Household and Community Benefits category. This subdimension is encompassed within Parry et al.'s (2014) Community Cohesion and H-8320's Household and Community Benefits categories. But both categories are broader and contain items from the Personal Benefits categories or other Community Benefit subdimensions. Smith et al. (2013) labels similar items under the Aesthetic and Social benefits category.

Comparisons between items in the Personal Benefits categories reveal slightly more inconsistencies. Our themes of Endogenous and Exogenous Personal Benefits mirrored somewhat the H-8320's separate characterizations of Personal Development and Growth and Appreciation and Satisfaction respectively. But the actual items in each category do not line up. Endogenous Personal Benefits did not separate into smaller scales as Parry et al.'s (2014) study suggested with "independence" and "mental serenity" subdimensions. Three of the Exogenous Personal Benefits were found in Parry's Community Cohesion benefits dimension. While the items have an element of interest in some phenomenon outside the individual (e.g. wildlife, local cultures, aesthetic beauty), the surveys used in this study asked about their benefit to the individual. Personal Health Benefits were similar to many used in H-8320 and Parry et al. (2014) that emerged in similarly themed subdimensions as well. But whereas the Experience Benefits Checklist suggests more specific

dimensions of "Mental Health" and Psychophysiological Benefits, and Parry et al.'s (2014) study revealed Physical Enhancement and Mental Serenity domains, this study did not suggest further distinctions. The Interpersonal Relationship Benefits category showed the most inconsistency. Comparable items appear in H-8320 as both Personal Development & Growth and in Household & Community Benefits. This was perhaps foreshadowed by the fact that this category contained the greatest variety of recipients of the benefit: these items were studied as household, personal or community benefits in their respective surveys. personal, benefits to others, and benefits to one's household. Interpersonal Relationship Benefits that matched items in this study were not present in Parry's analysis so no comparison can be made.

3.5. Discussion & Conclusion

The study suggests that there are indeed different domains within the greater benefits construct and alludes to possible scales within those domains. Despite having varied lists of benefit items, and being sampled at different locations and timeframes, the groups' factor structures converged on two primary domains: personal benefits and community benefits. The separation of these two domains suggests that individual benefits may be understood by recreationists as occurring hierarchically within the construct: level 1 to the individual, and level 2 beyond the individual (community, society, natural and cultural environment, economy) and may support Driver's benefits chain of causality (Driver, 1994). It also adds credibility to Smith et al.'s (2013) approach of developing a separate community benefits instrument.

The distinction also supports the use of survey questions that ask separate questions about personal benefits to the individual and recreation's benefits to the community as a whole. Another level of "household," which may have been thought of as between personal and community, is not as well understood. Results from this study suggests that household benefits are more closely related to level 1 benefits to the individual. But to understand the relationship between different levels will require more research, particularly on subdimensions or items which had trouble being placed into one level or the other.

Parry et al.'s (2014) study provides an interesting comparison by asking respondents to recall any recreation experience; when asking about benefits, the researchers did not frame the question by specifying a benefit recipient, and instead left the benefit to be interpreted by the respondent. Data from the surveys used in this study differ in that researchers forced respondents to consider a specific recipient and asked about benefits to different recipients in separate questions. This may have influenced the emergence of separate factors based on the individual or community recipient of the benefits.

3.5.1. Influence of Study Location on Factor Structure

Nuanced differences between factor structures from different study groups suggests that site and trip characteristics, as well as how benefits questions are presented in the survey, may influence visitors' conceptualization of the structure of benefits received. One explanation might be that when visitors are homogenous and/or there isn't much variety in the range of settings, there may not be sufficient variation to distinguish among benefits. For example, Group 5 represents data from the Squirrel River, a remote wilderness area in northwestern Alaska. The survey sampled hunters from the lower 48 states, most of whom engaged in long trips more than 5 days. This group was the least consistent with regard to the influence of benefit recipient on factor structure as its community benefit subdimensions included three personal benefit items. The remote natural setting and nature-oriented activity may have influenced consistent scoring on outdoor or natural resource protection variables, regardless of the recipient. The Squirrel River study also did not distinguish between benefit recipients in the study, allowing a wider interpretation of the meaning of the benefit item. Parry et al.'s 2014 study differs in respect to sampling location as well, in that there was none. Parry et al. (2014) employed critical incident technique where respondents recalled a recreation experience that could have occurred anywhere on public land.

3.5.2. Effect of Survey Design

Survey design characteristics such as question wording, response scale, and list of benefit items may also influence interpretation of benefits constructs. For a factor to emerge there must be a sufficient number of related items that account for a significant portion of variance in the data (Gorsuch, 2015). For example, three factors emerge in Group 6 (Dalton Highway study from 2013) based on recipient: personal benefits, benefits to household, and benefits to others. Analyzing only these results might lead one to conclude that benefits are defined by their recipient, and that respondents identify clearly with a "household benefits" construct. Yet the factor structure in Group 7 places "household" benefit items into three different subdimensions: personal health, interpersonal relationships, and general personal benefits. Group 7 contained more health-related benefit items in its study which may have led to the household benefit of "improved health" emerging within a Personal Health Benefits subdimension rather than a household benefits dimension. Similar influence may also be seen in Groups 8 and 9 which also have a longer list and greater variety of benefit items and produced a greater number of distinct factors.

3.5.3. Future Research Needs

Next Steps Toward to a Valid Measurement Instrument

The goal of this factor analysis is to improve the list of benefit items in such a way that they can be tested more rigorously for reliability and validity, then ultimately use a list as scales to measure the desirability and attainment of important benefits. This study goes as far as steps 1 and 2 of Nunnally & Bernstein's (1994) method of developing psychometric scales by (1) defining the meaning of the construct and (2) identifying the potential latent subdimensions that make up the construct. This primary exploratory factor analysis stage helps identify potential subdimensions, identify key items related to those subdimensions, and reduce the total number of items by culling and removing items that are redundant or do not associate with a single subdimension. Results from this study can thus help with the next step of establishing items to measure each dimension. Key items for each subdimension are listed in the results and may serve as good items to measure the subdimension. But the study also identified poor, confusing, or otherwise less useful items that should be omitted. As its list of benefits currently seems notoriously endless, OFM will benefit from further distilling the number of items to produce a more targeted measurement instrument.

Variable Reduction

Vague item wording may contribute to inconsistent item interpretation and should qualify an item for omission. For example, one could reasonably interpret "improved outdoor knowledge" as having the same meaning as other items such as "closer relationship with the natural world" or "improved outdoor recreation skills." Meanwhile several studies had combined it with self-confidence as "improve outdoor knowledge and self-confidence." Depending on the study, outdoor knowledge emerged as either a personal or community benefit. Confusion about this item's definition suggests it be omitted from further analysis. Also, "improved outdoor knowledge and self-confidence" was included in this study along with "improved outdoor knowledge" and "improved self-confidence." Self-confidence emerges only in the endogenous personal benefits while the placement of improved outdoor knowledge is less clear in Group 5. Differences between the two confirm "improved outdoor knowledge and self-confidence" is a double barrel item and should be omitted as well.

"Greater community involvement in land use planning processes" and "greater community involvement in recreation and other land use decisions" were both included to see if they emerged with different meanings. As they are highly synonymous and both emerged in community benefits dimensions, the study would recommend using one wording or the other and not keeping both as

separate items in future research. The same could be said for synonymous interpersonal relationship items such as "enhanced family relationships," "improved family bonding," and "developing stronger ties with my family or friends."

Some benefit items such as "increased appreciation of the area's cultural history" and "improved ability to relate to local residents and their culture" were inconsistent in whether they best described the personal or community benefits construct. Interpretation of these items may be highly dependent on the cultural significance or presence of cultural resources at a certain site. Many items were omitted before factor analysis during primary reduction simply because they had too low of a response rate. Results should not suggest these are less salient or poor candidates for future research compared to other items. As Parry described, "managers must be aware of the desires of both the plurality and the minority" (2014, p. 242). While our goal is to reduce this list, further research may necessitate including additional items not analyzed in this study in order to understand their role in defining the benefits construct.

Research on Certain Subdimensions

Certain subdimensions identified in this study may warrant future research or careful attention in subsequent surveys. The Personal Health Benefits subdimension only emerged separately in Group 7. When these items were present in other groups, they factored with other Personal Benefits from the Endogenous Personal Benefits subdimension. Gomez et al. (2016) performed exploratory and confirmatory factor analysis on personal health benefits to reveal three health benefits dimensions: (1) Realization of a Positive Psychological Experience, (2) an Improved Condition, and (3) Prevention of a Worse Condition. The first dimension contains items such as "gives me a sense of self-reliance" or "higher self-esteem" and "causes me to appreciate life more" that are very similar to items in this study's Endogenous Personal Benefits subdimension. Some of the Endogenous Personal Benefit items are also related to Parry et al.'s (2014) Mental Serenity subdimension. It is possible that this study picked up on health items that were more overt or physical in nature, but that the more psychological outcomes in the Endogenous Personal Benefits carry some health-related meaning. For subsequent analyses of benefit items, we suggest incorporating a greater variety of health-related recreation benefits.

Confusion between benefits levels may be evidenced by a number of benefits items related to one recipient, but emerging in a subdimension of the opposite recipient, or by Parry et al.'s (2014) Community Cohesion category. This is particularly evident in the Exogenous Personal Benefits subdimension. For example, while the benefit to the individual such as "increased appreciation of an area's cultural history" or a "greater understanding of the importance of wildlife"

could lead to Community Benefits like "increased protection of cultural or historical sites" and "increased protection of wildlife habitat," the benefit as described is not overtly targeted to the community as the primary recipient. Though not all of their items matched with items from this study, many of the items in Parry's et al.'s (2014) Community Cohesion factor read like benefits to individuals.

This study and Parry et al.'s (2014) study both identified an Interpersonal Relations Benefits subdimension, but they used very different items such that none matched. This might suggest the Interpersonal Relationships Benefits dimension might be broader than either study found on its own and illustrates the caution that one should take in developing a measurement instrument from just one study. A study of a more exhaustive yet refined list of Personal Benefits (i.e. with redundant or problematic items removed) would help improve our understanding of these three subdimensions.

3.5.4. Evaluation of OFM's Use of the Experience and Benefit Checklist

Finally, this study highlights potential issues with the OFM EBC's categorization of benefit items and its use for guiding benefit item inclusion in recreation surveys. This study suggests that visitors discern mostly between benefits that occur to the individual (i.e. "me") versus benefits that occur to a common or collective resource (i.e. "someone or something other than or in addition to me"). Where the EBC shows economic, environmental, and household/community benefits as separate categories on the same level, results from this study suggest they are more likely distinct scales within a greater community benefits construct.

Results also show the EBC's combination of "household and community benefits" is also problematic. Both household and community benefits contain elements of social cohesion and relations. But data from this study found that respondents distinguished between relationships at the interpersonal level and social cohesion at the community level.

The EBC's personal benefit categories of "personal development and growth" and "personal appreciation and satisfaction" somewhat reflect this study's endogenous and exogenous personal benefits. But the actual benefit items that constitute those groups need to be reconsidered. Items from both EBC categories emerged in both of this study's subdimensions to no surprise. For example, "enhanced sense of personal freedom" appears in the EBC's Personal Appreciation and Satisfaction category, yet in the results it is a defining element of the Endogenous Personal Benefits. Similarly, "sensitivity and awareness of outdoor aesthetics" is considered a Personal Development and Growth benefit in the EBC and emerges in the Exogenous Benefits subdimension in this study.

3.5.5. Conclusion

Studies continue to show that visitors identify with lasting benefits of recreation and that there are many salient benefits. And the BLM is pushing the frontier of managing for them through the OFM framework. But research about exactly how the framework should define, understand and measure the benefits construct is only slowly catching up to the implementation of OFM. Results from this study should add to the urgency of developing a standardized tool to identify what benefits the public want to realize from recreation, both personally and for their communities. The factor structures and suggestions from this study should guide development of a new list of benefits, both refined from problematic or redundant items, and inclusive of items associated with themes that need further exploration (e.g. health outcomes). Such a list can be administered consistently so that data can be examined again in an exploratory factor analysis. Based on results the list can be further refined and finally tested again more rigorously for validity and reliability through a confirmatory factor analysis.

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Chapter 4: General Conclusions

4.1. Research Overview

Research for this thesis addressed two prevailing concerns in the management of public lands for outdoor recreation. The first study (Chapter 2) addressed shortcomings of methods of understanding local demand for recreation by developing a survey that would capture latent desires in a context more relevant to local recreation use and management. The second study (Chapter 3) addressed the urgent need to develop and validate a standard instrument to measure perceptions of lasting beneficial outcomes of recreation.

4.2. Findings from "Ideal Trip" Descriptions in the Fairbanks Community Recreation Study

By employing a hypothetical, "ideal trip" scenario, the survey method allowed researchers to get unique information otherwise unavailable with existing methods. For example, latent trip desires surfaced that may have been missed if only measuring current participation. New insight about constraints to ideal trips at various existing settings informs managers how setting-level decision making can help visitors realize these latent desires. Salient issues expressed in the surveys highlighted local desires for more trails in closer proximity to where they live and work (especially for summer use), for those trails to be managed to avoid conflicts between user groups, and for the trails to be made more accessible through improved quality, parking and trailhead development, and better access to maps and information about local recreation opportunities. Armed with documented characteristics of desirable types of recreation trips, what factors would be most important to facilitating them, and where they might occur, local recreation managers can better target a specific market of recreation desires.

The typological analysis by primary activity revealed considerable variation between trips within a given activity and promotes an experience-based or outcomes-focused approach to recreation management over an activity-based approach. This study's results would suggest caution on assigning just one style or type of trip to individuals. One person's "ideal" may differ depending on a variety of trip characteristics such as available time, chosen trip companions, and primary activity. Knowledge of important trip characteristics can be used to develop indicators and standards for management.

The community-level scale tailored results to be more relevant to the greater Fairbanks community and the recreation settings most meaningful to them. By limiting the study to a geographic rather than a jurisdictional area, results can help identify which local recreation providers are more or less equipped to provide certain types of trips. Surveying to find the range of

trip types desired in the Fairbanks community highlighted the nuance between trip types, the risks of lumping distinct trips into the same categories, and how the Recreation Opportunity Spectrum in one community might be shifted due to its unique characteristics.

A key takeaway for managers is to understand their potential market and specialize. The Fairbanks community indicated desires for a diverse range of opportunities across the spectrum, and that different Place Groups appear more or less suited to help provide setting for those opportunities. Managers of these areas should be wary of the temptation to 'be all things to all people' (Haas, 2001; McCool & Cole, 2001). Managers may feel pressured by participation-oriented performance metrics to cater more and more to tastes for highly developed facilities that yield the most numerous visits. But results from this study suggest this can threaten the availability of equally important opportunities that may necessarily require fewer visitors per acre, especially toward the primitive end of the spectrum (McCool, 2001). Equipped with a better understanding of what opportunities may be offered nearby, managers can use results like these to justify their market specialization. The next step is to understand how these markets and their demand are distributed throughout the local population. Results from this survey can be used to develop a survey to measure this.

This research approach can help understand recreation desires in the region, but does not change the reality of challenges faced by agencies to plan in a more regional context (McCool & Cole, 2001). Partnering with other agencies and expending agency resources beyond borders may still be difficult and unlikely. This project and resulting collaboration was possible through a unique combination of: 1) strategic planning policy that emphasized community collaboration to deliver outdoor recreation services (U.S. Bureau of Land Management, 2014b); 2) federal grant funds to employ researchers and support agency staff coordination (America's Great Outdoors Initiative grant program); 3) willingness and openness of key agency staff to look beyond their borders and share the research opportunity with of local service providers; 4) interest of other local service providers in collaborating in the study.

4.3. Exploratory Factor Analysis to Identify Underlying Dimensions of the Benefits Construct

Studies continue to show that visitors identify with lasting benefits of recreation and that there are many salient benefits. The BLM is pushing the frontier of managing for them through the OFM framework. But the research about exactly how the framework should define, understand and measure the benefits construct is left playing "catch-up" with the implementation of OFM. Results from this study and the issues highlighted with the Experience Benefits Checklist should add to the

urgency of developing a standardized tool to identify what benefits the public want to realize from recreation, both personally and for their communities.

The BLM does not claim the EBC is a validated set of measurement scales for benefits such as the REP scales. But the by establishing BLM monitoring protocols to use items from the EBC in survey development, and absent another standardized, validated measurement instrument, managers are left to use the EBC by default.

An exploratory factor analysis was performed on 13 prior studies of desirability of lasting benefits of a recreation experience to determine if the construct has an underlying structure to the benefits construct. Findings from the meta-analysis exhibit factor structures converging across samples to reveal two primary domains of lasting beneficial outcomes of recreation: 1) personal recreation benefits to the individual recreationist and 2) community benefits to society, the environment and economy. This revelation and its comparison to what other recent benefits factor analyses have found can be used to develop a future study to establish a much-needed, standardized measurement instrument.

This study highlighted inconsistencies between recent benefits studies, recent attempts to develop benefits measurement instruments, and between research findings and the categorization of the EBC. Future efforts to identify and test benefits scale items are warranted. But they must address the potential effects of: question scale; site characteristics and homogeneity of study sample; a host of poorly-worded, redundant or otherwise confusing benefit items; and the need to isolate lasting benefits from onsite experiences.

4.4. Overall Conclusions

Results from these two studies provide valuable insight on targeting desirable recreation experiences and outcomes during the planning process, and how to proceed to develop a more valid way to evaluate the effectiveness of management programs intended to deliver those benefits. The BLM's planning framework suggests a flow where (1) the beneficial outcomes that are most in demand are identified, (2) the relationship between outcomes and the social, managerial and physical setting are understood, (3) planners and managers work backward from desired benefits to make the appropriate settings available, (4) recreationists participate in their preferred activity to have a recreation experience that yields benefits, and finally (5) managers evaluate whether the targeted beneficial outcomes were realized. Research from both the second and third chapters work in tandem to make this planning flow possible. The exploratory factor analysis in Chapter 3 works toward honing an instrument that can reliably and validly identify the benefits people want out of their recreation. The Fairbanks Recreation Study in Chapter 2 provides an example of how to

apply such an instrument in a context that is meaningful to a community of recreationists. Then, once the targeted outcomes are identified for a management area, the same tool from Chapter 3 can be used to evaluate the effectiveness of management practices. Applying concepts from each study in practice would be amiss without considering the other. Even with the proper instrument to measure the desirability of beneficial outcomes, the wrong application in the wrong context will experience shortcomings mentioned in Chapter 2. And when replicating an effort like the Fairbanks Recreation Study to understand demand for benefits, one must bear in mind the limits and assumptions associated with the list of benefits used in a survey.

The process and results of the Fairbanks Recreation Study highlight the need to look beyond agency boundaries when assessing a community's demands for recreation services. The exploratory factor analysis of beneficial outcomes of recreation lends itself to developing a better tool to more accurately record what beneficial outcomes of recreation are most important in a population, and whether they are being realized. Knowledge from these studies is especially timely in the contemporary management environment that relies increasingly on collaborative partnerships for efficient service delivery (U.S. Bureau of Land Management, 2014b) and that is actively adopting an outcomes-focused approach to management (U.S. Bureau of Land Management, 2014a). Continuing to improve our ability to identify and manage for these beneficial outcomes will be critical to maintaining the relevance of recreation services in a world of competing interests for public lands resources.

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Appendices

Appendix A: Fairbanks Community Recreation Survey Online Questionnaire

Appendix A contains a printout of the web survey. While all the questions are shown, some responses were contained in dropdown menus. Those dropdown menus are not displayed in the printout. Please see Appendix B of the final report (Wright & Fix, 2016) for all possible response options.

Interior Alaska Community Recreation Study

Welcome to the Fairbanks Community Recreation Study online survey!

Interior Alaska Community Recreation Study

How would you like to spend your recreation time?
How can management best provide the experiences you desire?

To answer these two questions, this survey will ask you to ***imagine and describe*** outdoor activities and trips in Interior Alaska. Instead of asking about your typical recreational outings, we ask you to describe what would be your **"ideal"** outdoor recreation experience.

Instructions

1. You will develop a hypothetical "trip" based on your available time, fellow participants and preferred activity.
    - Although we refer to a "trip," the recreation you describe can be close to your home and as short as 1/2 hour.
    - Your "trip" or activity must occur outdoors in Interior Alaska (see next page for map and instructions).

2. Then, you will be asked questions to help us understand what makes the trip ideal and how your past experience relates to the trip.

3. The survey concludes with questions regarding public land management in Interior Alaska.

4. You will have the opportunity to create multiple "ideal" trips. You may describe up to four trips, one at a time. Each time, you can explain the relevant details. For example, you might choose to describe:
    - What you would ideally do on your summer weekdays, when time is limited,
    - What you would ideally do on a winter weekend outing with friends,
    - Or describe the characteristics of a once-a-season trip in the fall (like a longer hunting trip with your family),
    - And so on.

5. Because these "ideal" activities may be hypothetical, your responses should not be limited by current recreation conditions. However, please be realistic about:
    - What could actually be provided (for example, a trophy trout fishery on the Chena River would not be possible),
    - What is within the means of your current skill level or ability,
    - And the financial cost of the trip.

6. At the end of the survey you will have the opportunity to enter your name into a drawing for **one of twenty $30 gift certificates to your choice of Beaver Sports or Frontier Outfitters**. Your name will be entered into a separate database and will not be connected to your responses.

Survey Results

- This survey will be open until June 30th, 2014. Survey data will be provided to local recreation planning agencies for their use. For more information about results and findings from this survey, contact Dr. Peter Fix at pjfix@alaska.edu or Bryant Wright at rbwright@alaska.edu.

Please Note:

Interior Alaska Community Recreation Study

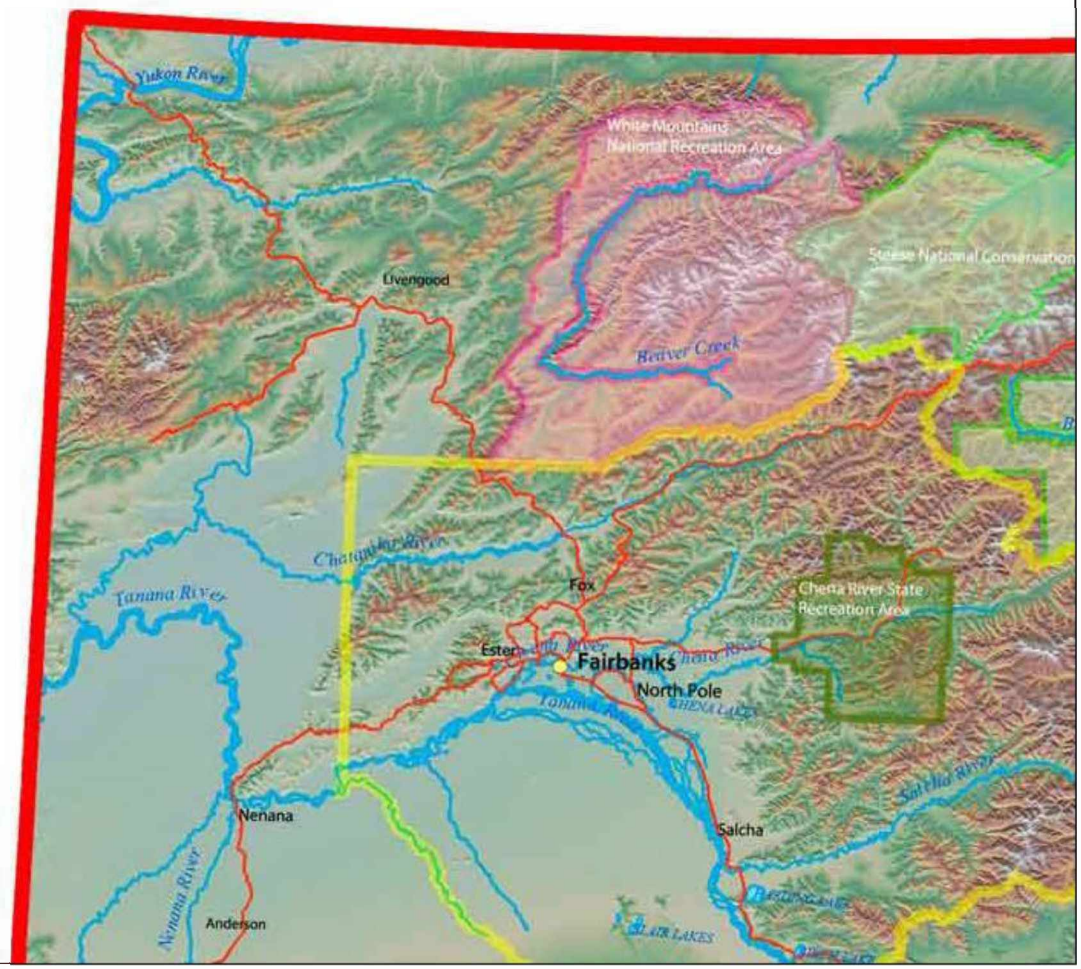
- The survey has 40 questions and can be time consuming depending on what you describe.
- This survey is voluntary and your responses will remain anonymous.
- You must be 18 years old or older to participate in this study. Completing the survey implies your consent to participate.
- If at any time you wish to quit without saving your results, click "Exit Survey" at the top of the page then close this window.
- If you have questions or concerns about your rights as a research participant, you can contact the UAF Office of Research Integrity at 474-7800 (Fairbanks area) or 1-866-876-7800 (toll-free outside the Fairbanks area) or uaf-irb@alaska.edu.

Interior Alaska Map

Area of Interest: Interior Alaska

Your ideal trip can describe what you would like to do for recreation **within the red border of the map below**. However:

- Your trip should describe recreation that takes place *outdoors*.
- Please limit your trips to areas *accessible to the public*.
- The trip can still be close to your home/work; in fact the trip could be an activity you do right from your home (e.g., snowmachining, dog mushing, running, etc.).
- The focus of this survey is not on team sports taking place on fields (e.g., baseball, soccer). While those activities are also important, a different survey is needed to adequately assess those activities.



Interior Alaska Community Recreation Study

Interior Alaska Community Recreation Study

Planning Your Trip

1. You likely recreate in many different ways, and your ideal trip at a given time most likely changes by

- the activity you will do,
- the participants in the trip, and
- the amount of time available for the trip.

Now, imagine an ideal trip based on your combination of these three characteristics.

Please begin describing your ideal trip by selecting your first or most important consideration when planning this trip. What will you describe first?

- ◯ Time Available
- ◯ Participants
- ◯ Activity

Interior Alaska Community Recreation Study

Select Activity

2. Select the main recreation activity you will describe.

- ◯ ATV riding
- ◯ Backpacking
- ◯ Berry picking
- ◯ Boating (motorized)
- ◯ Camping
- ◯ Canoeing/rafting
- ◯ Climbing
- ◯ Cross country skiing
- ◯ Dog mushing
- ◯ Fishing
- ◯ Geocaching
- ◯ **Other** (check and describe below)
- ◯ Goldpanning
- ◯ Hiking
- ◯ Horseback riding
- ◯ Hunting
- ◯ Mountain biking
- ◯ Photography
- ◯ Skiing/snowboarding downhill
- ◯ Skijoring
- ◯ Snowmachining
- ◯ Trail running
- ◯ Trapping
- ◯ Wildlife viewing

If other, please list the activity:

3. What time(s) of year would you prefer to participate in this trip?

- Select all that apply

☐ Summer (Jun-Aug) ☐ Fall (Sept-Oct) ☐ Winter (Nov-Mar) ☐ Spring (Apr-May)

Interior Alaska Community Recreation Study

What Next?

4. Now, please select your second most important consideration when planning this trip.

- ◯ Activities
- ◯ Participants

Interior Alaska Community Recreation Study

Who Will Join You?

5. Tell us who will join you on this trip you are describing.

- Please choose the option that *best describes* your trip companions, or select "Other" and explain.

- ◯ Yourself (alone)
- ◯ Your friend(s)
- ◯ Your spouse/significant other
- ◯ Family members
- ◯ Friends and family
- ◯ An organized group/club
- ◯ Other (please check and describe below)

If you checked "other", please describe the participants in this trip:

6. Will you bring any dogs on this trip?

- ◯ Yes
- ◯ No

Interior Alaska Community Recreation Study

For How Long?

7. Select the amount of time available for the ideal trip you are describing.

- ◯ Under 1 hour
- ◯ 1 to 2 hours
- ◯ 3 to 6 hours
- ◯ 7 hours to all day (Day trip)
- ◯ Overnight
- ◯ 2 to 3 nights
- ◯ 4 to 5 nights
- ◯ More than 5 nights

Interior Alaska Community Recreation Study

Review Selection

8. You have selected *[q10]*
for *[q30]*
with *[q23]*.

Is this correct?

- ◯ Yes (continue survey to questions 9-23 of 40)
- ◯ No (return to choose time available)

Interior Alaska Community Recreation Study

Where will you go?

Your ideal [q10] trip with [q23] for [q29]

Features, Facilities and Maintenance

For each type of feature, select the ideal characteristic for your [q10] trip destination.

9. Parking

10. Trail Development

11. Distance Covered (on-site)

12. Winter Trail Maintenance

13. Sleeping or Campsite Facility

14. Toilets

15. Onsite Information

16. Staffing

17. Watercraft Access

Travel Distance

Interior Alaska Community Recreation Study

18. At your trip's farthest extent, how near or far should you be from the road?

- Choose one or the other based on which is most critical to your trip

◯ Within_____
OR
◯ At least_____

Specify distance:

19. Is the trip/activity dependent on proximity to home/work?

- If "No": Skip to next question.
- If "Yes": How near or far from your home or work should you travel to begin your trip?
  - Choose one or the other based on which is most critical to your trip

◯ Within_____
OR
◯ At least_____

Specify distance or travel time:

Other People

20. Ideally, how many times should you encounter other groups of people on this trip (besides those who may join you)?

21. What types of recreation should this area be maintained for?

22. **Other Activities**

Are there other activities you would combine with {q10} on this "ideal trip"?

- If yes, list the activities that are most important to your trip.

1.
2.
3.
4.
5.

Interior Alaska Community Recreation Study

23. Consider the factors you chose above **on this page (questions 9-22):** Which are especially important to this [q10] trip?

1. *Pick 2-4 factors you selected that are most important to you for this trip.*
2. *Please describe how these factors would make your trip ideal.*
3. *If any important details were not mentioned above, describe them here.*

Continue survey to question 24 of 40.

Interior Alaska Community Recreation Study

Desired Experiences

Your ideal [q10] trip with [q23] for [q29]

- **THIS PAGE:** This question asks about how you interact with the setting you just described, *during the trip itself.*
- **NEXT PAGE:** Then we will ask you how these experiences might affect you *beyond your actual trip*, and help you reach larger life goals.

24. Please rate the importance of achieving the following experiences **during** this trip.

	Not at all important			Somewhat important			Extremely important
Enjoying the sights and sounds of nature	◯	◯	◯	◯	◯	◯	◯
Bringing your family closer together	◯	◯	◯	◯	◯	◯	◯
Experiencing new and different things	◯	◯	◯	◯	◯	◯	◯
Testing your abilities	◯	◯	◯	◯	◯	◯	◯
Being with friends	◯	◯	◯	◯	◯	◯	◯
Growing and developing spiritually	◯	◯	◯	◯	◯	◯	◯
Experiencing solitude	◯	◯	◯	◯	◯	◯	◯
Teaching your outdoor skills to others	◯	◯	◯	◯	◯	◯	◯
Taking a chance on dangerous situations	◯	◯	◯	◯	◯	◯	◯
Getting away from the usual demands of life	◯	◯	◯	◯	◯	◯	◯
Doing something creative such as sketching, painting, writing/blogging, photography	◯	◯	◯	◯	◯	◯	◯
Getting exercise	◯	◯	◯	◯	◯	◯	◯
Being free to make your own choices	◯	◯	◯	◯	◯	◯	◯

Are there other reasons for this trip?

Continue survey to questions 25-27 of 40.

Interior Alaska Community Recreation Study

Lasting Benefits

Your ideal [q10] trip with [q23] for [q29]

We would like to know about larger life goals that your recreation may help achieve.

25. **Possible outcomes *to you*:**

Below is a list of longer-term outcomes that you might consider when planning your [q10] trip.

- Please rate how each outcome may have influenced your choices for this [q10] trip.
- If the outcome is not important to you, or you do not anticipate participation would lead to the outcome, select "no influence."

	No influence			Moderate influence			Substantial influence
Improved physical fitness	○	○	○	○	○	○	○
Enhanced sense of personal freedom	○	○	○	○	○	○	○
Enhanced sense of competence	○	○	○	○	○	○	○
Improved outlook on life	○	○	○	○	○	○	○
Increased self-confidence	○	○	○	○	○	○	○
Improved knowledge about outdoor recreation in this area	○	○	○	○	○	○	○
Increased knowledge about the ecosystems in this area	○	○	○	○	○	○	○
A greater connection with nature	○	○	○	○	○	○	○
Improved knowledge of local communities	○	○	○	○	○	○	○
Improved mental health	○	○	○	○	○	○	○
Enhanced work performance	○	○	○	○	○	○	○
Gained sense of independence	○	○	○	○	○	○	○

Interior Alaska Community Recreation Study

26. **Possible outcomes to *your household*:**

Please rate how each potential outcome to **your household** may have influenced your choices for this [q10] trip.

- Some of the outcomes might not be applicable to your household, not important to you, or you may not anticipate your trip would lead to the outcome. If so, select "no influence."

	No influence			Moderate influence			Substantial influence
Recreation opportunities for your family	○	○	○	○	○	○	○
Reduced health care expenses	○	○	○	○	○	○	○
Improved health	○	○	○	○	○	○	○
Greater awareness of methods to minimize recreation impacts	○	○	○	○	○	○	○
More well-rounded development for your children	○	○	○	○	○	○	○
Improved parenting skills	○	○	○	○	○	○	○
Improved group cooperation	○	○	○	○	○	○	○
Improved family bonding	○	○	○	○	○	○	○

Interior Alaska Community Recreation Study

27. **Potential outcomes to *Interior AK communities*:**

Think about *all the other people* who might participate in *this type of trip* ([q10] with [q23] for [q29]) at the *setting you described.*

- To what extent do you feel that managing such an area for these kinds of trips would contribute to or detract from the following outcomes (when you consider total use)?

	Substantially detracts			No effect			Substantially contributes
Protection for fish & wildlife habitat in the Interior	○	○	○	○	○	○	○
Positive economic contribution to Interior businesses	○	○	○	○	○	○	○
Retention of distinctive landscape features	○	○	○	○	○	○	○
Lower health care expenses for Interior communities	○	○	○	○	○	○	○
A desirable place to live/work/retire	○	○	○	○	○	○	○
Pride in the Interior communities	○	○	○	○	○	○	○
Lower crime	○	○	○	○	○	○	○
Reduced obesity	○	○	○	○	○	○	○
Greater involvement in the land use planning for Interior communities	○	○	○	○	○	○	○

Are there other ways in which your "ideal trip" would contribute to larger goals you have, outcomes to your household, or outcomes to the community and/or environment?

Continue survey to questions 28-36 of 40.

Interior Alaska Community Recreation Study

You and Your Trip

Your ideal [q10] trip with [q23] for [q29]

28. What time of week would you participate in this kind of trip?

29. Realistically, how often (during the seasons you selected) would you participate in a trip like you described?

30. How long have you been participating in [q10]?

31. How long have you been participating in [q10] in Alaska?

32. How does your experience level relate to this trip? For example:

- Did your ideal trip change as you became more experienced?
- Do you anticipate your ideal trip will change in the future?

33. What places in Interior Alaska currently provide the opportunity to take part in your ideal [q10] trip?

(Limit to area within red border of map below)

1. Please identify these areas, and
2. Describe how the areas are ideal for this trip.
3. If a particular area falls short, please explain what it is lacking.
4. If there are no areas that meet your needs, please explain, or describe why a specific place outside the Interior is ideal.
5. Please address what could be done to help you realize your ideal [q10] experience with [q23] for [q29].

Interior Alaska Community Recreation Study

You and Your Trip

Your ideal [q10] trip with [q23] for [q29]

28. What time of week would you participate in this kind of trip?

29. Realistically, how often (during the seasons you selected) would you participate in a trip like you described?

30. How long have you been participating in [q10]?

31. How long have you been participating in [q10] in Alaska?

32. How does your experience level relate to this trip? For example:

- Did your ideal trip change as you became more experienced?
- Do you anticipate your ideal trip will change in the future?

33. What places in Interior Alaska currently provide the opportunity to take part in your ideal [q10] trip?

(Limit to area within red border of map below)

1. Please identify these areas, and
2. Describe how the areas are ideal for this trip.
3. If a particular area falls short, please explain what it is lacking.
4. If there are no areas that meet your needs, please explain, or describe why a specific place outside the Interior is ideal.
5. Please address what could be done to help you realize your ideal [q10] experience with [q23] for [q29].

Interior Alaska Community Recreation Study

35. How would you evaluate information available from public agencies (e.g. BLM, AK State Parks, FNSB, etc.) regarding the [q10] trip you described? Please rate the extent to which you disagree or agree with each statement.

- *"Information from public agencies would be: ...."*

	Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree	**I don't know**
Trustworthy	○	○	○	○	○	○
Up-to-date	○	○	○	○	○	○
Convenient to obtain	○	○	○	○	○	○
Informative	○	○	○	○	○	○
Useful	○	○	○	○	○	○
My first source of information	○	○	○	○	○	○

36. Would you like to elaborate on your ratings above?

Continue survey to questions 37-40 of 40.

Interior Alaska Community Recreation Study

Partnerships

Have you ever been involved in any recreation-focused partnerships?

- *Examples of partnerships could include volunteering to help build or maintain facilities, recruiting and organizing volunteers, raising funds to help offset management costs, helping gather data, "friends" or advocacy groups, etc..*

37. If **Yes**, please tell us about your experiences. What did you find to be positive and/or negative?

38. If **No**, why not? Are you not interested, or are you interested but not able? Please explain.

39. If there are convenient opportunities to assist in management related to your activity or area of interest, would you like to be involved?

- Please indicate how you might like to be involved during the next 12 months. Check all that apply.

*Note: This question is only to gauge interest levels, and will not be used to contact you or solicit your involvement in any way.

- ☐ Volunteering as an individual
- ☐ Volunteering as part of a group/club
- ☐ Organizing volunteers
- ☐ Gathering scientific data
- ☐ Attending a public meeting
- ☐ Advocating for certain land uses
- ☐ I would like to be involved but do not have time
- ☐ I do not want to be involved in any way

40. Are you actively a member of any local, organized recreation groups?

- ◯ Yes
- ◯ No

Interior Alaska Community Recreation Study

Exit Survey? Complete Another?

You have completed the survey!

Would you like to complete another survey for a different activity, different companions, or a different time frame?

- If Yes, **Click Here** to describe another trip.
  - You will be directed to a **shorter version** in a new window.
- Also, **Click Here** to enter in a prize drawing for **one of twenty gift certificates worth $30** to your choice of Beaver Sports or Frontier Outfitters.
  - You may enter after each survey you complete to increase your odds. Maximum of 4 entries per person.

You must still **click "SUBMIT" to enter your responses** and close this window.

Thank you!

- This survey will be open until June 30th, 2014. Survey data will be provided to local recreation planning agencies for use in their planning processes. For more information about results and findings from this survey, contact Dr. Peter Fix at pjfix@alaska.edu or Bryant Wright at rbwright@alaska.edu. If you have questions or concerns about your rights as a research participant, you can contact the UAF Office of Research Integrity at 474-7800 (Fairbanks area) or 1-866-876-7800 (toll-free outside the Fairbanks area) or uaf-irb@alaska.edu.

Appendix B: White Mountains National Recreation Area Winter Recreation Study Questionnaire

Appendix B contains a mail-back questionnaire given to winter visitors of the White Mountains National Recreation Area. The questions about recreation experiences and lasting recreation benefits associated with the respondent's visit provide examples of the type of measurement instrument studied in Chapter 3.

White Mountains National Recreation Area
Winter Recreation Study

We would like to thank you for visiting the White Mountains National Recreation Area. We would now like to find out about how your trip went. Your participation in this survey is very important to us as we are hoping to learn more about visitation to the White Mountains National Recreation Area. Results of this survey will be provided to managers of the area to assist in updating WMNRA management plans.

Participation in this study is completely voluntary. Returning the questionnaire will be considered as your consent for participating in this study. The survey number on the final page will be used to record time and location of survey distribution and response rate. We will not ask for any identifying information. The following questionnaire should take you about twenty minutes to complete.

This study is being conducted by:

UNIVERSITY OF ALASKA FAIRBANKS
Department of Resources Management
323 O'Neill Bldg
PO Box 757200
Fairbanks, AK 99775-7200
If you have any questions about this survey, contact
Dr. Peter Fix at (907) 474-6926; ffpjf@uaf.edu

For this survey please reference your trip to the White Mountains National Recreation Area when you were contacted at the trailhead.

Section A: Trip Characteristics

Please check all that apply when appropriate.

1. Approximately how many times have you been to the White Mountains National Recreation Area in *winter* (as shown on the map) in the past two years?

   □ This was my first visit Or _____ times

2. Including yourself, how many people were in your group? _____ people

3. What sources of information were useful for planning your trip to the White Mountains?

   □ Friends, family, or others
   □ Internet
   □ Other:_____
   □ BLM, Fairbanks Office
   □ Brochure

4. Did you (or your group) use the cabin reservation system? ____ Yes ____ No

   If yes, please rate the convenience of the cabin reservation system (*check one*):

   ____ Not at all convenient
   ____ Slightly convenient
   ____ Moderately convenient
   ____ Extremely convenient

Do you have suggestions for the cabin reservation system?

_____

_____

5. How did you travel within the White Mountains Area?

   □ Skis
   □ Snowshoes
   □ Other: _____
   □ Snowmachine
   □ Skijoring
   □ Hiking/walking
   □ Dog sledding

6. On your trip did you spend more than one day in the White Mountains area?

   □ Yes □ No (if "No", go to question 8)

7. If you answered "Yes" on Question 6, how many nights did you spend:

   a) camping?_____ b) staying in a cabin?_____

Section B: Destination and Activities

Please review the included map and answer the questions below.

8. As shown on the included map, we have divided the White Mountains into 4 recreation zones. Please check the boxes for all of the zones that you visited during your trip:

- ☐ Zone 1: Wickersham to Lee's Cabin and Fred Blixt Cabin
- ☐ Zone 2: Beyond Lee's Cabin to Borealis-LeFevre, Wolf Run, and Richard's Cabin
- ☐ Zone 3: Windy Gap, Caribou Bluff, and Cache Mountain Cabins
- ☐ Zone 4: US & Nome Creek Road including Quartz Creek Trail

9. From the zones marked above, which zone was the most satisfying to you? _____

10. Were you hindered from reaching any zones?

☐ Yes ☐ No

If "Yes", which zones? _____

Why? _____

11. Please check the boxes for all the trails that you visited during your trip:

- ☐ Ski Loop Trail
- ☐ Moose Creek Trail
- ☐ Fossil Creek Trail
- ☐ Windy Creek Trail
- ☐ Big Bend Trail
- ☐ Fossil Gap Trail
- ☐ Bear Creek Trail
- ☐ McKay Creek Trail
- ☐ Wickersham Creek Trail
- ☐ Trail Creek Trail
- ☐ Summit Trail
- ☐ Cache Mountain Loop Trail
- ☐ Colorado Creek Trail
- ☐ Quartz Creek Trail
- ☐ Lower Nome Creek Trail
- ☐ US & Nome Creek Road

12. Please check the boxes for all the cabins/shelters that you stayed in during your trip:

- ☐ *Did not stay overnight*
- ☐ Lee's Cabin
- ☐ Moose Creek Cabin
- ☐ Crowberry Cabin
- ☐ Caribou Bluff Cabin
- ☐ Wolf Run Cabin
- ☐ Cache Mountain Cabin
- ☐ Fred Blixt Cabin
- ☐ Summit Trail Shelter
- ☐ Wickersham Creek Trail Shelter
- ☐ Eleazar's Cabin
- ☐ Borealis-LeFevre Cabin
- ☐ Colorado Creek Cabin
- ☐ Windy Gap Cabin
- ☐ Richards Cabin

13. Please check each *winter* activity that you, or your group, participated in.

□ Hiking	□ Staying in a cabin
□ Skijoring	□ Photography
□ Snow shoeing	□ Snowmachining
□ Skiing	□ Dog sledding
□ Trapping	□ Other: _____

14. From the activities marked above, which one would you select as your primary activity at your most satisfying zone?

_____

Section C: Evaluation of Management and Preferences

We would like to know how management impacted your trip. This set of questions consists of three parts: the first asks about the number of other groups you encountered, the second part asks for your evaluation of the quality of management, and the third part asks your preferences for management.

15. Approximately how many other groups of people did you encounter in your most satisfying zone (as indicated in question 9)? _____ groups

16. Please circle the number that best represents how crowded you felt in your most satisfying zone.

Not at all crowded		Slightly crowded			Moderately crowded		Extremely crowded	
1	2	3	4	5	6	7	8	9

17. Please rate the quality of each of the following items that you observed during your trip.

	← Poor ---------- Average ---------- High →							Did not observe
Trail conditions	1	2	3	4	5	6	7	□
Trail signage	1	2	3	4	5	6	7	□
Outhouses	1	2	3	4	5	6	7	□
Cabins	1	2	3	4	5	6	7	□
Ranger presence	1	2	3	4	5	6	7	□
Information boards	1	2	3	4	5	6	7	□

18. Please circle the number that corresponds to your preference for management in the White Mountains National Recreation Area during winter.

	← Remove ----------			leave as is			----------Add more→
Cabins	1	2	3	4	5	6	7
Trail signage	1	2	3	4	5	6	7
Information boards	1	2	3	4	5	6	7
Trails	1	2	3	4	5	6	7
Grooming	1	2	3	4	5	6	7

Please provide comments on the management of the items listed above in the White Mountains.

_____

_____

_____

Did you experience conflict with other user groups? ____ Yes ____ No

If yes, please explain.

_____

_____

_____

19. Cabin permits are currently $25 per night for Friday and Saturday nights and $20 for all other nights (Sunday thru Thursday). Do you agree or disagree that there should be a different rate between weekdays and weekends?

____ Strongly agree
____ Moderately agree
____ Slightly agree
____ Neither
____ Slightly disagree
____ Moderately disagree
____ Strongly disagree

20. If cabin rates were raised to $30 for weekdays and weekends, how would this impact your future trips?

____ No impact
____ Change dates of trips (e.g., no longer visit during weekdays)
____ Take fewer trips to cabins (e.g., 1 trip per year instead of multiple)
____ Shorter multi-day trips to cabins (e.g., 2 day instead of 3, 4, or 5 day trips)
____ Would no longer stay at cabins
____ Other, please explain: _____

Section D: Experiences

Next we would like to know the reasons why you took this trip.

21. We would like to know more about the **experiences** you achieved on your trip to the White Mountains. For the experiences listed below, first rate the **importance** of each. Then rate your **attainment** of each, while visiting your most satisfying zone, as indicated by question 9.

Importance							Experiences	Attainment						
Not at all			Somewhat			Extremely		Not at all			Somewhat			Fully
1	2	3	4	5	6	7	Enjoying the sights and smells of nature	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Bringing your family close together	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Experiencing new and different things	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Testing your skills and abilities	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Doing something with your family	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Being close to nature	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Giving your mind a rest	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Exploring the area	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Keeping physically fit	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Teaching your outdoor skills to others	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Learning what you are capable of	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Experiencing the open space	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Getting away from the usual demands of life	1	2	3	4	5	6	7
1	2	3	4	5	6	7	To be with members of your group	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Getting exercise	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Sharing your skill and knowledge with others	1	2	3	4	5	6	7
1	2	3	4	5	6	7	Being away from crowds of people	1	2	3	4	5	6	7
1	2	3	4	5	6	7	To be with friends	1	2	3	4	5	6	7

Section E: Benefits of Recreation

Recreation can provide benefits not only to the individual participants, but also to society as a whole. We would like to know your opinions about these potential benefits.

22. We are interested in your opinion regarding some possible positive outcomes that recreation can provide to individuals. Managers can help promote benefits that are important to users. Please circle the number that corresponds to how important it is to you that your most satisfying zone is managed for the following benefits.

	Importance						
	← Not at all			Somewhat			Extremely →
Improved physical fitness	1	2	3	4	5	6	7
Enhanced sense of personal freedom	1	2	3	4	5	6	7
Enhanced sense of competence	1	2	3	4	5	6	7
Improved outlook on life	1	2	3	4	5	6	7
Increased self-confidence	1	2	3	4	5	6	7
Improved outdoor knowledge	1	2	3	4	5	6	7
Enhanced work performance	1	2	3	4	5	6	7
A greater connection with nature	1	2	3	4	5	6	7
A more exercise-oriented lifestyle	1	2	3	4	5	6	7
Improved mental health	1	2	3	4	5	6	7
Greater job productivity	1	2	3	4	5	6	7
Gained sense of independence	1	2	3	4	5	6	7

23. We are also interested in your opinion regarding some possible positive outcomes that recreation can provide to the community at large. Managers can help promote community benefits that are important. Please circle the number that corresponds to how important it is to you that your most satisfying zone is managed for the following benefits.

	Importance						
	← Not at all			Somewhat			Extremely →
Greater opportunities for youth	1	2	3	4	5	6	7
Increased productivity at work	1	2	3	4	5	6	7
Greater protection for fish & wildlife habitat	1	2	3	4	5	6	7
Greater awareness of minimal impact recreation	1	2	3	4	5	6	7
Positive economic contribution to communities	1	2	3	4	5	6	7
Improved family bonding	1	2	3	4	5	6	7
Heightened awareness of natural world	1	2	3	4	5	6	7
Greater community involvement in land use planning processes	1	2	3	4	5	6	7
Increased recreation business to local communities	1	2	3	4	5	6	7

Section F: Demographics

Tell us about yourself. This section asks for some background information about you. Individual answers will be kept strictly anonymous.

24. Your age: _____

25. What is the highest level of education you have achieved?

    ____ Less than a high school diploma
    ____ High school diploma or GED
    ____ Technical/vocational degree beyond high school
    ____ Some college
    ____ 4-year college degree
    ____ Advanced degree beyond 4-year college degree

26. Are you: □ Male □ Female

27. Are you Hispanic or Latino? □ Yes □ No

28. If no, what race do you consider yourself to be?

    □ Alaskan Native □ Asian □ American Indian
    □ African American □ Native Hawaiian or Pacific Islander
    □ White or Caucasian □ Other: _____

29. What is your zip code (or country if you are not a US resident)? _____

Section G: Comments and Suggestions

Survey #: ____