PARTICIPATION AND PERCEPTION: EARLY EXPOSURE, ENVIRONMENTAL ATTITUDES, AND OFF-HIGHWAY VEHICLE (OHV) RECREATION IN THE BOISE METROPOLITAN AREA

by

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ABSTRACT

Off-highway vehicle use has and is becoming an increasingly popular form of recreation in the Boise Metropolitan region. However, it also has the potential to impact the flora and fauna present on public lands. As OHV use increases, so does the likelihood of impacts on the environments where recreation takes place. In order to effectively manage the resources provided by the landscape, more must be known about the user population. This study sought to determine which elements affect the continued use of OHVs and how OHV recreationists differed in their environmental attitudes by categorizing them into groups according to their experience use history (EUH).

OHV recreationists were invited to participate in a survey through door-to-door solicitation within ten Treasure Valley communities and at the Ada and Canyon County DMVs. Distribution neighborhoods were randomly selected. In order to participate, individuals were required to be 18+ years of age and have operated an OHV at least once in their lives. A total of 335 surveys were distributed from May to September 2015, with 58 surveys returned.

Comparing current and past users along with data on their initial exposure to OHV shows that neither early exposure nor demographic characteristics, such as sex or current age, was correlated with an individual's current use status. Additionally, statistical analysis found the majority of users support environmental protection and management, but found no significant differences in environmental attitudes across EUH groups.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
ATV	All Terrain Vehicle
BLM	Bureau of Land Management
EUH	Experience Use History
HBPA	Hemingway Butte Play Area
IDPR	Idaho Parks and Recreation
IRB	Institutional Review Board
LEK	Local Ecological Knowledge
NEP	New Ecological Paradigm
NSRE	National Survey on Recreation and the Environment
OHV	Off-Highway Vehicle
ORMA	Owyhee Resource Management Plan
PCA	Principal Components Analysis
SRMA	Special Recreation Management Area
TMP	Travel Management Plan
UTV	Utility Task Vehicle

CHAPTER ONE: INTRODUCTION

In recent years, off-highway vehicle (OHV) use has increased significantly, particularly near areas with rapid population growth, such as the Boise Metropolitan Area. Including all non-street-legal recreational motorized vehicles, OHV recreation was one of the fastest growing modes of recreation in the United States, growing by more than 100 percent from 1982-2001 (Cordell et al. 2004). During a six-year period (1994-2000), the number of OHV operators in the U.S. increased by 32%, representing a growth from 27.3 million users in 1994 to around 37.6 million in 2000 (Cordell et al. 2004). This growth has continued, with an additional three million users added in fall of 2007 (Cordell et al. 2008). According to the 2008 National Survey on Recreation and the Environment (NSRE), one in five Americans age 16 and older have participated at least once in OHV recreation.

This increase in OHV recreation extends to Idaho where, from 2005-2008, the percentage of Idaho's population that participates in OHV recreation increased from 33.5% to 34.2% (Cordell et al. 2005, 2008). Idaho is now second in the nation for population percentage participating in OHV recreation. However, as OHV use increases, so does the likelihood of negative impacts on the recreation environment, such as soil erosion and disturbance of wildlife (Miller et al. 1998, Rode et al. 2006, Rodriguez-Prieto et al. 2014, Steenhof et al. 2014, Tarrant et al. 1997, Taylor and Knight 1993). Therefore, the question becomes how do we maintain recreational opportunities and wildlife habitat?

In the Owyhee Front Special Recreation Management Area (SRMA), located west of Boise, Idaho, federal land managers face the challenge of minimizing impacts on the environment while also supervising OHV recreation. The wild-urban interface created in the meeting of these two areas presents potential conflicts for the BLM and their dual mandate of multiple use and sustained yield. This mandate requires that the BLM manage the resources on public lands for a range of uses, from energy development to recreation, while also protecting any natural, cultural, and historical resources (BLM 2012). Thus the BLM must find a balance between expectations for management of natural resource systems and the value placed on the land by recreationists.

Management of recreation takes the form of a Travel Management Plan (TMP). TMPs typically limit activity through restrictions on vehicle size, engine type, trail closures, and particular seasons of use. Through the implementation of TMPs, managers seek to mitigate impacts on the environment while also accommodating the increase in OHV use. However, as the effectiveness of these TMPs is largely reliant on the compliance of users, a greater understanding of the user population and their perception of recreation and the recreation environment may increase their effectiveness.

This project explores current and past user perceptions and attitudes towards OHV recreation in the Owyhee Front. First, with the increase in the number of riders, and the fragile nature of our high desert environment and its wildlife, this study hopes to determine if an individual's first ride and operation events can predict current use. This information may be useful in understanding how the user population may change in the future. Second, through categorizing OHV recreationists based on their duration and frequency of recreation, or their experience use history (EUH), this study hopes to

examine the relationship between prior experience and recreation perspectives regarding rider behavior and environmental impacts. This information presents an opportunity to assist in the creation of regulations that will allow for continued use, while also attempting to minimize the impacts on the environment - preserving the dual mandate established by the BLM.

Through the use of questionnaires distributed to residents of the Boise Metropolitan Area, addressing OHV recreation history, skill level, and environmental attitudes of past and present users, I analyze novel data to determine how and where people are recreating. These data also allow me to address users perceptions of the recreation environment. Moreover, I explore if the manner in which one is introduced to OHV recreation is correlated with an individual's current use status in order to predict how OHV use will change in the coming years with continued urban expansion and the anticipated increase in the recreationist population.

While also contributing to the literature on experience use history (EUH), this study will allow anthropologists to assist federal land managers in creating effective TMPs. Such TMPs will allow for continued use of ecosystem services while also reducing the impacts on the environment and sensitive wildlife. Additionally, this framework presents an opportunity for application in other metropolitan regions experiencing an increase in OHV recreation across the state, and perhaps, the country. Overall, this project serves to increase our understanding of the OHV recreation and to examine the link between recreation history and participant perspectives in present and future populations.

CHAPTER TWO: BACKGROUND

The Owyhee Front Special Management Area

The Owyhee Front Special Recreation Management Area (SRMA) (Figure 1) is comprised of 261,487 acres of public lands with 3,000 miles of trails in Owyhee County, Idaho (BLM OFO 2006b). The SRMA includes the 28,800 acre Wilson Creek Subregion, the 233,000 acre Murphy Subregion, and the 192 acre Hemingway Butte Play Area (HBPA). According to the 1999 Owyhee Resource Management Plan (ORMA), the Wilson Creek and Murphy Subregions are designated as OHV use limited to designated roads and trails, whereas the HBPA is designated as an open area with unrestricted OHV travel permitted (BLM OFO 2006a, BLM OFO 2006b, BLM OFO 2007).

These areas have become a popular location for motorized recreational OHV use, primarily by residents of the nearby Boise Metropolitan Area (BLM OFO 2006b). OHVs allowed in this area include ATVs, UTVs, dirt bikes and off-highway motorcycles, dune buggies, and rock-crawlers. Snowmobiling is not allowed in the SRPA.

The area features three trailheads along the Owyhee Front, single track trails for motorcycles, wider trails and two-tracks for all-terrain/utility task vehicles (ATVs/UTVs) and other motorized vehicles. However, BLM missives state that as recreation use and travel increases, a variety of natural and cultural resources are impacted. Wildlife, such as sage grouse, are affected when OHV activity occurs adjacent to the animals' habitats (BLM OFO 2006b). Cheatgrass, an invasive exotic annual grass, is introduced and spread in disturbed areas and near existing trails. Various cultural sites, including camps, burials,

and mines, may be disturbed or damaged as a result of the creation of unauthorized roads and trails (BLM OFO 2007).

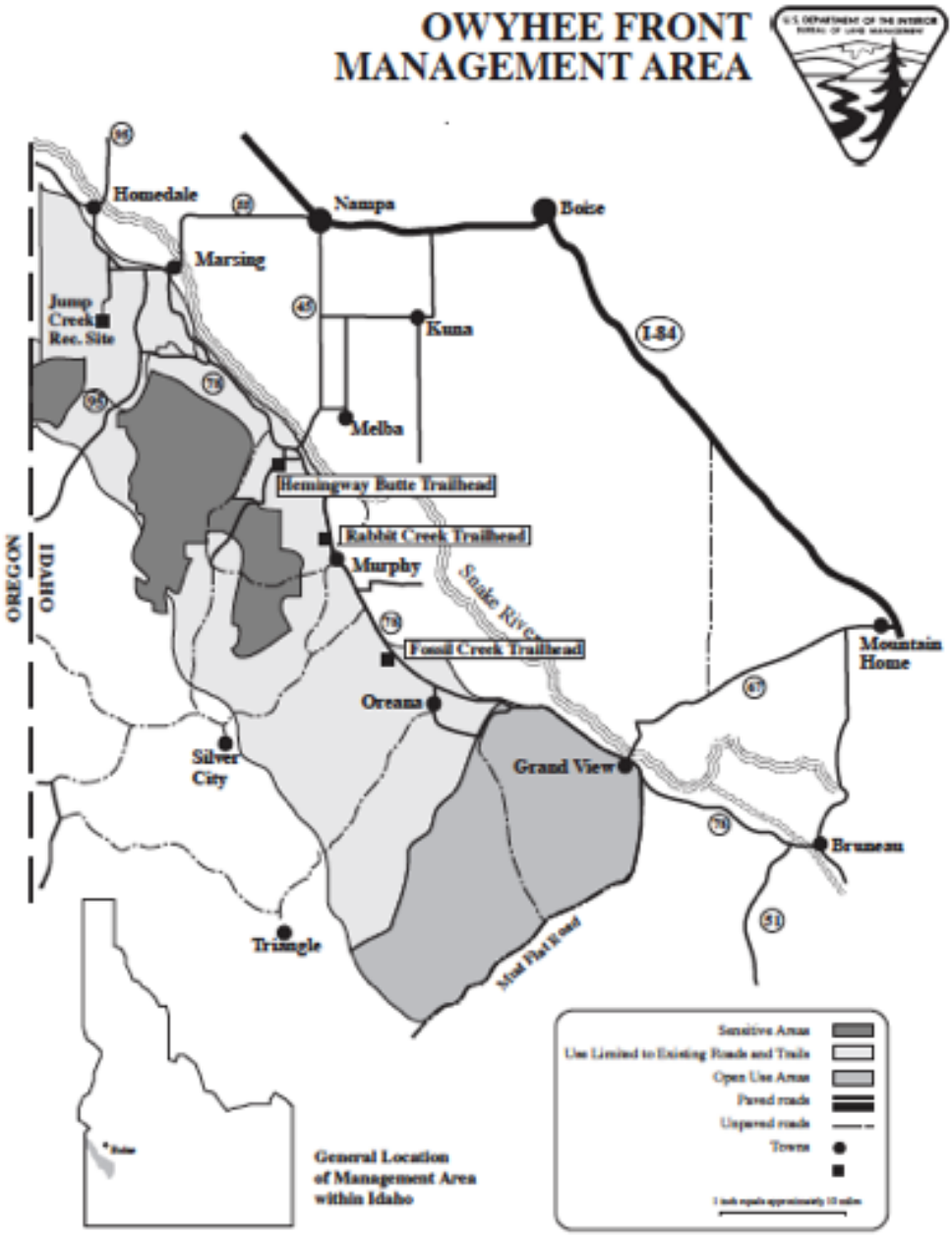

Figure 1. The Owyhee Front Management Area

This leaves managers in a predicament. OHV recreationists are opposed to further trail closures; in fact, the question most often asked during the course of this study was if the purpose was to close trails. However, environmental disturbances have been noticed by both the BLM and recreationists. According to the 2007 Murphy Subregion TMP, the BLM estimated 128 miles of new unauthorized trails were created in the subregion from 1999 to 2007 (BLM OFO 2007), many of which run parallel to or end in locations similar to existing trails. One recreationist from Kuna, Idaho, recounted an event in June 2015 in which he witnessed a group of three ATVs driving off-trail through a river, bringing much debris into the water with them and agitating fish (interview, July 2015). Another individual living in Caldwell mentioned the number of ATVs and dirt bikes riding off trails appeared to be increasing with each visit he made out to the trailheads (interview, July 2015).

Idaho's Burgeoning OHV User Population

The 2004, Idaho Parks and Recreation (IDPR) administered an outdoor recreation survey to more than 2,300 randomly sampled Idaho residents (BLM OFO 2007). Of those that participated, IDPR found that more than half of the residents had participated in OHV recreation. IDPR also determined ATV registration, required for all OHVs operated or transported on public lands, roads, or trails, had increased by 57% in southwest Idaho counties (Adams, Ada, Boise, Canyon, Elmore, Gem, Owyhee, Payette, Valley, and Washington). Another survey, the 2008 National Survey on Recreation and the Environment (NSRE), addressed the growth in OHV recreation in the state (Cordell et al. 2008). The report states that, in three years time, the OHV user population in Idaho had grown by approximately 65,000, with the total population of users making up 34.2% of

Idaho's population (Cordell et al. 2008). According to the 2011 NRSE selected data report on Idaho, the 2009 population estimate for OHV recreation was reported at 40.8% of the population (Cordell et al. 2011). If the increase in the user population continues, it is likely the stress placed on the environment will increase proportionately with user density.

Motivation Theory and Experience Use History

In order to address these issues, federal land managers and researchers alike require a foundational understanding of OHV recreationists. Central to this goal is a focus on what motivates recreation behavior (Manfredo et al. 1996). Motivation theory states that recreation is pursued in an effort to reach both physical and psychological goals (Driver & Tocher 1970, Knopf et al. 1973). For example, an individual, in response to stress resulting from their busy, daily routine, may choose to go fishing because it allows them to achieve a stress-free state, although momentarily (Knopf et al. 1973, Manfredo 1984, Wellman 1979). Therefore, the recreation experience itself provides an explanation for why people engage in recreation (Manfredo et al. 1996). It follows then that information on the motivations behind recreation can assist in the development of programs that allow continued landscape use while mitigating the negative impacts of recreation (Manfredo et al. 1996).

This emphasis on recreationist motivations has extended to addressing the behaviors actually exhibited by recreationists and their views on management, resource use, and environmental impacts (Chipman & Helfrich 1988, Dyck et al. 2003, Hammitt et al. 2004, Hvenegaard 2002, Mowen et al. 1997, Oh & Ditton 2008, Smith et al. 2009, Thapa et al. 2006, White et al. 2007, Wynveen et al. 2007). In order address the behaviors

and perspectives present within user populations, researchers employ experience use history (EUH) (Schreyer et al. 1984). Measuring a user's past experience in a particular activity, EUH is used to categorize recreationists to analyze similar and contrasting perspectives within a population of users for a variety of dependent variables (Smith et al. 2009). Categorizing users based on prior experience is generally derived from data on recreationists' total number of visits, years of use, and frequency per year of participation within an activity (Smith and Burr 2011).

Studies on EUH cover a wide range of topics, including its effects on management preferences (Smith et al. 2009), desired benefits (Smith and Burr 2011), and environmental impacts (White et al. 2007). Results of such studies are quite varied. While several studies have been unable to find a correlation between attitudes and behavior for OHV users (Nord et al. 1998, Tarrant & Green 1999, Teisl & O'Brien 2003), others found that OHV users were less concerned about the environment and less likely to practice environmentally friendly recreative behavior than non-motorized recreationists (Thapa & Graefe 2003, Theodori, Luloff, & Willits 1998). Tarrant and Green (1999) argue that any and all environmental attitudes influence one's choice of recreation activity, which then determines the level of environmentally conscious behavior. The authors hypothesize, due to the implicit environmental impacts that result from OHV recreation, OHV use is likely to lead to less positive environmental behaviors. However, in 2010, Barker and Dawson found that the more OHV users participated in recreation, the greater the likelihood of users practicing environmentally responsible behavior.

Similarly, Kuehn et al. (2011) found that OHV users tended to look negatively upon environmentally irresponsible riding behavior. Some studies have also found the

higher the level of specialization in an activity, the greater support for protection of the recreation environment, adherence to management regulations, and low-impact behavior (Chipman & Helfrich 1988, Dyck et al. 2003, Hvenegaard 2002). In a study on specialization between motorboat recreationists, Jett et al. (2009) found those with more experience were more supportive of conservation efforts.

However when applied to OHV recreation, a recent study by Smith et al. (2010) found no significant correlation between Utah OHV recreationists' level of involvement and their degree of environmental concern - although they did find that those with greater levels of specialization were motivated by personal achievement and a chance to lead and teach others. Another study by Baker et al. (2007) reinforced the importance of social factors; the results indicated registered riders in New York were motivated by social affiliation, i.e. spending time with friends and family and meeting new people. The authors also note that elements of the natural setting, including scenic views and wildlife, and managerial setting attributes (rules and signs, information/maps, and parking) were important resource attributes for riders (Baker et al. 2007).

Ultimately the correlation between experience, attitudes, and behavior seems to vary across both the recreation activity and location. While certain studies have found a positive relationship with increased participation in recreation and environmental attitudes and behavior (Barker and Dawson 2010, Chipman & Helfrich 1988, Dyck et al. 2003, Hvenegaard 2002), others have not identified any correlation between these factors (Nord et al. 1998, Smith et al. 2010, Tarrant & Green 1999, Teisl & O'Brien 2003).

In the Boise Metropolitan Area, OHV recreation has not been previously subjected to such analyses, leaving federal land managers and researchers alike unaware

of how one's degree of involvement in OHV recreation may impact environmental attitudes and behaviors. As attitudes are representative of an individual's intent to practice certain behaviors, information on such attitudes provides an opportunity for influencing behavior through management action (Manfredo et al. 1992). If BLM managers are to increase compliance with TMP regulations, then exploring the relationship between EUH, attitudes, and behavior is necessary for their success.

Since OHV recreation occurs in a "wild" environment, it stands to reason that these individuals would seek to prolong the natural context of this activity. Therefore, I hypothesize that these individuals are more likely to support environmentally responsible behavior and conservation and protection of the recreation environment, which allows for the sustained use of the recreation services provided. Through an application of EUH to this population, I aim to identify if differences in experience affect the way an individual views the recreation environment and the activity itself and to determine if this hypothesis holds.

Predicting Current Use

While all previous research has addressed the histories of users within a variety of recreation activities, researchers seem seldom concerned with the affects of the initial experiences on recreation motivations. There appears to have been no work performed which concerns itself with how one enters the world of OHV recreation and its relationship with current use status. It is important to note, however, that when and how one is introduced to the activity may be as vital to our understanding of recreation participation as the entire sum of their experience.

Among ecological anthropologists, studies find that when and how people learn from others affects how they acquire new behavior and knowledge relating to their environments (Demps et al. 2012, Gallois et al. 2015, Kline et al. 2013, Koster et al. 2016). It is commonly believed that individuals learn throughout their lives and knowledge about local environments is continually acquired and updated with age (Berlin 1992, Godoy et al. 2009). This is often supported by studies in which older people are more knowledgeable than the younger people about the plants and animals they use for subsistence (Figueiredo et al. 1993, Ladio and Lozada 2004, Reyes-Garcia et al. 2005, Somnasang and Moreno-Black 2000). However, research has also found that children learn a lot from parents and peers early in life and are highly knowledgeable about their environment, exhibiting an ability to identify a wide range of plants and animals with ease (Koster et al. 2016, McDonald 2007, Zarger and Stepp 2004).

Due to this learning trajectory, knowledge and/or skill often peak at some point in a person's life. Studies on tropical forest hunters have found that peak efficiency in hunting returns is reached around 40 years of age (Gurven et al. 2006, McElreath and Koster 2014). Research has shown that hunting knowledge also plateaus around this age (Koster et al. 2016). According to Kramer (2005), this is consistent with an embodied capital perspective as a high level of subsistence-related expertise at this age is necessary to provide for dependents. Dependents of these experienced individuals can have opportunities to learn their knowledge and skills (Demps et al. 2012).

However, sensitive learning periods can exist, and it may be more difficult to learn and develop skills after certain ages (Hannon and Trehub 2007). Parents and peers have greater influence at different points in the life cycle, with parents highly influential

demonstrators for young individuals and peers more important later in life (Aunger 2000, Hewlett and Cavalli-Sforza 1986, Hewlett et al. 2011, Koster et al. 2016, Lozada et al. 2006). It is also important to note that most knowledge is acquired by adulthood, with social learning in later life serving to update preexisting knowledge (Demps et al. 2012, Koster et al. 2016).

We expect that as people acquire knowledge differentially by age, the timing of participation within OHV recreation may significantly affect an individual's experience of the activity, including their overall knowledge, skills, and behavior. Additionally, knowledge may potentially be impacted by who is demonstrating the activity for the individuals, whether parents, peers, or otherwise. This study seeks to address if any aspects of the initial exposure, whether riding or operating, correlate with whether an individual is currently participating in OHV recreation. I hypothesize that those individuals who were first exposed to OHV recreation at an early age will be more likely to be current users, while those who were exposed to OHV recreation later in life are more likely to no longer participate in this form of recreation.

Hypotheses

H1: The earlier an individual is exposed to OHV recreation, the more likely they are to be current users.

H2: Active participants in OHV recreation are more supportive of conservation and protection of the recreation environment.

CHAPTER THREE: METHODS AND MATERIALS

Recreation Survey

From January to March 2015, I developed a 60-question survey (Appendix A) in order to obtain information on the OHV recreationist population and recreation history. I pilot-tested the survey with seven individuals in February of 2015 on a frequently used walking path in downtown Boise. After testing, I revised the surveys, resulting in a final draft made up of questions intended to elicit information on the following variables:

Demographic Information: sex, age, education, income level, and household size of survey participants. This information can be used to infer broader patterns of demography and recreation use in the Boise Metropolitan Area.

Introduction to OHV Recreation: Participants were asked to outline their initial exposure to OHV recreation. Questions included how individuals were introduced to OHV recreation and by whom. Analysis of this information may highlight possible correlations between recreation history and environmental attitudes. This section serves to address if current use can be predicted by elements of the introductory experience.

Experience Use History (EUH): Questions in this section address an individual's recreation history, including primary vehicle type, preferred recreation locations, as well as skill level and vehicle use patterns. Questions regarding the years and frequency of use of participants are intended to categorize recreationists according to EUH.

Environmental Attitudes: This section addresses user perspectives regarding OHV recreation, environmental protection and conservation, and management following the

framework established by Waight and Bath (2014). While the questions from the Waight and Bath study were retained for use, those addressing environmental impacts were dismissed[1].

Environmental Sketches: In place of further questions on environmental impact, the survey included a section in which the participant was asked to draw how they believe environments appear *with* and *without* OHV use. Participants were encouraged to label elements of the drawings and space was provided for further explanation if necessary. This section received the strongest response in the pilot tests, with most participants responding favorably to its inclusion. Though some individuals reported dislike of the section or did not fully complete it, the sketches provide an opportunity to obtain qualitative and quantitative data on perceptions of the recreational impacts on the environment.

Trailhead Fees: Two questions were included to determine at which trailheads, if any, OHV users would be willing to pay for use, as well as the amount they would be willing to pay.

This research was approved (#028-SB15-081*)* by the Boise State IRB in April 2015 (Appendix B).

Sample Size and Area

In 2008, the number of Idaho OHV recreationists residing within metropolitan locations was estimated at 226,200 (Cordell et al. 2008). This number was used to calculate the necessary sample size for questionnaire distribution. At a 95% confidence

[1] I found the questions utilized by Waight and Bath to assess environmental concerns to be leading and thus likely to result in biased responses.

level, the required sample size is 384 individuals. This number was increased to a total distribution of 500 questionnaires in order to increase the possible number of returned surveys and to reach the determined sample size. As the population of interest is metropolitan-residing OHV users, the sample area included the top ten communities in the Boise Metropolitan Area according to total population.

Table 1. Population totals, estimated distribution, and actual distribution numbers for communities in the sample area. Table includes distribution methods employed in each community.

Community	Est. Population	Percent of Total	Distribution Goal	Surveys Distributed	Distribution Method
Boise	214,237 (est. 2013)	42.75	214	139	door-to-door DMV
Nampa	85,930 (est. 2012)	17.15	86	44	door-to-door DMV
Meridian	85,000 (est. 2014)	16.94	85	46	door-to-door DMV
Caldwell	48,957 (est. 2013)	9.77	49	39	door-to-door DMV
Eagle	21,025 (est. 2012)	4.2	21	21	door-to-door
Kuna	16,189 (est. 2012)	3.23	16	16	door-to-door
Garden City	11,251 (est. 2012)	2.25	11	11	door-to-door
Emmett	6,516 (est. 2012)	1.3	7	7	door-to-door
Star	6,194 (est. 2012)	1.24	6	6	door-to-door
Middleton	5,801 (est. 2012)	1.16	6	6	door-to-door
Total	**501,100**	**100**	**501**	**335**	

This range of communities includes the perspectives of users living directly in Boise City as well in the smaller communities located in the metropolitan area that access nearby OHV recreation areas and represent a portion of the state's user population. Using

the most recent census-estimated population (U.S. Census Bureau) for each community, I calculated the aggregate population of inhabitants at 501,100. These figures were used to calculate the percentage each community contributes to the total population. These percentages were applied to the survey distribution number to determine the amount of questionnaires to distribute in each community, as seen in Table 1.

Participants and Distribution

Maps providing city limits were obtained for each community through the City of Boise website and Google Maps. A reference grid was added to each map, dividing the communities into zones (Figure 2). Using a random number generator (random.org), residential neighborhoods were sampled for each community. If the numbers chosen did not correspond to a residential area, the unit was recorded and new numbers were generated until an appropriate unit was located. With the assistance of an undergraduate intern, Jadie King, I visited houses within the sampled neighborhoods from May to September 2015, seeking participants for the study. In order to participate, individuals were required to be 18 years or older and have operated an OHV. No one was excluded from participating based on gender, ethnicity, or socioeconomic status. However, it is important to note that in some communities a language barrier did prevent around a dozen individuals from participating.

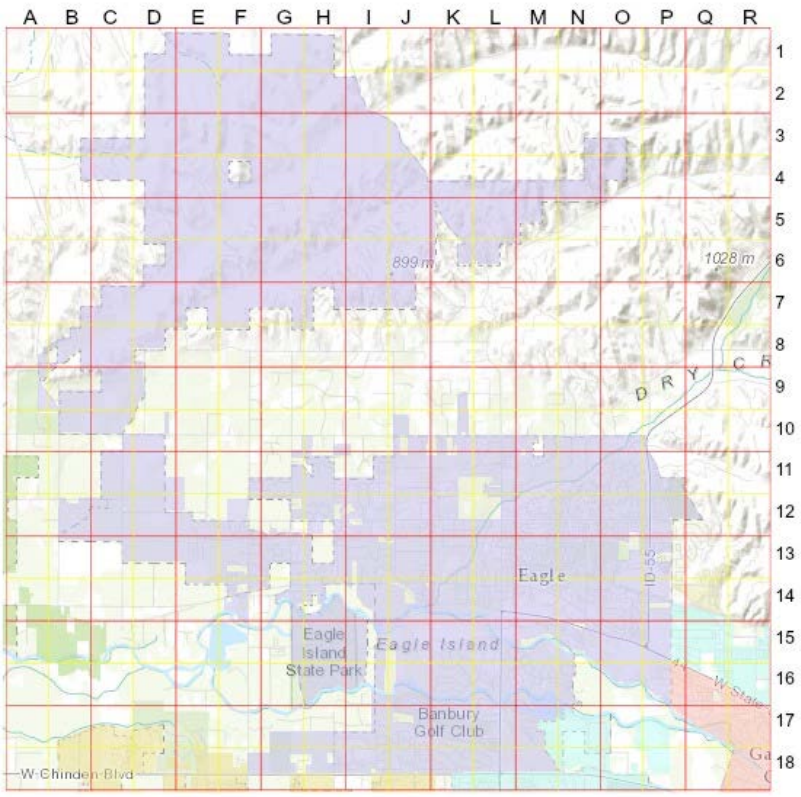

Figure 2. Map of Eagle city limits with reference grid.

At each neighborhood, the addresses of the homes visited was recorded along with the date and time and whether contact was made with the residents. If contact was made, residents were asked if they, or any other adults in the home, had ever operated an OHV. Their responses were recorded, and if they indicated past experience, they were invited to participate in the study. Survey numbers were recorded for those who opted to participate, and a note was made if the residents declined. Participants were provided with a pre-addressed, postage-paid envelope to return the completed survey. If no contact was made, a note was recorded to reattempt contact at a later date. The intern and I continued going door-to-door in each neighborhood until the distribution goal for the community was met.

Beginning in July 2015, we began soliciting individuals at the Department of Motor Vehicles Driver's Licensing Offices in Boise and Caldwell. This was modification was submitted to and approved by the IRB, and permission was obtained from the Idaho Transportation Department and Ada and Canyon County Sheriff's Offices. Ultimately, this change was made to address concerns over the time necessary to distribute door-to-door; while on foot, we found we only distributed one survey every ten houses and visited approximately 35 houses an hour. Distribution at the local DMVs provided the opportunity to attempt to randomly sample individuals in the Boise Metropolitan Area while also increasing our distribution numbers in a shorter amount of time. DMV location was recorded for each visit, along with date, time, contact, OHV use, and community of residence. Distribution concluded in mid-September with a total 1,190 houses visited, 563 people approached at the DMV, and 335 surveys distributed (Table 1).

Data Analysis

Researchers tend to differ in their opinion on the operationalization of EUH; some setting-specific studies partition users based on whether they've visited the area previously, then further dividing users based on general activity experience (Schreyer and Lime 1984). Other research addressing experiences and perceptions within a specific setting divides users into groups according to experience categories developed through researcher-defined measures of low, medium, and high categories of the length and frequency variables (Hammitt and McDonald 1983). However, the most common method segregates recreationists into high and low categories based on the total number of years the individual has participated in the activity and the occurrence of participation in the last 12 months (Schreyer and Lime 1984, Williams et al. 1990, Hammitt et al. 2004,

Backlund et al. 2006, Smith et al. 2009). Additional operationalization includes categories based solely on the total number of years spent visiting an area (White et al. 2008) and independent analysis of the length and frequency variables (Watson et al. 1991, Budruk et al. 2008).

Based on the criteria highlighted by Smith and Burr 2011, this study defines the EUH of an OHV user according to the total number of years they have been riding and the total number of days spent riding from June 2014 - June 2015. To maintain consistency with previous research, data for both variables was standardized by calculating the z-score for each individual, and the four most heterogenous EUH groups were identified through a K-means cluster analysis (Jackson 1987, Backlund et al. 2006, Smith and Burr 2011).

Eight questions from the survey are utilized to measure environmental attitudes. These questions employ a 5-point Likert scale with respondents indicating their level of agreement with the statement, where -2 = strongly disagree and 2 = strongly agree. The eight questions selected assess individuals' views on management and access to public lands and environmental impacts and conservation. Four of the questions regarding the perceived benefits received through OHV use, rights to riding on public lands, the effect of environmental protection on OHV use, and the impact of OHVs on the environment were reverse coded prior to analysis.

Statistical analysis was performed using Microsoft Excel and the R Program for Statistical Computing. Analytical tests utilized in this study include descriptive statistics, logistic regression modeling employed to address the effect of early exposure on continued use, cluster analysis to identify EUH group, principal components analysis to

examine overall environmental attitudes, and ANOVA to identify possible differences between group attitudes.

CHAPTER FOUR: RESULTS

Demography and Rider Behavior

Of the total number of individuals solicited, 422 (24.07%) identified as having operated an OHV at least once in their life, while 451 (25.73%) individuals had never operated an OHV. The remaining homes/individuals were recorded as either no contact (28.24%) or declined to participate (21.96%). Regarding the 335 surveys distributed, 58 surveys were returned between June and December 2015, representing a 17.37% response rate. Females represent 39.66% of the sample at 23 participants, while males make up 60.34% at 35 participants. The age distribution of this sample ranges from 21-80, with a mean age of 49.4 years, a modal value of 61, and a standard deviation of 16.4. The majority of participants reside in Boise (56.9%), and the average length of residency for all eight communities is 28 years. No surveys were returned from Emmett or Middleton (Table 2).

Table 2. Distribution of respondents according to community of residence.

Boise n (%)	Nampa n (%)	Meridian n (%)	Caldwell n (%)	Eagle n (%)	Kuna n (%)	Garden City n (%)	Star n (%)
33 (56.90)	11 (18.97)	1 (1.72)	6 (10.34)	3 (5.17)	2 (3.45)	1 (1.72)	1 (1.72)

Primary vehicle type (Table 3) is largely represented by ATVs (62.07%). Duration of participation in OHV recreation ranges from 1-50 years, with a mean of 15.8 years and a standard deviation of 13.6. Days spent riding in the last year range from 0-

140, with a mean of 11.3 and a standard deviation of 22.9. When asked to self-assess their skill level, 14 (24.14%) individuals placed themselves in the beginner category, 26 (44.83%) reported intermediate skill, 13 (22.41%) identified as advanced, and 3 (5.17%) claimed expert skill. Two participants declined to respond. Off all 58 participants, only two (3.45%) reported belonging to an OHV association, while 41 (70.69%) individuals identified as current participants in OHV recreation and 17 (29.31%) individuals identified as past participants.

Table 3. Distribution of respondents according to primary vehicle type.

ATV n (%)	Dirt bike/ Motorcycle n (%)	UTV/ Side-by-Side n (%)	Off-Road Truck/ Jeep n (%)	Didn't Specify n (%)
36 (62.07)	8 (13.79)	2 (3.45)	5 (8.62)	7 (12.07)

Participants were also asked to report the various tasks and reasons for using the vehicles (Table 4). The majority of individuals reported having used their vehicles largely for exploring trails and public lands and spending time with family and friends. Additionally, when asked to name a price in dollars they would be willing to pay as a trail fee for day use, only 23 (39.66%) individuals reported an amount above zero; fee amounts ranged from $0-40 with a mean of $4.98.

All participants also responded to eight questions addressing their attitudes towards OHV recreation and environmental protection and management (Table 5). When asked how important OHV recreation is in Southwestern Idaho, an overwhelming majority (77.58%) agreed it was highly important to the local culture. The majority of

respondents also agree that OHV recreation is a privilege (75.87%) and that they do not have the right to ride wherever they choose (67.13%).

The respondents were also in favor of environmental protection despite the possible impacts on OHV recreation (75.86%) and agree that such protection does not lead to extensive inconveniences for OHV users (63.79%). When asked about the costs and benefits of OHV recreation for participants and the environment, the respondents were divided; nearly a quarter of participants believe the benefits they obtain through OHV recreation are not worth more than the impacts of the activity. Another quarter of the users believe the opposite, with the benefits outweighing impacts, while 31.58% of respondents remained neutral. However, 65.52% of respondents agree that OHV recreation has a significant impact on the environment.

Table 4. Distribution of participants according to the purpose for which they utilized their OHVs.

Purpose	Never n (%)	Rarely n (%)	Sometimes n (%)	Mostly n (%)	All the Time n (%)
Hunting	31 (57.41)	4 (7.41)	9 (16.67)	7 (12.96)	3 (5.56)
Fishing	27 (50.00)	6 (11.11)	13 (24.07)	5 (9.26)	3 (5.56)
Berry Picking	32 (61.54)	8 (15.38)	12 (23.08)	—	—
Wood Cutting	37 (67.27)	8 (14.55)	8 (14.55)	1 (1.82)	1 (1.82)
Transport "To and From"	16 (29.09)	8 (14.55)	15 (27.30	11 (20.00)	5 (9.09)
Exploring Trails and Public Lands	7 (12.96)	4 (7.41)	11 (20.37)	20 (37.04)	12 (22.22)
Excitement and Thrills	11 (21.57)	14 (27.45)	8 (15.69)	11 (21.57)	7 (13.73)
Quality Time with Family and Friends	4 (7.41)	9 (16.67)	13 (24.07)	19 (35.19)	9 (16.67)

Table 5. Distribution of participants according to the environmental attitudes statements.

Environmental Attitudes Statement	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
OHV recreation is an important part of Southwestern Idaho's culture.	2 (3.4)	2 (3.4)	9 (15.52)	30 (51.72)	15 (25.86)
OHV recreation is a privilege, not a right.	5 (8.6)	2 (3.4)	7 (12.07)	21 (36.21)	23 (39.66)
The benefits I get outweigh the potential impacts of the activity.	5 (8.8)	13 (22.81)	18 (31.58)	14 (24.56)	7 (12.28)
I need my OHV to accomplish my tasks.	9 (16.7)	16 (29.63)	7 (12.96)	10 (18.52)	12 (22.22)
It is important to protect the environment even though it prevents OHV use in some areas.	3 (5.2)	4 (6.89)	7 (12.07)	19 (32.76)	25 (43.10)
It is my right to ride where I want on public lands.	11 (18.87)	28 (48.26)	11 (18.97)	6 (10.34)	2 (3.4)
Protecting the environment causes too many inconveniences for OHV recreationists.	18 (31.03)	19 (32.76)	11 (18.97)	8 (13.79)	2 (3.4)
OHV recreation has little affect on the environment.	16 (27.59)	22 (37.93)	10 (17.24)	6 (10.34)	4 (6.89)

Environment Sketches

In order to assess perceived impacts on the environment, participants were asked to complete two brief sketches - one of the environment WITHOUT OHV use, another WITH OHV use. Participants were encouraged to provide a brief explanation of their sketches and label any image elements they felt needed clarification. Of the 58 individuals who participated in the survey, 28 respondents completed the sketches section. I reviewed each set of sketches and their corresponding explanations for any notion of change. Sketches are labeled as having positive change if participants suggested

any improvement to the environment WITH OHV use. Negative change is determined through the representation of a negative impact to the WITH environment. Sketches with explanations expressing no change are coded as neutral/no change. Additionally, those sketches where a change of any kind could not be determined are also coded as neutral/no change.

Upon review, five of the sketch sets showed negative change from an environment without OHV recreation to an environment with OHVs, five showed positive change, and the remaining 18 are coded as neutral/no change. Content analysis revealed that 60.7% of the sketches illustrate the change between the two environments with an increase in the amount of trails. While some images depict wildlife or hiking trails being replaced by OHV trails, others show completely new trails over the extent of the landscape. Additionally, 42.86% suggest a decrease in vegetation and wildlife with the introduction of OHVs. One set of images effectively illustrates the change seen in many of the completed images. The WITHOUT image (Figure 3) contains a scene filled with tall grasses, a small animal, and a stream near by. The following WITH image contrasts with the first due to the fallen tree, the dead animal, and the trail running through the stream, leading to erosion.

However, some participants state that the introduction of OHVs to the environment is of benefit due to the management activities that result from its presence (Figure 4). Four individuals claim that without OHVs, brush would be overgrown and trees would not be cleared, increasing the susceptibility of the environment to fire. Another individual posits that OHV recreation assists in the preservation of open lands and avoidance of development, while three individuals state they cannot imagine the

environment without OHVs - they've always been there. One such sketch consisting of a single, sad face was returned with a question, asking "How can most people enjoy seeing the outdoors without some form of mechanical transportation?"

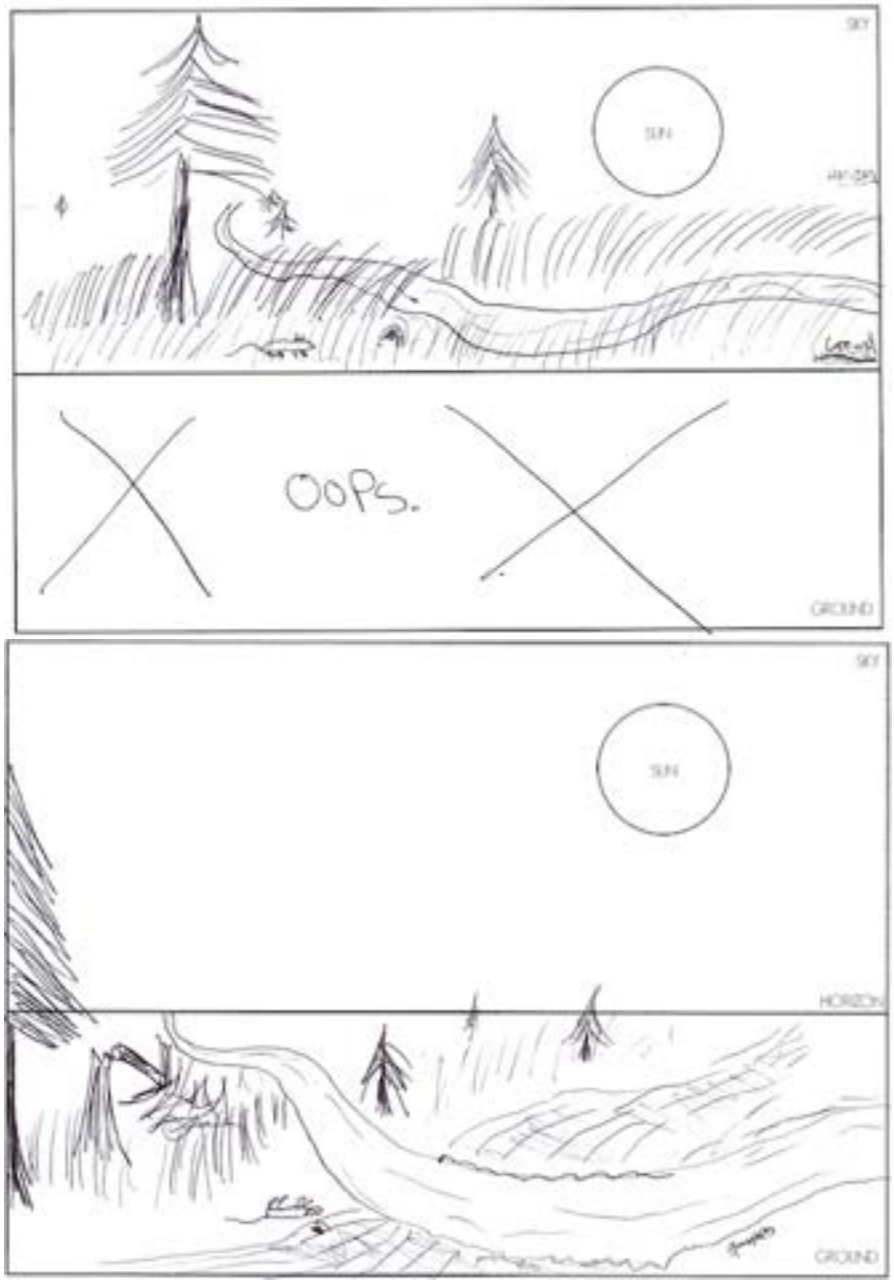

Figure 3. Sketches illustrating an environment WITHOUT and WITH OHVs. The first image (WITHOUT) depicts a river with ample vegetation and wildlife. In the second image (WITH), an OHV trail runs through the river and the vegetation and wildlife have declined.

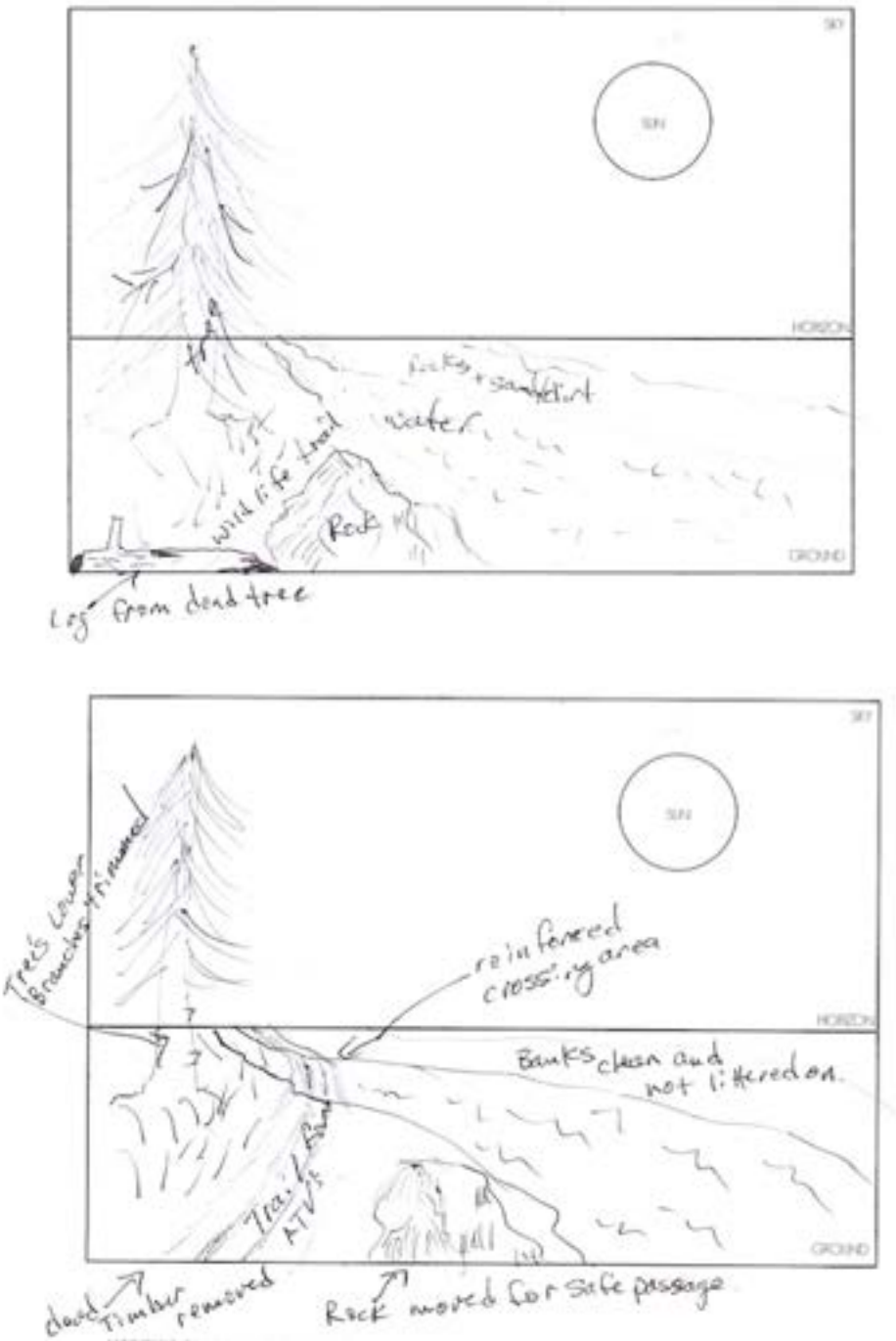

Figure 4. Sketches illustrating an environment WITHOUT and WITH OHVs. The first image (WITHOUT) depicts a river with rocks and sand on its far bank, fallen timber, rocks, and a wildlife trail. In the second image (WITH), the wildlife trail has been replaced with and OHV trail, the timber has been removed and the trees trimmed. The river now features a reinforced crossing area, and litter has been removed from the bank.

Hypothesis 1: Predictors of Current Use

To test my hypothesis whether earlier exposure increases the likelihood of current use, I chose to employ a logistic regression analysis; participants were recorded as either current users (1) or non-users (0). Independent variables for this analysis represent those aspects of the initial exposure being tested; these consist of participants' age at first ride, first ride vehicle operator (family, friend, etc.), first ride vehicle type (ATV, dirt bike, etc.), age at first operation, first operation instructor (family, friend, etc.), and first operation vehicle type to represent the elements of initial experience. Additional independent variables included in the analysis consisted of sex, age, residence, and education level. Before analysis, two individuals (survey # 135 and 182) were removed from the sample due to missing data, resulting in a remaining sample of 56, with 41 current and 15 past participants.

A scatterplot matrix of the data suggests a negative relationship between age at first ride and current use status, a negative relationship between sex and current use status, and a negative relationship between age and current use status. All assumptions of the model were tested and met. Tests for outliers and influential cases found none. Following the scatterplot matrix and testing for assumptions, I ran all possible logistic regression models of current use status. Results of the subset analysis found that the model consisting of the intercept and age at first ride represented the best model, as its BIC was the smallest at 1.2. In the resulting model (Table 6), age at first ride displayed a p-value of 0.13, suggesting that neither age at first ride, nor any of the other variables employed, were significant predictors of current use status.

Table 6. Model of current use status with age and first ride as a predictor.

Variable	Beta	Standard Error	Odds Ratio	95% CI Lower	95% CI Upper	P-Value
Intercept (current use status)	1.64936	0.54150	5.2036242	1.8984460	16.24370	0.00232
Age at First Ride	-0.2787	0.01830	0.9725186	0.9370096	1.00822	0.12782

Hypothesis 2: Experience Use History and Environmental Attitudes

A K-means cluster analysis identified the four most homogenous groups of current users in the survey. Of the 41 individuals recorded as current users, four (survey # 73, 156, 228, and 323) were removed from the sample due to missing data, leaving a remaining sample of 37 individuals. Following the framework found in Smith and Burr 2011, the groups are identified according to their patterns of prior experience as casual newcomers, casual veterans, frequent riders, and occasional riders (Table 7).

Table 7. Comparison of experience use history groups (n = 37).

	Casual Veterans (n = 10)	Casual Newcomers (n = 19)	Frequent Riders (n = 1)	Occasional Riders (n = 7)
Years riding M (SD)	35 (8.551)	5.32 (3.001)	12	17.43 (2.507)
No. of days riding June 2014 - 2015 M (SD)	6.53 (7.475)	6.53(6.518)	140	9.43 (9.796)

Casual newcomers are marked by a comparatively short length of participation in OHV recreation, as well as a relatively low number of days spent riding in the last year. Casual veterans are identified by a long period of long involvement and relatively few days riding during the last year. Frequent riders are marked by their larger number of

days spent riding last year compared to the other groups. Lastly, occasional riders participate comparatively more often than the casual groups but less than the frequent riders. It is interesting to note that, in this case, there was a wide range of values for number of days spent riding in the last year regardless of group. This sample was more clearly segmented by the duration of their participation as seen below in Figure 5.

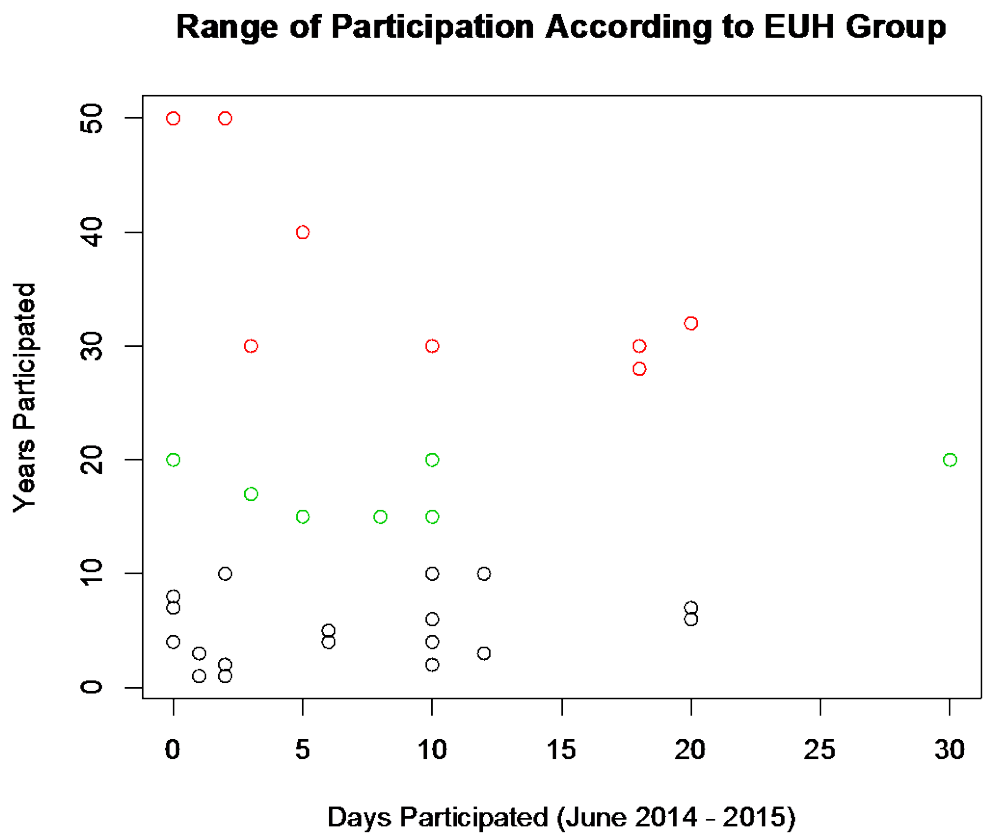

Figure 5. Distribution of user participation according to EUH group (excluding frequent riders). Casual newcomers are colored black, occasional riders are green, and casual veterans are red.

EUH and its relationship with environmental attitudes was explored through a principal components analysis (PCA) procedure. Of the eight variables included, two variables had several correlation values below 0.30/-0.30 and were consequently removed

from analysis[2]. A Kaiser-Meyer-Olkin test verified that PCA was appropriate and sampling was adequate with values ranging from 0.73 - 0.818, well above the acceptable limit of 0.5. The p-value for Bartlett's test of sphericity was less than 0.05, suggesting the correlations between items were sufficiently large for PCA. After extracting factors for the remaining six variables, I identified a single distinct factor with an eigenvalue greater than 1.0. I then utilized oblique rotation to define the most distinct factor for the remaining variables (Table 8). The Cronbach's alpha for the resulting factor was 0.76.

Table 8. Factor loadings and statistics of environmental attitudes. ** These questions were reverse coded prior to analysis to maintain the scale.

Environmental Attitudes Statement	Factor 1	h2	u2	mean	SD
It is important to protect the environment even though it prevents OHV use in some areas.	0.74	0.55	0.45	-0.21	1.2
The benefits I get from OHV recreation do not outweigh the potential impacts of the activity.**	0.72	0.52	0.48	-0.23	1.5
It is not within my rights to ride where I want on public lands.**	0.69	0.48	0.52	1.0	1.2
OHV recreation has a significant effect on the environment.**	0.66	0.44	0.56	0.56	1.0
Protecting the environment causes few inconveniences for OHV recreationists.**	0.66	0.43	0.57	0.67	1.2
I need my OHV to accomplish other important tasks.	-0.60	0.36	0.64	0.67	1.3

The factor loadings represent the correlation between the variables (each statement) and Factor 1 (F1). The higher the loading value, the greater the correlation

[2] The two statements removed are as follows: "OHV recreation is an important part of Southwestern Idaho's culture." and "OHV recreation is a privilege, not a right."

between the variable and the factor. Each of the environmental attitudes statements with a value greater than 0.40 significantly loads on F1, increasing the degree of correlation. The communality, or the h2 value, of a variable represents the total influence of the factor on a single variable. This value ranges from 0 to 1, with 1 indicating the variable in question can be fully defined by the factor and is not unique. A 0 value indicates the variable cannot be predicted from the factor. The uniqueness value (u2) is the amount of the variable that cannot be predicted from the other variables.

In Table 8, the first factor is strongly correlated with the six original variables, as each of the loadings is greater than 0.40. This factor increases along with the increase in the scores for the first five variables. This suggests that these five criteria vary together; if one increases, then the remaining variables will also increase. Thus, based on these correlations, the factor can be viewed as a measure of the participants' awareness of and the importance they place on the protection of the environment. However, the factor also increases as the final statement decreases, as signified by the negative value; these results suggest that, in this population, those users who employ their OHVs for recreation, rather than to accomplish tasks, tend to have a greater understanding of impacts and desire for environmental protection with regard to OHVs.

A single factor score was also calculated for each participant. An analysis of variance test (ANOVA) shows the differences in EUH group means for the resulting factor scores (Table 9). The data includes those individuals who were ascribed an EUH group. The frequent rider group was removed from this analysis due to the sample size of one, leaving a remaining sample of 36. The factor scores estimate an individual's score on a factor, based on their scores for the component variables, reflecting the degree to

which each individual is aware of environmental impacts and supports protection and management of the landscape. The values in table 9 suggest that while a wide range of awareness and support is seen in all groups, on average the members of the casual newcomer and occasional rider groups are more aware and supportive than the casual veterans.

Table 9. Distribution of factor scores according to EUH group.

EUH Group	Minimum Value	Maximum Value	Mean	SD	Variance
Casual Newcomer	-2.114	0.875	0.064	0.829	0.687
Casual Veteran	-1.911	1.661	-0.188	1.237	1.529
Occasional Rider	-0.453	1.332	0.312	0.687	0.472

However, not all of the assumptions for this analysis are met. While the data met the assumption of homogeneity of variance, it did not meet the assumption of a normal distribution between groups, as the casual newcomer group is non-normal. Because not all of the assumptions of ANOVA were met, it was necessary to conduct a robust ANOVA. Means were trimmed by 20% and the analysis was executed with 2000 bootstrap samples. The resulting p-value was 0.671 ($F = 0.392$). This indicates that the differences in the group means for the environmental attitudes factor scores are not significant.

CHAPTER FIVE: DISCUSSION

Results of the logistic regression suggest that current OHV use is not correlated with an earlier exposure to OHVs, nor the instructor or type of vehicle present during the initial exposure. The PCA results imply that those individuals who use OHVs for the purpose of recreation are more likely to be aware of the impacts of OHVs and will support management practice that seek to protect and conserve the environment despite the potential impacts it may have on them as OHV recreationists. This attitude seems to hold across EUH groups, as an analysis of variance was unable to find any significant differences between the group means of the PCA factor scores. This is further supported by descriptive statistics and the environmental sketches, both of which largely convey OHV recreationists' knowledge of impacts on the environment and their support management.

Initial Exposure and Current Use

Prior to this study, measures of an individual's initial exposure to OHVs had yet to be employed in analyses seeking to predict current use status. In attempting to test for correlations with current use status, my analysis determined there was no significant predictor of an individual's current use status. This contrasts with the local ecological knowledge (LEK) and social learning literature in which the timing and demonstration of learning are significant factors in the development of knowledge and skills. Though the initial scatterplot matrix appeared to suggest several possible negative relationships between current use and age, sex, and age at first ride, these relationships were not

confirmed. Therefore, the first hypothesis fails. However, when compared to the LEK studies, the results follow a similar direction in regards to the timing of participation, with the likelihood of current use appearing to decrease with age, despite non-significance. Unlike the LEK studies, the demonstrator the individual was learning from appears to have no effect in this population, as the initial event operators and instructors were not included in the best model.

It is important to note, however, the possibility that these results were constrained by the small sample size. Overall, only 58 of the 334 distributed surveys were returned. Furthermore, not all of the data was present for each of the 58 individuals who participated. The sample population for this analysis was 56 participants, with the population of non-users represented by 15 respondents. This non-response bias may impact the results of the study, driving them towards non-significance. Inclusion of not only a larger number of respondents, but also a larger population of non-users, may improve analysis. Additionally, it is possible that there may be errors in the data due to the nature of self-reporting by participants. Individuals may not recall these events accurately due to the time since their first experience with OHVs; it is also possible they may have reported false data. It also bears mentioning that when asked to state why they had ceased their participation, the majority of the non-users mentioned personal finances were a factor.

As LEK is generally applied to subsistence related knowledge, and OHV use falls under the banner of leisure or recreation, it is possible factors impacting continued use may not include knowledge acquisition or demonstration. While data on annual household income was collected, it was not included in this analysis due to the fact that

most participants did not provide that information. However, further analyses may benefit from exploring the relationship between income and OHV use. While social learning studies emphasize populations seeking to obtain subsistence resources from their environment, OHV recreationists are seeking enjoyment from the landscape. Although this application of social learning studies to leisure and recreation activities may appear as somewhat of a disconnect, OHV recreationists are still "foraging" for something.

Regardless, it is still interesting that current participation is not predicted by aspects of the initial exposure events and demographic characteristics. First, this analysis has served to eliminate variables from a list of possible predictors for current use. Second, since continued recreation is not determined by an earlier exposure to, instruction, and type of OHVs, in addition to the demographic variables tested, it follows that any individual, anywhere, at any point in time may enter and remain within the population.

Prior Experience and Environmental Attitudes

While the PCA results suggest users who utilize OHVs for recreation purposes tend to have a greater understanding of the impacts of OHVs on the environment and increased support for environmental protection, this study failed to find any significant patterns in the attitudes and perspectives of current OHV recreationists in the Boise Metropolitan Area across EUH groups. However, the lack of associations could result from several possible factors, including a possible non-response bias. The population of OHV recreationists was represented by 37 respondents; one individual was removed from the variance analysis due to a lack of representation in their EUH group. Therefore, the non-significance may be driven by the limited number of participants. Additionally, a

limited number of variables were addressed in the PCA. Questions representing these variables were obtained from a survey administered from Waight and Bath (2011), while others were excluded. Future studies may benefit from including a wider range of similar variables in the analysis.

Many studies of prior experience have also chosen to employ the New Ecological Paradigm scale as a measure of recreationists' attitudes (Barker and Dawson 2010, Smith et al. 2010, Smith and Burr 2011). The NEP scale, developed as a method to assess the environmental attitudes of a group of people, similarly asks participants to indicate how strongly the agree or disagree with a range of statements (Anderson 2012). Responses are then used to quantify levels of concern. This scale was originally incorporated into the survey, but was removed before distribution due to its lengthiness and its focus on an individual's general concern for the environment. However, its successful application in other studies suggests future research on OHVs in the Boise Metropolitan Area may benefit from using this scale in their analysis; such an analysis would provide the opportunity to compare results across populations due to its nature as a standardized method of assessment used across a variety of disciplines.

Overall, the lack of differences between EUH groups is not entirely surprising given that both current and non-current users provided similar responses for the environmental attitudes statements, with the majority aware of the impacts of OHVs on the environment and in favor of protection despite the effect it may have on their ability to participate. This awareness is also supported by the environmental sketches, with nearly 43% reporting some degree of impact on local vegetation and wildlife. These results suggest that a one-size-fits-all management approach may be sufficient for this

population, rather than targeting users according to EUH. Coupled with their desire to avoid trail closures (as expressed during survey distribution) and responses indicating the majority of participants are in favor of environmental protection, providing users with information about environmental issues in the Owyhee Front and how to avoid negative impacts may be an effective way for the BLM to increase TMP compliance and environmentally responsible behavior. However, further research incorporating a greater number of users is necessary before it can be said there are absolutely no differences between EUH groups for these measures.

CHAPTER SIX: CONCLUSION

One of the most difficult challenges for the BLM is the dual mandate of managing landscapes for both wildlife and recreational activities, providing reasonable and compelling routes for the public for motorized and non-motorized travel while also protecting natural and cultural resources from damage or complete loss. User interests and perspectives must be considered along with the various landscape elements, climactic conditions, and infrastructure in order to develop effective management plans (Murphy TMP 2007). By improving management planning, federal land managers can minimize impacts on the environment and develop a system of roads and trails that protect rather than inhibit recreation opportunities on public lands. As the population of OHV recreationists increases, organizations like the BLM can only benefit from current and thorough information on the histories and perceptions of OHV participants.

With such an undersized sample, future studies may benefit from expanding the representation of both current and past users across the population and conducting analysis once more. Additionally, studies of EUH and OHV use have gone on to incorporate the NEP scale as a measure of participant attitudes. Use of this scale may be beneficial in the future for a more specific, standardized understanding of prior experience and environmental attitudes among OHV recreationists in the Boise Metropolitan Area. Despite these potential issues, this analysis was able to obtain useful and interesting information about the OHV recreationist population in the area.

While I was unable to pinpoint factors which impact continued use, the analysis suggests that any individual is a potential OHV recreationist, regardless of age and the manner of introduction to OHV recreation. This reinforces the importance of developing a management schema that supports both the recreationists and the recreation environment. Additionally, while statistical analysis was unable to identify any significant patterns in users' environmental attitudes across EUH groups, it appears that most individuals are in favor of environmental protection and management. Since the individuals do not seem to vary in this perspective across groups, federal land managers may find success in a singular approach that focuses on educating OHV users about environmental issues in the Owyhee Front SRMA and how to avoid environmentally irresponsible behavior. However, further research is necessary to determine if differences in perspectives exist across user groups.

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APPENDIX A

Survey Materials

A-1. Participant Survey

Off-Highway Vehicle (OHV) Recreation in the Treasure Valley

WHAT IS YOUR PRIMARY OFF-HIGHWAY VEHICLE TYPE?

_____

AT WHICH TRAILHEAD DO YOU PREFER TO BEGIN RIDES?

_____

HOW MANY YEARS HAVE YOU BEEN PARTICIPATING IN OHV RECREATION?

_____

HOW WOULD YOU RATE YOUR SKILL LEVEL? (CIRCLE ONE)

Beginner Intermediate Advanced Expert

WHY THAT RATING?_____

_____

_____

THINK BACK TO LAST JUNE. HOW MANY DAYS WOULD YOU ESTIMATE YOU SPENT RIDING SINCE THEN?_____

IN 2014, APPROXIMATELY HOW MUCH ($$) DID YOU SPEND ON OHV RECREATION?

_____

DO YOU BELONG TO AN OHV GROUP OR ASSOCIATION? Yes No

IF SO, WHICH ONE? _____

OF THE ALL THE TIMES YOU'VE USED YOUR OHV,HOW OFTEN DID YOU USE IT FOR THE FOLLOWING PURPOSES?

Hunting	*Never*	*Rarely*	*Sometimes*	*Mostly All The Time*
Fishing	*Never*	*Rarely*	*Sometimes*	*Mostly All The Time*
Berry Picking	*Never*	*Rarely*	*Sometimes*	*Mostly All The Time*
Wood Cutting	*Never*	*Rarely*	*Sometimes*	*Mostly All The Time*
Transportation "To and From"	*Never*	*Rarely*	*Sometimes*	*Mostly All The Time*

Exploring Trails and Public Lands	*Never*	*Rarely*	*Sometimes*	*Mostly All The Time*
For Excitement and Thrills	*Never*	*Rarely*	*Sometimes*	*Mostly All The Time*
Quality Time with Family/Friends	*Never*	*Rarely*	*Sometimes*	*Mostly All The Time*

HOW OLD WERE YOU THE FIRST TIME YOU RODE AN OHV?_____

WHO DID YOU RIDE WITH THE FIRST TIME(FRIEND, BROTHER, PARENT, ETC.)?

_____

WHAT TYPE OF VEHICLE WAS IT?_____

WHO OWNED IT? _____

WHERE DID YOU RIDE?_____

DESCRIBE HOW IT MADE YOU FEEL. DID YOU ENJOY IT? WERE YOU SCARED?

_____

_____

_____

HOW OLD WERE YOU WHEN YOU FIRST LEARNED TO OPERATE AN OHV?

_____

WHO TAUGHT YOU?_____

WHAT TYPE OF VEHICLE WAS IT?_____

WHO OWNED IT? _____

WHERE DID YOU RIDE?_____

DESCRIBE HOW IT MADE YOU FEEL. DID YOU ENJOY IT? WERE YOU SCARED?

_____

_____

_____

DO YOU STILL RIDE OHVs? (CIRCLE ONE) *Yes* *No*

IF NO:

WHEN WAS THE LAST TIME YOU RODE AN OHV? _____

WHY DID YOU STOP? _____

_____

_____

IF YES:

WHEN WAS THE LAST TIME YOU RODE AN OHV? _____

DO YOU OWN AN OHV? *Yes* *No*

IF SO, HOW MANY? _____

IF NO, HOW DO YOU GAIN ACCESS TO OHVs? (CIRCLE ALL THAT APPLY)

Renting *Family member (list relation):_____*

Friend *Other:_____*

HOW MUCH IN DOLLARS WOULD YOU BE WILLING TO PAY FROM DAY USE AT TRAILHEADS IN THE OWYHEES? _____

AT WHICH TRAILHEAD(S) WOULD YOU BE WILLING TO PAY FOR DAY USE?_____

PLEASE COMPLETE THE FOLLOWING QUESTIONS BY CIRCLING YOUR LEVEL OF AGREEMENT.

OHV recreation is an important part of Southwestern Idaho's culture.

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OHV recreation is a privilege, not a right.

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

The benefits I get from OHV recreation outweigh the potential impacts of the activity.

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

I need my OHV to accomplish other important tasks.

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

It is important to protect the environment even though it prevents OHV use in some areas.

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

It is my right to ride where I want on public land.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Protecting the environment causes too many inconveniences for OHV recreationists.

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OHV recreation has little affect on the environment.

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

OHV recreation is very important to me.

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

I find that a lot of my life is organized around OHV recreation and related activities.

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

If I ceased my OHV recreation I would probably lose touch with many of my friends.

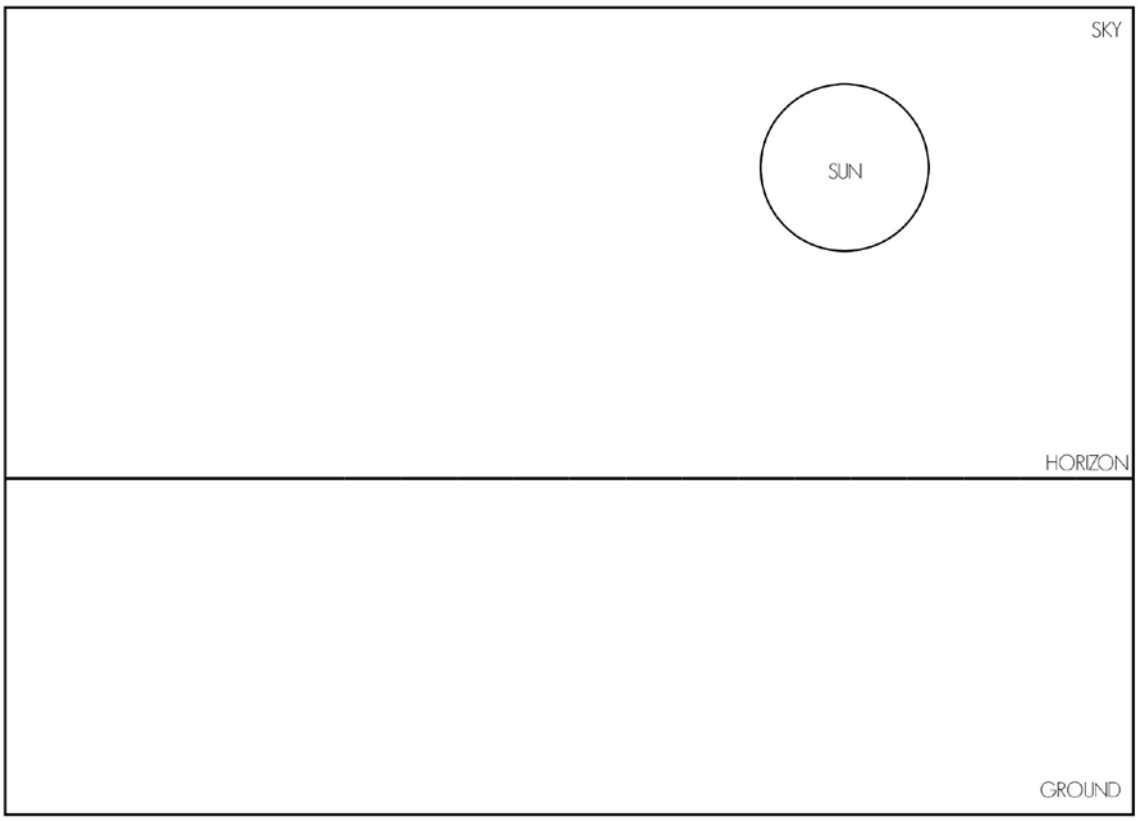
Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

I would rather go ride OHVs than participate in other types of outdoor recreation?

Strongly Disagree *Disagree* *Neutral* *Agree* *Strongly Agree*

continue to next page ——————>>>

USING THE TEMPLATE BELOW, PLEASE DRAW WHAT AN ENVIRONMENT LOOKS LIKE <u>WITHOUT</u> OHV RECREATION. FEEL FREE TO LABEL ASPECTS OF THE IMAGE (TREES, BIRDS, BUSHES, ETC.).



USE THIS SPACE TO EXPLAIN YOUR DRAWING.

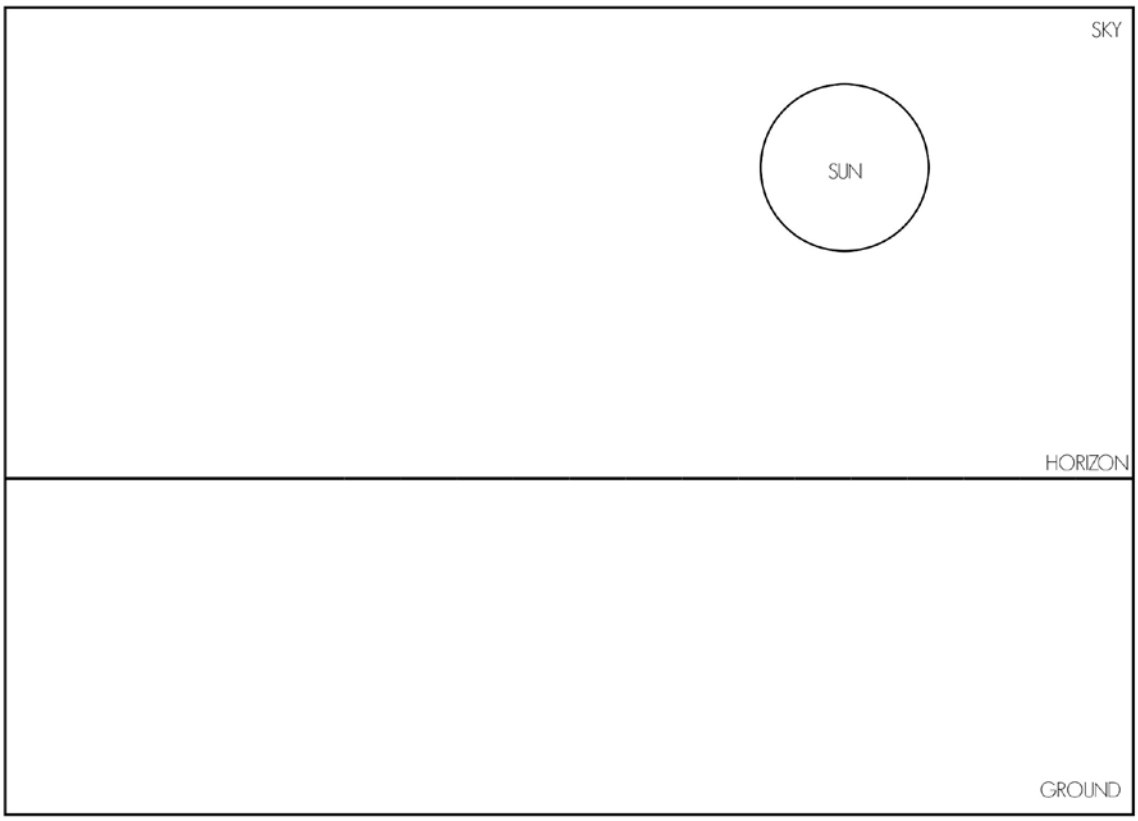
_____

_____

_____

_____

USING THE TEMPLATE BELOW, PLEASE DRAW WHAT AN ENVIRONMENT LOOKS LIKE <u>WITH</u> OHV RECREATION. FEEL FREE TO LABEL ASPECTS OF THE IMAGE (TREES, BIRDS, BUSHES, ETC.).



USE THIS SPACE TO EXPLAIN YOUR DRAWING.

_____

_____

_____

_____

DEMOGRAPHIC INFORMATION

SEX: __________ BIRTH YEAR: __________

PLACE OF RESIDENCE: ____________________(CITY)_________(STATE)

HOW LONG HAVE YOU LIVED IN THAT STATE? ____________________________

WHAT IS YOUR HIGHEST LEVEL OF EDUCATION? _______________________________

WHAT IS THE COMPOSITION OF YOUR HOUSEHOLD (LIVING WITH SPOUSE, KIDS, ROOMMATE, SIBLING, ETC.)?____

WHAT IS THE SIZE OF YOUR HOUSEHOLD? _________________________________

WHAT IS YOUR ANNUAL HOUSEHOLD INCOME? ____________________________

cut here -

THANK YOU FOR COMPLETING THIS SURVEY!

WOULD YOU BE INTERESTED IN PARTICIPATING IN A FOCUS GROUP ON OHV RECREATION IN THE TREASURE VALLEY? IF SO, PLEASE COMPLETE THE FOLLOWING AND WE WILL BE IN TOUCH SHORTLY. THANK YOU!

FIRST NAME: ______________________________

PHONE NUMBER: __________________________

EMAIL ADDRESS: ______________________________@_________________________

WOULD YOU LIKE A COPY OF THE COMPLETED RESEARCH? PLEASE LEAVE YOUR EMAIL BELOW.

EMAIL ADDRESS: ______________________________@_________________________

ARRANGEMENTS HAVE ALREADY BEEN MADE FOR THE COLLECTION OF THE SURVEY. PLEASE COMPLETE THE INSTRUCTIONS PROVIDED FOR PICK-UP OR MAIL RETURN. THANK YOU AGAIN!

A-2. Cover Letter

Dear Participant:

My name is Michelle Kinney, and I am a graduate student in the Anthropology program at Boise State University. As part of my thesis, I am collecting data on the recreation histories of past and present Off-Highway Vehicle (OHV) use. Because you are 18 years of age or older and have indicated experience with OHV use, I am inviting you to participate in this research study by completing the attached survey.

The questionnaire will require approximately 20 minutes to complete. There is no compensation for responding nor is there any known risk. All information will remain confidential, and your responses will not be identified with you personally. Copies of the data will be provided to my advisor, Dr. Kathryn Demps. If you choose to participate in this project, please answer all questions as honestly as possible and return the completed questionnaire promptly through the prearranged method - pick up or mail return. Participation is strictly voluntary, and you may refuse to answer any questions, or quit, at any time. Completion and return of the questionnaire will indicate your willingness to participate in this study.

Thank you for taking the time to assist me in furthering my education. The data collected will provide useful information regarding OHV use in the Treasure Valley and help accommodate users in the future. If you have any questions about the manner in which this study is being conducted, please contact me at the email address listed below or Dr. Demps at 208-426-4690. If you have questions about your rights as a research subject, you may contact the Boise State University Institutional Review Board (IRB) at 208-426-5401.

Sincerely,

Michelle Kinney
michellekinney@u.boisestate.edu

A-3. Door-to-Door Recruitment Script

RECRUITMENT SCRIPT

***Prior to contact, record address on contact sheet.**

Hello. My name is _____, and I'm an undergraduate student at Boise State University in the Anthropology department. Could I have a minute of your time?

IF NO: Thank you. Have a nice day. **Record "declined" on contact sheet.**

IF YES: I'm collecting data on off-highway vehicle use in the Treasure Valley. Have you ever operated an off-highway vehicle?

> ***IF NO:*** Is there anyone else in your home who has operated an off-highway vehicle?
>
> > ***IF NO:*** Thank you for your time. Have a nice day. **Record "no OHV use" on contact sheet.**
> >
> > ***IF YES:*** **Record "OHV use" on contact sheet.** Would it be alright if I left a brief survey on off-highway vehicle use history for them to complete? The survey takes approximately 20 minutes to complete, and you can arrange for mail return or pick up. All information provided will remain confidential, and no identifying information will be connected to your responses.
> >
> > > ***IF NO:*** Thank you for your time. Have a nice day. **Record "declined" on contact sheet.**
> > >
> > > ***IF YES:*** Great. Please try to answer all questions as honestly as possible. Further information about the survey is contained in the cover letter. If you have any questions, feel free to contact the project advisor, Kathryn Demps, or the Boise State University Institutional Review Board (IRB).
> > >
> > > How would you like to return the survey? You can either schedule a time for pick up or return the survey by mail.
> > >
> > > ***FOR MAIL RETURN:*** **Provide the participant with a pre-addressed envelope. Record survey/envelope number and "mail return" on contact list.**
> > >
> > > ***FOR PICK UP:*** **Provide participant with blank envelope. Record survey/envelope number. Schedule a time within a week and a half to retrieve the survey. Record "pick up" on contact list, complete with date and time.**
> > >
> > > Thank you for your time. Again, if you have any questions, the contact information is on the cover letter. Have a great day.

IF YES: **Record "OHV use" on contact sheet.** Would you be willing to complete a brief survey on your off-highway vehicle use history? The survey takes approximately 20 minutes to complete, and you can arrange for mail return or pick up. All information provided will remain confidential.

IF NO: Thank you for your time. Have a nice day. **Record "declined" on contact sheet.**

IF YES: Great. Further information about the survey is contained in the cover letter. Please try to answer all questions as honestly as possible. If you have any questions, feel free to contact the project advisor, Kathryn Demps, or the Boise State University Institutional Review Board (IRB).

How would you like to return the survey? You can either schedule a time for pick up or return the survey by mail.

FOR MAIL RETURN: **Provide the participant with a pre-addressed envelope. Record survey/envelope number and "mail return" on contact list.**

FOR PICK UP: **Provide participant with blank envelope. Record survey/envelope number. Schedule a time within a week and a half to retrieve the survey. Record "pick up" on contact list, complete with date and time.**

Thank you for your time. Again, if you have any questions, the contact information is on the cover letter. Have a great day.

***Be sure all information is properly recorded on contact sheet.**

IF A CHILD ANSWERS THE DOOR:

Hello. My name is _____. Is your mom or dad home?

IF YES: May I please talk to them?

IF YES: **Continue with script.**

IF NO: Thank you. Have a nice day. **Record as "no contact - retry". Reattempt contact at a later date.**

IF NO: Thank you. Have a nice day. **Record as "no contact - retry". Reattempt contact up to twice following procedures as outlined above.**

IF NO ONE ANSWERS THE DOOR: Record on contact sheet as "no contact". Reattempt contact up to twice following procedures as outlined above.

MICHELLE'S SCRIPT

***Prior to contact, record address on contact sheet.**

Hello. My name is Michelle Kinney, and I'm a graduate student at Boise State University in the Anthropology department. Could I have a minute of your time?

IF NO: Thank you. Have a nice day. **Record "declined" on contact sheet.**

IF YES: I'm collecting data on off-highway vehicle use in the Treasure Valley. Have you ever operated an off-highway vehicle?

> ***IF NO:*** Is there anyone else in your home who has operated an off-highway vehicle?
>
> > ***IF NO:*** Thank you for your time. Have a nice day. **Record "no OHV use" on contact sheet.**
> >
> > ***IF YES:*** **Record "OHV use" on contact sheet.** Would it be alright if I left a brief survey on off-highway vehicle use history for them to complete? The survey takes approximately 20 minutes to complete, and you can arrange for mail return or pick up. All information provided will remain confidential, and no identifying information will be connected to your responses.
> >
> > > ***IF NO:*** Thank you for your time. Have a nice day. **Record "declined" on contact sheet.**
> > >
> > > ***IF YES:*** Great. Please try to answer all questions as honestly as possible. Further information about the survey is contained in the cover letter. If you have any questions, feel free to contact the project advisor, Kathryn Demps, or the Boise State University Institutional Review Board (IRB).
> > >
> > > How would you like to return the survey? You can either schedule a time for pick up or return the survey by mail.
> > >
> > > ***FOR MAIL RETURN:*** **Provide the participant with a pre-addressed envelope. Record survey/envelope number and "mail return" on contact list.**
> > >
> > > ***FOR PICK UP:*** **Provide participant with blank envelope. Record survey/envelope number. Schedule a time within a week and a half to retrieve the survey. Record "pick up" on contact list, complete with date and time.**
> > >
> > > Thank you for your time. Again, if you have any questions, the contact information is on the cover letter. Have a great day.

IF YES: **Record "OHV use" on contact sheet.** Would you be willing to complete a brief survey on your off-highway vehicle use history? The survey takes approximately 20 minutes to complete, and you can arrange for mail return or pick up. All information provided will remain confidential.

IF NO: Thank you for your time. Have a nice day. **Record "declined" on contact sheet.**

IF YES: Great. Further information about the survey is contained in the cover letter. Please try to answer all questions as honestly as possible. If you have any questions, feel free to contact the project advisor, Kathryn Demps, or the Boise State University Institutional Review Board (IRB).

How would you like to return the survey? You can either schedule a time for pick up or return the survey by mail.

FOR MAIL RETURN: **Provide the participant with a pre-addressed envelope. Record survey/envelope number and "mail return" on contact list.**

FOR PICK UP: **Provide participant with blank envelope. Record survey/envelope number. Schedule a time within a week and a half to retrieve the survey. Record "pick up" on contact list, complete with date and time.**

Thank you for your time. Again, if you have any questions, the contact information is on the cover letter. Have a great day.

***Be sure all information is properly recorded on contact sheet.**

A-4. DMV Recruitment Script

RECRUITMENT SCRIPT

Hello. My name is _____, and I'm an undergraduate student at Boise State University in the Anthropology department. Could I have a minute of your time?

IF NO: Thank you. Have a nice day. **Record "declined" on contact sheet.**

IF YES: I'm collecting data on off-highway vehicle use in the Treasure Valley. Have you ever operated an off-highway vehicle and do you live in Boise, Meridian, Nampa, or Caldwell**?**

IF PARTICIPANT DOES NOT LIVE IN DISTRIBUTION AREA: Thank you for your time. Have a nice day. **Record "not eligible" on contact sheet.**

IF NO USE: Thank you for your time. Have a nice day. **Record "no use" on contact sheet.**

IF YES TO BOTH QUESTIONS: **Record "OHV use" and community of residence on contact sheet.** Would you be interested in participating in a brief survey? It takes approximately 20 minutes to complete, and you can mail it back to the university at your convenience. All information provided will remain confidential, and no identifying information will be connected to your responses.

IF NO: Thank you for your time. Have a nice day. **Record "declined" on contact sheet.**

IF YES: Great. Please try to answer all questions as honestly as possible. Further information about the survey is contained in the cover letter. If you have any questions, feel free to contact the project advisor, Kathryn Demps, or the Boise State University Institutional Review Board (IRB). **Record survey/envelope number on contact sheet.**

Thank you for your time. Again, if you have any questions, contact information is available on the cover letter. Have a great day.

***Be sure all information is properly recorded on contact sheet.**

MICHELLE'S SCRIPT

Hello. My name is Michelle Kinney, and I'm a graduate student at Boise State University in the Anthropology department. Could I have a minute of your time?

IF NO: Thank you. Have a nice day. **Record "declined" on contact sheet.**

IF YES: I'm collecting data on off-highway vehicle use in the Treasure Valley. Have you ever operated an off-highway vehicle and do you live in Boise, Meridian, Nampa, or Caldwell**?**

IF PARTICIPANT DOES NOT LIVE IN DISTRIBUTION AREA: Thank you for your time. Have a nice day. **Record "not eligible" on contact sheet.**

IF NO USE: Thank you for your time. Have a nice day. **Record "no use" on contact sheet.**

IF YES TO BOTH QUESTIONS: **Record "OHV use" and community of residence on contact sheet.** Would you be interested in participating in a brief survey? It takes approximately 20 minutes to complete, and you can mail it back to the university at your convenience. All information provided will remain confidential, and no identifying information will be connected to your responses.

IF NO: Thank you for your time. Have a nice day. **Record "declined" on contact sheet.**

IF YES: Great. Please try to answer all questions as honestly as possible. Further information about the survey is contained in the cover letter. If you have any questions, feel free to contact the project advisor, Kathryn Demps, or the Boise State University Institutional Review Board (IRB). **Record survey/envelope number on contact sheet.**

Thank you for your time. Again, if you have any questions, contact information is available on the cover letter. Have a great day.

***Be sure all information is properly recorded on contact sheet.**

APPENDIX B

IRB Approval Letters

B-1. SB-IRB Notification of Exemption - 028-SB15-081

BOISE STATE UNIVERSITY
RESEARCH AND ECONOMIC DEVELOPMENT

Date: May 11, 2015

To: Michelle Kinney cc: Kathryn Demps

From: Office of Research Compliance (ORC)

Subject: SB-IRB Notification of Exemption - 028-SB15-081

Development of Environmental Attitude and Off-Highway Vehicle (OHV) Use History in the Treasure Valley

The Boise State University ORC has reviewed your protocol application and has determined that your research is exempt from further IRB review and supervision under 45 CFR 46.101(b).

Protocol Number: 028-SB15-081
Approved: 5/11/2015 Application Received: 4/15/2015
Review: Exempt
Category: 2

This exemption covers any research and data collected under your protocol as of the date of approval indicated above, unless terminated in writing by you, the Principal Investigator, or the Boise State University IRB. All amendments or changes (including personnel changes) to your approved protocol must be brought to the attention of the Office of Research Compliance for review and approval before they occur, as these modifications may change your exempt status. Complete and submit a Modification Form indicating any changes to your project.

Annual renewals are not required for exempt protocols. When the research project is completed, please notify our office by submitting a Final Report. The exempt status expires when the research project is completed (closed) or when the review category changes as described above.

All forms are available on the ORC website at http://goo.gl/D2FYTV

Please direct any questions or concerns to ORC at 426-5401 or humansubjects@boisestate.edu.

Thank you and good luck with your research.

Office of Research Compliance

1910 University Drive Boise, Idaho 83725-1139
Phone (208) 426-5401 orc@boisestate.edu

B-2. SB-IRB Notification of Approval for Modification - 028-SB15-081

BOISE STATE UNIVERSITY
RESEARCH AND ECONOMIC DEVELOPMENT

Date: July 22, 2015

To: Michelle Kinney cc: Kathryn Demps

From: Office of Research Compliance (ORC)

Subject: SB-IRB Notification of Approval for Modification - 028-SB15-081

Development of Environmental Attitude and Off-Highway Vehicle (OHV) Use History in the Treasure Valley

The Boise State University ORC has reviewed and approved the proposed modifications to your exempt protocol application.

Protocol Number: 028-SB15-081
Approved: 7/22/2015 Submission Received: 7/20/2015
Review: Exempt

Your research is still exempt from further IRB review and supervision under 45 CFR 46.101(b). This exemption covers any research and data collected under your protocol as of the date of approval indicated above, unless terminated in writing by you, the Principal Investigator, or the Boise State University IRB. All amendments or changes (including personnel changes) to your approved protocol **must** be brought to the attention of the Office of Research Compliance for review and approval before they occur, as these modifications may change your exempt status. Complete and submit a Modification Form indicating any changes to your project.

All forms are available on the ORC website at http://goo.gl/D2FYTV

Please direct any questions or concerns to ORC at 426-5401 or humansubjects@boisestate.edu.

Thank you and good luck with your research.

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