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Research Paper

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Innovations in outdoor recreation visitor use management: Applying market segmentation at the Timberline Lodge Recreation Complex

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Abstract

This study examined the perceptions of outdoor recreation users at the Timberline Lodge Recreation Complex (TLRC), a national historic landmark in Oregon's Mount Hood National Forest. The primary purpose of this study was to investigate the multiple facets of customer satisfaction, crowding, and conflict in relation to two specifically segmented recreational user groups: 1) snow users and 2) lodge users. These two different user segments were determined to possess independent satisfaction, crowding, conflict, socio-demographic, trip characteristic, and group characteristic trends. Overall, a series of statistical analyses determined that lodge users were more satisfied and perceived less crowding and conflict than snow users. The utilization of market segmentation within a diverse population of users proved to be invaluable in this study. By examining the TLRC users through the lens of various market segments, this study was able to provide a deeper understanding of visitor use management. This innovative method for segmenting recreationists in multifaceted recreation settings may allow resource managers to provide a higher quality of service and experience for their customers. Holistically viewing this area

as a recreation complex as opposed to individual management zones (e.g., silos) further demonstrated the application of innovative and collaborative visitor use management and research.

Keywords: Management innovation, market segmentation, outdoor recreation, satisfaction, visitor use management

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Introduction

This study focused on an innovative method for understanding outdoor recreation visitor use management at Mount Hood, Oregon. Mount Hood is a highly developed outdoor recreation complex with multiple outdoor recreation activities occurring simultaneously. Located in Northwest Oregon (USDA Forest Service Region 6), the Mount Hood National Forest provides recreation users a wide array of resources and opportunities that attract visitors from around the world. According to the National Visitor Use Monitoring data from the year 2004, the average recreation user on the Mount Hood National Forest was a middle-aged white male (Kocis et al., 2004). The most commonly sought-out recreation activities on the forest consisted of viewing natural features, viewing historical sites, driving for pleasure and downhill skiing (Kocis et al., 2004). While there are many attractions throughout the Mount Hood National Forest, the Timberline Lodge (a National Historic Landmark) is by far the most popular and legendary site. Boasting over one million annual visitors and a diversified arrangement of both recreation users and resources, the Timberline Lodge is an outdoor recreation epicenter (Kocis et al., 2004).

National Forest managers have stressed the importance of activity segmentation in order to determine which activities are being sought after and the corresponding perceptions of unique user segments. Therefore, the purpose of this study was to better understand this complex recreation destination, specifically investigating visitor's perceptions of conflict, crowding, activity segmentation, and satisfaction through the lens of market segmentation. The following research questions were investigated:

R[1]: What does the sample of users look like at the TLRC?

R^2: What are the socio-demographic, trip characteristic, and group characteristic differences between snow users and lodge users?

R^3: Are there significant differences in satisfaction levels between snow users and lodge users?

R^4: Are there significant differences in perceived crowding and conflict levels between snow users and lodge users?

Market Segmentation

Kotler and Armstrong (2013) postulated that segmentation is the foundation upon which the marketing industry was built. Marketing professionals realized early on that certain participants were unique in reference to their individual attractions and desires. Accordingly, a need to segregate clientele into representative groups who possess analogous traits was necessary (Kotler & Armstrong, 2013). Based upon the four Ps of the marketing mix (i.e., product, promotion, price and place), the identification of market segments is fundamental to the effectiveness of management strategies (Havitz, Dimanche, & Bogle, 1994). Translating this cornerstone marketing principal into the realm of outdoor recreation could allow recreation resource managers to achieve one of their primary goals — to provide visitors with a high-grade experience.

Recreation user perceptions can also be efficiently employed as a segmentation instrument for public natural resource managers (Andereck & Caldwell, 1994). Moreover, it is imperative that resource managers separate visitors into homogeneous groups (Donnelly, Vaske, DeRuiter, & King, 1996). One technique for providing this experience is that of market segmentation, where users' demands for a service are directly based upon the quality of the given service. This homogeneous group segmentation technique provides management the opportunity to better understand their visitors by placing users into various groups or categories based upon similar characteristics.

Recreation researchers have conducted several studies focusing on the effectiveness of market segmentation. For instance, Absher and Lee (1981) conducted a study which determined that both experience and visitor characteristics had a significant effect on visitor perceptions of crowding in National Park settings. Westover (1984) found that both the gender and age of recreation visitors could be an effective indicator regarding

perceptions of safety. Further, Andereck and Caldwell (1994) determined that public zoo visitors could be segmented by trip characteristics, motivations, and socio-demographic characteristics and that zoo managers could utilize market segmentation for applied marketing purposes.

More recently, Burns (2000) and Burns and Graefe (2005) examined the customer satisfaction levels of multiple outdoor recreation user segments. In general, it was found that the majority of users possessed a high level of overall satisfaction. The author found a correlation between users' primary activities (e.g., camping, day-use, or boat ramp use) and overall satisfaction. Further, when various user segments were compared against satisfaction levels, it was found that campers were consistently more satisfied than all other user segments. Findings of this nature can be valuable to recreation resource managers as they are able to target specific users segments to more effectively implement effective visitor use management policies and regulations.

Methodology

Study Area

The Mount Hood National Forest is considered an urban forest because of its relative proximity to the city of Portland, Oregon. Bordered on its northern side by the Columbia River Gorge, the Mount Hood National Forest encompasses over 60 miles, and one million acres of forested land, lakes, and mountain peaks. The Mount Hood National Forest contains more than 170 developed recreation sites in addition to nearly 300,000 acres of federally designated wilderness area and old growth forest (Brown & Reed, 2009). Based on the aforementioned qualities, outdoor recreation users from all over the West Coast of the United States and Canada partake in the abundant natural resources, beauty, and outdoor recreation activities that the Mount Hood National Forest has to offer.

The flagship feature of the Mount Hood National Forest is the iconic Mount Hood. Reaching 11,239 feet, Mount Hood is Oregon's tallest peak, and the fourth largest peak in the Cascade Mountain Range. It is a volcanic mountain and home to 12 glaciers, which makes it a year-round destination for both winter and summer recreation users alike. Estimates suggest that nearly 10,000 users attempt to summit Mount Hood every year, making it one of the most climbed mountains in the world (Chuprinko, 2012). Climbing

routes are spread out over all 12 of the glaciers and range in difficulty from beginner to advanced. In addition to mountaineering, Mount Hood boasts over 300 inches of annual snowfall and is home to three major ski resorts: Mount Hood Meadows, Mount Hood Ski Bowl and the Timberline Lodge ski area.

The Timberline Lodge ski area encompasses nearly 1,415 acres of skiable terrain, and is the only ski area in the United States which provides lift accessible ski terrain during all 12 months of the year. Utilizing the constant snow pack provided by the Palmer Glacier as well as state of the art snowmaking and management technology, the Timberline Lodge ski area is able to continue operation into the warm summer months. Due to these unique features, skiers and snowboarders from around the world pursue this coveted resource in order to train, recreate, and enjoy this anomaly of a ski resort. The focal point of the Timberline Lodge ski area, and this study, is the Timberline Lodge. This extremely popular site and its surrounding recreation opportunities host upwards of one million annual visitors and is managed by a unique blend of private, public, and non-profit entities. All of these stakeholders play a critical role in the innovative manner in which Timberline Lodge ski area is managed.

The focus of this study includes all of the recreation facilities and activity segments that surround the Timberline Lodge. For the purpose of this study, this area and the activity segments that encompass it are referred to as the Timberline Lodge Recreation Complex (TLRC). The TLRC is an intricate area made up of the Timberline Lodge, Wy'East day lodge, one ski hill, three parking areas, one federally designated wilderness access point, one main loop road, and a wide array of scenic view points and general recreation areas (Figure 1).

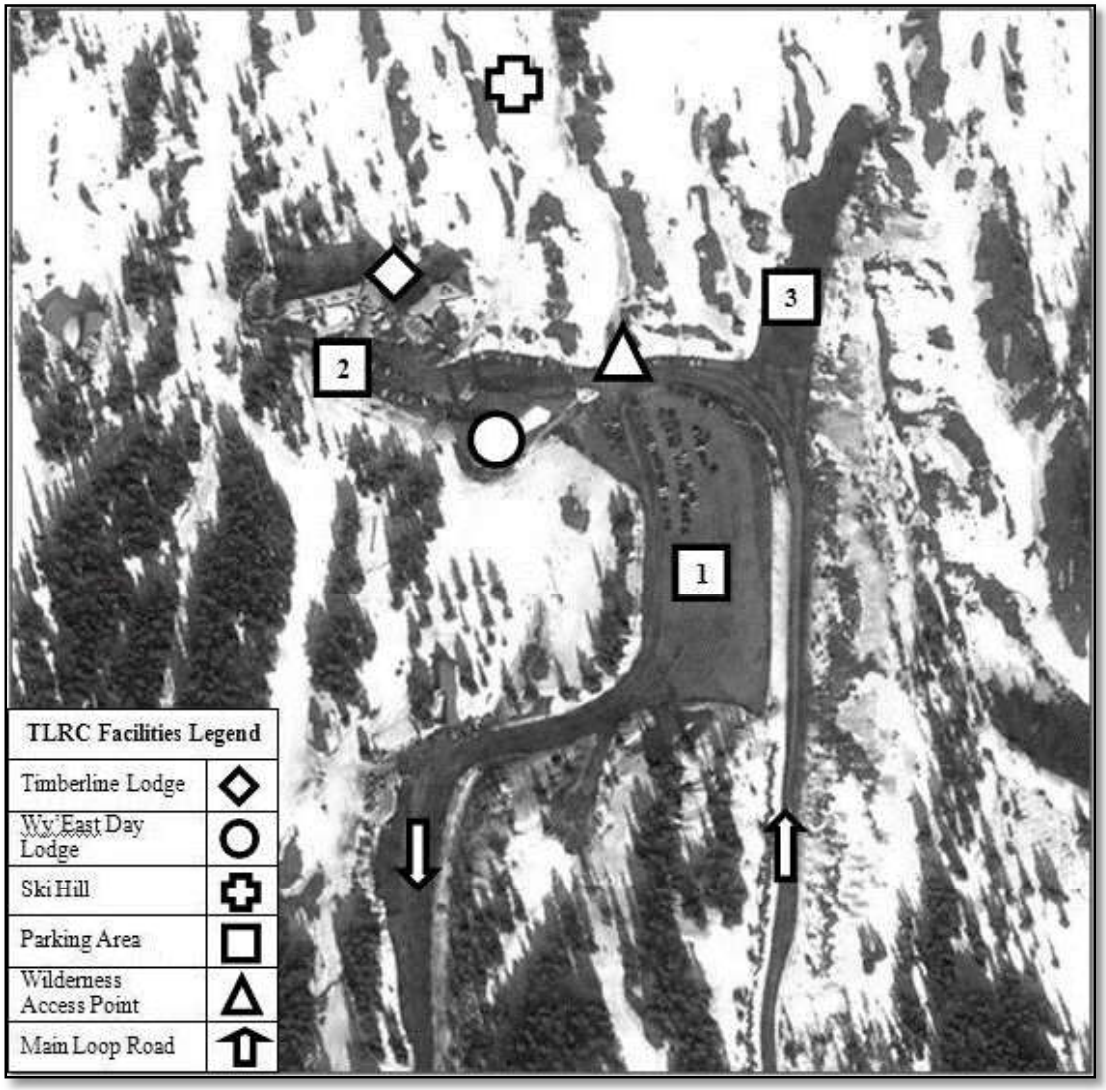

Figure 1: Timberline Lodge Recreation Complex facilities map

Data Collection

On-site face-to-face survey interviews were employed in order to gather data from recreation users throughout the three primary parking areas at the TLRC between the months of May and August of 2011. The entire TLRC encompasses a total of four square miles within the Mount Hood National Forest and provides an abundance of individual recreation sites and activities. In order to ensure a diverse and representative sample, the survey area was divided into three distinct geographical sectors. The locations of these sectors and the specific survey sites were selected in coordination with USDA Forest

Service needs. To gather a diverse and representative sample, a systematic sampling plan was developed in consultation with natural resource managers and local stakeholders to coincide data collection with peak use periods (Vaske, 2008).

A paper survey was administered by trained research assistants who approached potential respondents, described the purpose of the study, and solicited respondents to participate in the study. The survey was read aloud and took between 10 and 15 minutes to complete. For systematic sampling purposes, interviewers contacted every third person or party observed and requested their participation (Vaske, 2008). Only consenting adults (18 years of age or older) were eligible to participate. Upon completion of the survey, respondents were thanked for their time and asked if they had any other questions. In total, 972 surveys were attempted, yielding 805 completed surveys and an 83% response rate.

Results

All data were analyzed using Statistical Package for the Social Sciences (SPSS) version 24.0. To address research question R^1, frequencies, measures of central tendencies, and valid percentages were used. To address research question R^2, cross tabulation procedures were applied through the use of Pearson's Chi-Square test to assess the significant difference among distinct market segments. To address research questions R^3 and R^4, a series of independent samples t-tests were applied to determine significant differences between market segments.

R^1: What does the sample of users look like at the TLRC?

A demographic profile of all users at the TLRC was created in order to adequately portray the multi-faceted nature of the visitors and provide a framework for further analysis. A battery of socio-demographic, trip characteristic, and group characteristic items were investigated. These variables consisted of gender, age, annual household income, education level, race/ethnicity, group composition, trip longevity, and trip type. These individual variables were chosen based upon the work of previous researchers pertaining to satisfaction and market segmentation discussed within the literature (Absher, Howat, Crilley, & Milne, 1996; Burns, 2000; Burns, Graefe, & Absher, 2003; Crompton & MacKay, 1989; Farmer, 2004; Jaten & Driver, 1998).

The majority of respondents were male (68.6%), and the greatest proportion of users (72%) were between the ages of *21 and 50*. Regarding reported income, slightly less than one-half of users (47%) indicated that they earned between *$50,000 and $149,000* per year. The vast majority (97.8%) of visitors indicated that they were white. The socio-demographic findings pertaining to gender, age, annual household income, and race/ethnicity were consistent with general trends of traditional recreation users in the Pacific Northwest (Covelli, Burns & Graefe, 2006). Moreover, previous recreation literature has found that the average Mount Hood National Forests recreation users were middle-aged, white males who reported high levels of income (Kocis et al., 2004).

Analysis into education levels revealed that a large proportion of respondents (43.7%) possessed a *technical school degree or 2-year college degree*. An additional 38.5% of visitors stated that they had earned a *Bachelor's degree*. These findings are unique, as traditional snow users typically possess higher levels of education (Carmichael, 1996). Most of the respondents (96.7%) were from the United States and just a small percentage of users (3.3%) were visiting the TLRC from a country outside of the United States (mostly from Canada).

Next, group characteristic data pertaining to the general group composition of TLRC users were analyzed. The greatest proportion of the sample (83.8%) noted recreating at the TLRC with a group composition of *family and friends* (42%) or just *friends* (41.8%). A final examination into trip characteristics revealed that the majority of users (65.1%) at the TLRC were *repeat visitors*. The largest representative sample (46.3%) noted first visiting the TLRC in the year *2005 or later*, followed by those who had first visited between *1996 and 2004* (32.3%). Analysis of the number of annual days recreating at the TLRC indicated that the largest proportion of users (31.7%) recreated *22 or more days* per year. The presence of consistent repeat visitation is typical for specialized ski areas of this nature (Greer, 1990; Williams & Lattey, 1994). The TLRC, specifically the ski area, capitalizes on its' summer ski facilities which appeared to provide a loyal customer base. These findings revealed a traditional user segment that optimized a non-traditional facility.

Further trip characteristic analysis depicted a user segment of primarily day trip users (77.4%) recreating for extended periods of time. Day trip respondents reported an average stay time of 2.35 hours. General admission ski and snowboard lift tickets were issued for

a duration of six hours, making this a popular category amongst snow users.

In summary, this broad analysis of the entire TLRC sample determined that typical users were middle-aged white males who reported earning moderate levels of annual household income and possessed below average levels of education. Further, TLRC users typically recreated in smaller groups of adults consisting of either friends or family and friends, and tended to be repeating day trip visitors who were relatively new to the TLRC facility yet recreated on a rather frequent basis.

Due to the multifaceted nature of the TLRC, a wide variety of recreation activities often take place simultaneously. For this study, TLRC users were presented with a broad list of possible activities. These users were then asked to indicate which of those activities they partook in on that specific day, and of those, which was their primary activity. Respondents were then categorized based on their *primary activity* response, and placed into one of two segmented user groups: 1) *snow users* or 2) *lodge users*. Snow users were classified as any TLRC users who participated in snow based activities. Subsequently, lodge users were categorized as any TLRC user who engaged in activities that revolved around the Timberline Lodge. Out of the entire sample, just under three-fourths of respondents (74.7%) reported that their primary activity was *snow use*, while the remainder of the sample (25.3%) indicated that *lodge use* was their primary activity.

R^2: What are the socio-demographic, trip characteristic, and group characteristic differences between snow users and lodge users?

This section details an overall analysis of socio-demographic, group characteristics, and trip characteristic variants of segmented TLRC users. Cross tabulation analysis was applied through the use of Pearson's Chi-Square test to compare the overall significant differences that existed between these two unique user groups. Findings were reported in the form of frequencies, valid percentages, Pearson's Chi-Square values, and degrees of freedom. As noted above, TLRC users were asked a variety of socio-demographic questions pertaining to gender, age, annual household income, education level and race/ethnicity. The results of the cross tabulation analysis revealed that thirteen of the fifteen items were statistically significant (Table 1).

Table 1: Results of cross-tabulations for socio-demographic profile of segmented users

Socio-Demographic Variables		Snow Users Valid Percent	Lodge Users Valid Percent	
Gender				x^2=46.244
	Male	76.3	48.9	df=1
	Female	23.7	51.1	p<.001
Age				
	16-20	18.4	1.1	x^2=139.886
	21-30	38.0	11.2	df=3
	31-50	36.5	52.8	p<.001
	51 and older	7.1	34.8	
Household Income				
	$25,000 or less	19.7	5.0	x^2=33.139
	$25,000 - $49,000	21.3	10.0	df=3
	$50,000 - $149,000	42.9	57.1	p<.001
	$150,000 or more	16.1	27.9	
Education Level				
	Tech school/2 year college or less	51.0	31.5	x^2=22.029
	Bachelor's degree	35.2	44.9	df=2
	Master's degree or higher	13.8	23.6	p<.001
Race/Ethnicity				x^2=.296
	White	98.2	98.8	df=1

	Non-White	1.8	1.2	p=.604
From another country[a]				x^2=38.428
	Yes	3.3	16.8	df=1
	No	96.7	83.2	p<.001

Note. Percentages may not equal 100 because of rounding.

[a]Because n<30, we can only infer that these instances are true

With respect to gender distribution (x^2=46.244, df=1, p<.001), the analysis determined that over three-fourths of snow users (76.3%) were *male*, while just 48.9% of the lodge user were *male*. The respondents' age categories also varied significantly between segmented groups (x^2=139.886, df=3, p<.001). Snow users between the ages of *21 and 30* represented 38% of the sample, followed closely by visitors between the ages of *31 and 50* (36.5%). Conversely, lodge users tended to be older, as over one-half of respondents (52.8%) were between the ages of *31 and 50*, and slightly more than one-third of visitors (34.8%) indicated that they were age *51 or older*.

Next, TLRC visitors were asked to report their annual household income before taxes in the year of 2011. Snow users indicated that their annual household income was lower (x^2=33.139, df=3, p<.001) than that of their lodge user counterparts. Lodge users who earned *$150,000 or more* per year accounted for over one-quarter of the sample (27.9%), whereas snow users in the same category represented only 16.1% of the sample. Amongst the income category of *$49,000 or less*, snow users consisted of 41% of this category while only 15% of lodge users fell into this income category.

Respondents were asked to report the highest level of education they had achieved. Lodge users typically possessed higher education levels compared to snow users (x^2=22.029, df=2, p<.001). Over one-half of the snow user population (51%) reported possessing a *technical school, two-year college degree, or less*, while 31.5% of lodge users fell into the same category. Moreover, just under one-half of lodge users (44.9%) indicated they had obtained a *Bachelor's degree*, opposed to just over one-third of the snow user population (35.2%). Concerning race/ethnicity, the vast majority of both snow

users (98.2%) and lodge users (98.8%) reported that they were of *white*. Respondents in the lodge user category were more likely to be from another country (16.8%) than those in the snow use category (3.3%; x^2=38.428, df=1, p<.001).

In an analysis of group characteristics, TLRC users were asked to report on a battery of variables pertaining to the composition of their individual group (Table 2). A significant difference was noted in the group types of the respondents (x^2=126.814, df=3, p<.001). Lodge users were most likely to be recreating in groups consisting of *friends and family* (73.7%), compared to just 29.4% of snow users. Conversely, the majority of snow users (59.4%) were found to be recreating in groups of *friends*, while just 11.2% of lodge users fell into this same segment.

Table 2: Results of cross-tabulations for group characteristic profile of segmented users

Group Characteristic Variables		Snow Users Valid Percent	Lodge Users Valid Percent	
Group Composition				
	Alone	8.0	4.5	x^2=126.814
	Friends	54.9	11.2	df=3
	Family and Friends	29.4	73.7	p<.001
	Organized/Commercial	7.8	10.6	
Number of Adults				
in group	1	12.1	5.6	x^2=18.797
	2	32.5	48.3	df=3
	3-4	35.5	25.6	p<.001
	5 or more	19.8	20.6	
	Mean	2.63	2.61	
Number of children (16 and under) in group				
	0	76.2	74.6	x^2=.494
	1	7.4	7.1	df=4

2	8.0	8.3	p=.974
3-4	3.6	4.1	
5 or more	4.8	5.9	
Mean	.53	.59	

Note. Percentages may not equal 100 because of rounding.

Group characteristics were further analyzed to ascertain the proportion of adults and children in each segmented user group. Significant differences were noted in the numbers of adults in the groups (x^2=18.797, df=3, p<.001). Snow users (12.1%) were twice as likely as lodge users (5.6%) to visit the TLRC *alone*. Snow users were also more likely to recreate in groups of *three to four* (35.5%) as opposed to lodge users (25.5%). Nearly half of the lodge users (48.3%) reported recreating in groups of *two*, compared to 32.5% of snow users. There was no significant difference between the numbers of children per group between snow users and lodge users. Each market segment indicated recreating with children in their group approximately 25% of the time.

TLRC users were also asked a series of questions pertaining to the characteristics of their specific trip (Table 3). Analysis of first-time visitors versus repeat visitors, when stratified across segmented user groups, was found to be significant (x^2= 186.939, df=1, p<.001). Over three-fourths (77.1%) of lodge users were found to be *first-time visitors*, while conversely, 79.3% of snow users indicated that they were *repeat visitors*. Repeat visitors were then further analyzed in an effort to present a more accurate and detailed market segment. The year of first visit variable found that snow users (*M*=2001) were typically newer to the TLRC facility compared to lodge users (*M*=1994) (x^2= 12.817, df=3, p<.01). Additional analysis into the number of days recreating at the TLRC determined that the division between these user segments was significant (x^2= 99.324, df=4, p<.001). Over one-third (34.2%) of snow users indicated that they recreated at the TLRC *22 or more days per year* (*M*=25.65 days), whereas 50% of lodge users noted recreating only one day per year (*M*=6.0 days).

Table 3: Results of cross-tabulations for trip characteristics profile of segmented users

Trip Characteristic Variables	Snow Users	Lodge Users

		Valid Percent	Valid Percent	
First Visit vs. Repeat Visitor				
	First Visit	20.7	77.1	x^2=186.939
	Repeat Visitor	79.3	22.9	df=1
				p<.001
Year of First Visit				
	Prior to 1985	9.1	23.7	x^2=12.817
	1986 to 1995	9.1	18.4	df=3
	1996 to 2004	31.6	23.7	p<.01
	2005 or later	50.2	34.2	
	Mean	2001	1994	
Days Recreating at TLRC				
	1 day	4.5	50.0	x^2=99.324
	2-7 days	19.8	37.5	df=4
	8-14 days	23.3	6.2	p<.001
	15-21 days	18.2	---	
	22 or more days	34.2	6.2	
	Mean	25.65	6.0	
Type of Visit				
	Overnight	24.8	17.2	x^2=4.315
	Day trip	75.2	82.8	df=1
				p=.038
Overnight Trip:				
Number of Nights	1 night	28.5	53.6	x^2=11.603
	2 nights	26.8	32.1	df=3
	3-6 nights	22.0	14.3	p<.01
	7 or more nights	22.8	---	
	Mean	5.87	1.71	

Day Trip:				
Number of Hours	1-2 hours	4.0	68.3	x^2=273.466
	3-5 hours	37.8	28.3	df=3
	6 hours	37.8	2.8	p<.001
	7 or more hours	20.5	<1	
	Mean	6.22	2.28	

Note. Percentages may not equal 100 because of rounding.

The final trip characteristic analyses pertained to the duration of a TLRC users' stay (Table 3). Recreation users were asked to indicate whether their trip was a day visit or an overnight visit to the TLRC. Respondents were then asked to report on either the number of hours recreating on site or the number of nights on site. Snow users (24.8%) were more likely to be *overnight visitors* than lodge users (17.2%) (x^2= 4.315, df=1, p=.038). Additional examination into overnight trip longevity determined that snow users remained at the TLRC for longer periods of time (*M*=5.87 nights) compared to lodge users (*M*=1.71 nights) (x^2= 11.603, df=3, p< .01). With regard to day trip duration, snow users once again reported longer visits (*M*=6.22 hours) in contrast to lodge users (*M*=2.28 hours) (x^2= 273.466, df=3, p<.001). It should be noted that over two-thirds of lodge users (68.6%) indicated that their stay lasted between *one and two hours* on average.

Regarding socio-demographics, trip characteristics, and group characteristics, many differences were noted across the two user segments. Typically, snow users were younger white males who recreated in larger groups of friends multiple times per year and possessed lower levels of both income and education. Conversely, lodge users tended to be older white males and females (even distribution), who recreated in smaller groups of family and friends, far fewer times per year, and possessed higher levels of both income and education. The juxtaposition of these two user segments provides management insight into the diverse and complex nature of recreation visitor use management at the TLRC.

R^3: Are there significant differences in satisfaction levels between snow users and lodge users?

An analysis into the corresponding satisfaction levels of the snow users and lodge

users, was conducted to determine if a significant difference in satisfaction levels existed. A series of independent samples t-tests were conducted comparing a single item overall satisfaction variable, four service quality items, and nine trip experience items across a dependent user segmentation variable. The result of the independent t-tests illustrated that there were significant differences in overall satisfaction levels between snow users and lodge users, as nine out of the fifteen items were found to be significant.

The first independent t-test gauged differences in the overall satisfaction for snow users and lodge users. The results showed there was a significant difference in the overall satisfaction ratings (t= 2.833, p<.001). Lodge users (*M*= 9.37) reported higher overall satisfaction scores than snow users (*M*=8.99) (Table 4). Next, an independent samples t-test was conducted to examine the differences in the mean scores of five service quality items based upon user segments. The analysis revealed that differences in all five of the service quality items were significant (Table 4). Lodge users demonstrated higher mean scores (*M*= 4.91 to 4.64) than snow users (*M*= 4.83 to 4.29).

Table 4: Results of independent sample t-test for satisfaction items by user segments

Satisfaction Items	Lodge Users	Snow Users	
	Mean		t
Overall satisfaction[a]	9.37	8.99	2.833***
Health and cleanliness[b]	4.78	4.49	4.285***
Safety and security[b]	4.78	4.60	3.049***
Condition of facilities[b]	4.64	4.29	4.294***
Responsiveness of staff[b]	4.80	4.54	3.646***
Recreation setting[b]	4.91	4.83	2.125***

[a]Response scale: 1 = Least Satisfied and 10 = Most Satisfied

[b]Response scale: 1= Awful and 5 = Excellent

*significant at .05 level, **significant at .01 level, ***significant at .001 level

For the final measure of recreation satisfaction, respondents reported on a battery of trip experience items. An independent samples t-test was used to determine if there were differences in the mean scores of nine items based on segmented user groupings. The

analysis determined that three out of the nine trip experience attributes were significantly different, and that mean scores were once again higher for lodge users (Table 5). Lodge users indicated that they were more satisfied with the variables *I thoroughly enjoyed my visit to the TLRC* (t= 1.108, p<.05) and *my trip to the TLRC was well worth the money I spent to take it* (t= 2.387, p<.001) than snow users. The item *I was disappointed with some aspects of my visit to the TLRC* (t= 2.764, p< .001) was also agreed with more strongly by snow users, suggesting they were more disappointed than lodge users with certain aspects of their visit to the TLRC.

Table 5: Results of independent sample t-test for trip experience items by user segments

Satisfaction Items	Lodge Users	Snow Users	
	Mean		t-value
I thoroughly enjoyed my visit to the TLRC[a]	4.79	4.74	1.108**
My trip to the TLRC was well worth the money I spent to take it[a]	4.56	4.40	2.387***
The availability of parking was acceptable[a]	4.35	4.27	1.070
I was disappointed with some aspects of my visit to the TLRC[a]	1.42	1.65	2.764***
The condition of the parking lot area was acceptable[a]	4.25	4.16	1.102
There is a good balance between social and biological values in the management[a]	4.21	4.11	1.168
The condition of the roads was acceptable[a]	4.39	4.24	1.696
The TLRC and its surroundings are in good condition[a]	4.51	4.39	1.791
The availability of maps and signage was adequate[a]	4.30	4.20	1.187

[a]Response scale: 1 = Strongly Disagree and 5 = Strongly Agree

*significant at .05 level, **significant at .01 level, ***significant at .001 level

R^4: Are there significant differences in perceived crowding and conflict levels between snow users and lodge users?

Finally, reported crowding and conflict levels were examined between snow users and lodge users. An independent samples t-test was used to compare a single item overall crowding variable and seven crowding and conflict trip experience items across a dependent user segmentation variable (Table 6). Analysis of the overall crowding indicator suggested that snow users (*M*= 4.09) felt more crowded than lodge users (*M*= 3.41) (Table 6).

The second assessment of crowding and conflict focused on seven separate trip experience items. A series of independent samples t-test analyses revealed that four of the seven trip experience items were significantly different (Table 6). The crowding and conflict variables consisted of both positively and negatively worded statements. Most of the variables were positive, where a higher mean score indicated stronger agreement. The others variables were negative, where a lower mean score suggested stronger agreement. On all significantly different items, snow users expressed higher levels of perceived crowding than lodge users. For example, snow users (*M*=4.35) indicated a higher level of perceived crowding than lodge users (*M*=4.55) regarding the variable *I had the opportunity to recreate without feeling crowded* (t= -2.908, p< .01). Additional items that snow users perceived higher levels of crowding on included: *I avoided some places because there were too many people there* (t= 3.330, p< .001), *the number of people here reduced my enjoyment* (t= 2.286, p= .047), and *the behavior of other people at the TLRC interfered with the quality of my experience* (t= 1.368, p= .015). These analyses were consistent with the findings of the overall crowding single item indicator.

Table 6: Comparison of crowding and conflict items by user segments

Crowding and Conflict Items	Snow Users	Lodge Users	
	Mean		t-value
Overall crowding[a]	4.09	3.41	4.174

I had the opportunity to recreate without feeling crowded[b]	4.35	4.55	-2.908**
I could find places to recreate without conflict from other visitors[b]	4.39	4.46	-.922
Recreation activities here were not compatible[b]	1.65	1.65	-.022
I avoided some places because there were too many people there[b]	1.98	1.62	3.330***
The number of people here reduced my enjoyment[b]	1.98	1.73	2.286*
The behavior of other people at the TLRC interfered with the quality of my experience[b]	1.53	1.41	1.368**
The other people here increased my enjoyment[b]	3.77	3.71	.538

[a]Response scale: 1 = Not at all Crowded and 9 = Extremely Crowded

[b]Response scale: 1 = Strongly Disagree and 5 = Strongly Agree

*significant at .05 level, **significant at .01 level, ***significant at .001 level

Discussion

The first significant study finding pertained to the various levels of satisfaction amongst user groups. Snow users had a propensity to rate satisfaction items lower than lodge users, particularly with regard to facility and service items. Based on this notion, recreation managers should focus management efforts specifically on snow users as a whole and attempt to establish cost-effective mechanisms to provide increased services to this user segment. The TLRC is first and foremost a ski area, therefore, this coveted user group should remain the focus of all management objectives.

Next, instances of perceived crowding and conflict between independent user segments within the TLRC were found. Snow users had a propensity to rate crowding and conflict items higher than lodge users. The researchers believe that the rationale behind this may have been based on the presence of first-time visitors versus repeat visitors (Burns et al., 2003) as well as instances of inner and outer group animosity (Thapa, 1996; Thapa & Graefe, 1998). In this study, snow users were more likely to be repeat visitors. Focusing on the fact that repeat visitors tended to rate crowding and conflict items (as well as satisfaction items) lower, recreation managers face the daunting task of decreasing perceptions of crowding and conflict amongst their core constituency.

Further, the literature suggests that traditional user groups (e.g., skiers) tend to clash

with coming-of-age user groups (e.g., snowboarders) (Thapa, 1996; Thapa & Graefe, 1998). Facility and activity segmentation of any kind can provide multiple benefits for multifaceted recreation areas. One example would be to designate one side of the mountain for ski use only, and the other side for snowboard use only. Granted, this is a rather extreme example, a more nuanced form of spatial or temporal segmentation could further aid in the desired outcome. The literature also suggests that outer group animosity (e.g., skiers vs. mountaineers) can be a source of conflict within a recreation site. For instance, the study authors witnessed multiple instances of skiers intentionally antagonizing mountaineers hiking in designated wilderness areas. A relatively simple management solution could be administered to avoid these types of encounters such as physical barriers separating the individual areas or a penalty system that monetarily fines abusers.

Finally, conflict and crowding was found to exist throughout the TLRC. As noted in discussions with resource managers, the original infrastructure of the Timberline Lodge was not designed to handle an excess of one million annual visitors. The facility may soon exceed its user carrying capacity, and it will be up to resource managers to regulate the site accordingly. A trade-off between the consistent revenue flow of new customers and the satisfaction levels (Burns, Graefe & Absher, 2005) of existing customers may need to be addressed. The literature suggests that complex areas similar to the TLRC have been successfully regulated and managed in the past. Areas such as the Austrian village of Lech and Deer Valley, Utah, set possible management examples with their unique policies of limiting the maximum number of skiers on any day to a predetermined level (Hudson, 1996).

Conclusions

The findings from this study offer recreation resource managers innovative and more nuanced insights into the differing recreation user segments using the TLRC. Because of the evolving nature of the ski industry in general, recreation areas that were once focused on one specific activity are now finding that they must diversify their activities in order to survive within an evolving four-season model (Greer, 1990). This diversification has led, in many instances, to elevated levels of conflict, crowding, and reduced satisfaction

levels. The utilization of market segmentation within a diverse population of users proved to be invaluable. By examining the TLRC users through the lens of various market segments, this study was able to provide a deeper understanding of visitor use management. This innovative method for segmenting recreationists in multifaceted recreation settings may allow resource managers to provide a higher quality of service and experience for their customers. Holistically viewing this area as a recreation complex as opposed to individual management zones (e.g., silos) further demonstrated the application of innovative and collaborative visitor use management and research.

Recommendations for Future Research

Customer satisfaction has been researched within the realm of advertising, marketing, business, outdoor recreation, and more. Based on the complex nature of customer satisfaction, it continually proves difficult to assess. This study was built upon the frameworks of past customer service researchers such as Absher et al. (1996), Burns (2000), MacKay and Crompton (1988), and Parasuraman, Zeithaml, and Berry (1985; 1988), and serves to further their work. The goal of future studies should be to expand this useful framework, and further advance this field.

One overall satisfaction indicator, five service quality items, nine trip experience items, one overall perceived crowding item, and seven crowding and conflict items were examined in this study. Future studies should look into these same attributes at similar recreation complexes to determine if these same items are found to be adequate indicators of service quality. Moreover, the use of a multiple item satisfaction indicator should be used in an attempt to compare the effectiveness of both single and multiple item satisfaction indicators.

It should be noted that all users in this study were generally satisfied. Moving forward, resource managers and researchers should consider conducting more qualitative-oriented research. Mixed-methods research (e.g., quantitative and qualitative) can aid in further understanding the nuanced differences and opinions between and within market segments. The authors further suggest a qualitative follow-up with snow users to understand what exactly could be done to improve their satisfaction and overall experience quality.

Regarding the TLRC itself, a seasonal study analyzing users at the height of each of the four seasons would be optimal. This seasonal analysis could provide researchers with a well-rounded view of the TLRC and all of its users. The TLRC is unique in the fact that it is a constantly evolving facility. Year-round data collection could potentially shed light onto the summer trends that were discovered throughout this study. The utilization of market segmentation within this study proved to be invaluable. Two different user segments were found to possess independent satisfaction, crowding, conflict, socio-demographic, trip characteristic, and group characteristic trends. Future research should consider utilizing similar market segmentation strategies within an outdoor recreation context to replicate and enhance the foundations established in this study.

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