Proceedings of the 2013/2014 Southeastern Recreation Research Conference

Prepared by

Eric Frauman and Stephanie West

Department of Recreation Management and Physical Education - Appalachian State University

Gary Green and Bynum Boley

Department of Natural Resources, Recreation and Tourism – University of Georgia

and

Wayde Morse

School of Forestry and Wildlife Sciences - Auburn University

For References:

Frauman, E., Green, G., Morse, W., West, S., and Boley, B. (2014). *Proceedings of the 2013/2014 Southeastern Recreation Research Conference*. Boone, NC: Appalachian State University.

Last Name, 1st Initial of each author. (2014). Title of your paper. In E. Frauman, G. Green, W. Morse, S. West., and B. Boley (Eds.), *Proceedings of the 2013/2014 Southeastern Recreation Research Conference (*pp. #'s). Boone, NC: Appalachian State University.

TABLE OF CONTENTS

2014 SERR CONFERENCE KEYNOTE ADDRESS

RECREATION RESEARCH: SO WHAT? NOW WHAT?

Author:
Karla A. Henderson

Affiliation:
Parks, Recreation and Tourism Management
North Carolina State University

Address:
Box 8004
Raleigh, NC 27695

Introduction

In 1973 an article by Brown, Dyer, and Whaley entitled, "Recreation Research—So What?" was published in the *Journal of Leisure Research*. Brown et al. contended that most recreation research did not answer the question of, "So what?" They went on to describe the problems, and proposed linking the research with a more systematic approach. They suggested that the research was not addressing REAL problems, was highly reductionist, did not view recreation phenomena in a broader context, used little to no theoretical orientation for guidance, and was being done by researchers who were not prepared for multi-disciplinary work. The organizers of the 2014 SERR conference invited me to reflect on where recreation research is 40 years after this indictment by Brown et al. The purposes of this presentation were to critically examine the research published in the past 40 years and to reflect on what has happened in the past that can inform recreation research in the future.

The Status of Recreation Research

In a paper that I presented five years ago (Henderson, 2009) I also suggested that leisure and recreation research might be critiqued for several reasons: lack of theory and theoretical

quality, limited topics, too much *and* too little focus on professional practice, mindless empiricism, lack of methodological imagination, the characteristics of researchers, and the isolation of recreation and leisure research. Each of these areas was illustrated briefly in the SERR presentation.

Similar to Brown et al., some concern remains about the use of theory in recreation research. Studies have indicated a trend toward fewer purely descriptive studies, greater use of theoretical frameworks, more theory development, and a consistent examples of theory testing over the past 40 years (Henderson & McFadden, 2013). More important than the amount of theory, however, may be the quality of the theory in helping to understand recreation behavior and management issues.

Sometimes I feel that recreation researchers are studying some of the same topics over and over again. For example, do we really need to have more information about benefits? Driver (1999) suggested that perhaps the *easy* problems had been addressed related to leisure and its benefits. What are the deeper questions that should be asked about any aspect of recreation that will make research more relevant?

The relationship between research and practice has always been contentious. Some claim that the research is too theoretical while others suggest that it is too focused on practice. The balance is difficult to attain, and the research sometimes does not seem to be valued uniformly. Hall and Steelman (2007) examined the *Society and Natural Resources* journal for 20 years. Table 1 shows their findings regarding the relevance of the journal for researchers, practitioners and students. The journal appears most relevant to researches and not necessarily practitioners.

Mindless empiricism is a dogmatic critique but it relates to the seduction and addiction that can occur around statistics and numbers. Although sophisticated techniques are useful,

failing to explain what the findings mean adequately will not move the field forward.

Lack of methodological imagination is an area that seems to be changing rapidly as more methods become available, especially in the realm of qualitative approaches. Henderson and McFadden showed the changes occurring over a 20 year period based on their analyses of the *Journal of Leisure Research* and *Leisure Sciences*. See Figure 1. Opportunities for methods beyond surveys have grown considerably.

Having a diversity of researchers is also important related to race, gender, and geographic location as well as disciplinary backgrounds. Although the critique leveled by Brown et al. (1973) that researchers may not be prepared for interdisciplinary work has been mitigated to a great extent, more researchers operating from different perspectives will enable the asking of deeper questions and potential interpretations. Both Hall and Steelman (2007) and Henderson and McFadden (2013) have shown the trends in more geographical representation as well as gender representation among researchers.

Finally, the isolation of recreation and leisure research and the need to use this leisure within interdisciplinary teams is slowly changing. As real problems such as health due to obesity and inactivity and climate change have emerged, recreation researchers are expanding their efforts to show how understanding something about recreation behavior is related to real problems.

Food for Thought

Numerous implications might be drawn from these ideas expressed by researchers since 1973. However, I suggest that researchers might consider several possibilities. First, a continuing need exists for evidence-based evaluation and research for recreation planning as Brown et al. (1973) alluded. Second, many methodological tools are available that should be carefully chosen

to best address research questions. In some cases, mixed methods may be the most useful, but the use of the methods must be rigorous. Third, recreation and leisure researchers need to use their expertise to work with cross, inter, multi, and transdisciplinary teams to address the real problems. Fourth, asking harder questions must be considered with theory used as the foundation for moving to those harder questions. Finally recreation researchers need to jump into the work and never apologize for recreation as playing less than a critical role in understanding human behavior.

References

Brown, P. J., Dyer, A., & Whaley, R. S. (1973). Recreation research—So what? *Journal of Leisure Research, 5*(1), 16-23.

Driver, B. (1999). Recognizing and celebrating progress in leisure studies. In E. L. Jackson and T. L. Burton (Eds.), *Leisure studies: Prospects for the twenty-first century* (pp. 523–534). State College, PA: Venture.

Hall, T. E., & Steelman, T. A. (2007). The development of a discipline: A 20-year evaluation of *Society and Natural Resources. Society and Natural Resources, 20*, 865-881.

Henderson, K. A. (2009). 40 years of leisure research in the United States: Where we have been, where we are going. *Journal of Leisure and Recreation Studies (Korean)*, 33(1), 5-16.

Henderson, K. A., & McFadden, K. (2013). Characteristics of leisure research: Trends over three decades. *International Leisure Review, 2*(2), 119-134.

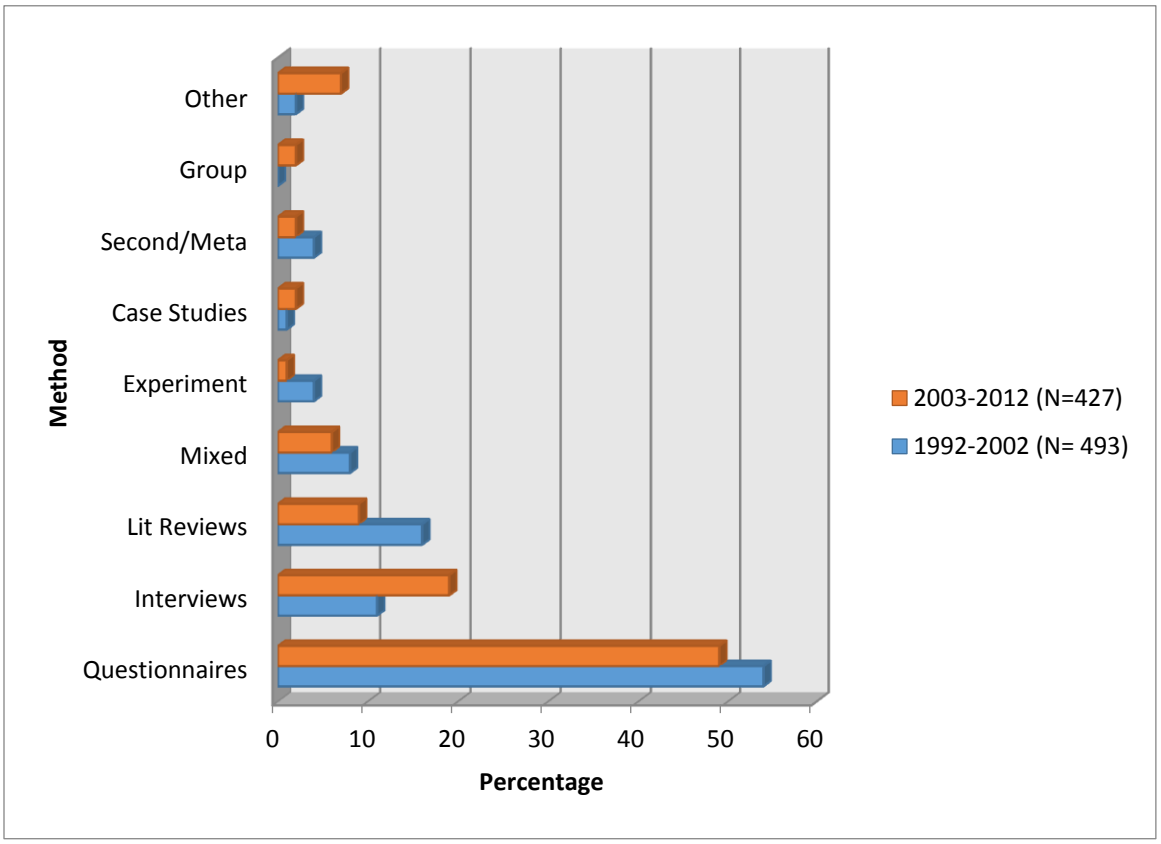
Table 1

Relevance of Research in *Society and Natural Resources* (from Hall & Steelman, 2007, p. 875)

		Relevance		
Group	Highly	Somewhat	Not	Don't Know
Student (n = 144)	49	42	4	7
Researcher, non-university (n = 67)	36	52	8	5
Practitioner (n = 28)	36	50	1	7
Researcher, university (n = 56)	52	41	2	5
Researcher, teacher, university (n = 164)	55	41	1	3
Total	49	44	2	5

Figure 1

Methods Used in Research Published in JLR and LSc from 1992-2012 (Henderson & McFadden, 2013)



THE EFFECTS OF NATURE-BASED TUTORING ON THE SELF-CONFIDENCE, SELF-EFFICACY, AND ENVIRONMENTAL CONCERN OF MIDDLE- AND HIGH-SCHOOL STUDENTS

Authors:
Lauren E. Mullenbach
Dr. Gary T. Green

Affiliation:
Warnell School of Forestry & Natural Resources
University of Georgia

Address:
Warnell School of Forestry and Natural Resources, RM 3-101
University of Georgia
180 E. Green St.
Athens, GA 30602-2152

Problem Statement

The current generation of primary and secondary students faces a future of complex environmental issues. Thus, it is important for science curricula to include pragmatic information on the natural world and its changing climate (U.N. Education Scientific & Cultural Organizations/UN Environment Programme [UNESCO/UNEP], 1975; UNESCO-UNEP, 1977, UN Council on Environment & Development [UNCED], 1992). However, in the state of Georgia, performance standards – the guidelines which direct classroom curricula – do not include environmental science or mention concept such as global warming, pollution, wildlife protection, or energy conservation, outside of 9th grade biology (Georgia Department of Education [GADOE], 2007). Many students also have low performance in their mathematics and science classes in comparison with the rest of the nation (U.S. Department of Education [USDOE], 2013). Additionally, administrators in Georgia are placing increased pressure on students to perform better on standardized tests, which may hinder student learning (Sarrio,

2011). Based on the literature, it is thought that these problems are related (Lieberman & Hoody, 1998; U.S. Environmental Protection Agency, 1996; Volk, Hungerford, & Tomera, 1984; Wheeler et al., 2007).

Past research examining teacher training in environmental science has found subsequent improvement of student performance and that students' environmental awareness increases when teachers' environmental awareness increases (Wilke, 1985). Investigations of extracurricular environmental education programs have found positive effects on student awareness and concern for the environment (Culen & Mony, 2003; Smith-Sebasto & Cavern, 2006). Research has also shown that teaching applicable, real-world subject material, particularly in science, can increase the motivation of the students to learn and thus can increase their retention of the material (Anthony, Tippett, & Yore, 2010). Additionally, research in developmental psychology has seen a correlation between confidence levels and self-efficacy levels in students. Hence, the more confident a student feels in a particular subject, the more they feel they can achieve in that subject (Ayotola & Adedeji, 2009; Lee, 2009; Usher & Pajares, 2009). Similarly, teaching in a holistic manner, which integrates environmental principles into other subjects, such as math, can improve performance in those subjects and environmental attitudes (Bartosh et al., 2009; Hassan & Ismail, 2011). However, limited research has examined the effects of extracurricular education, mentoring, or tutoring and their relationship to environmental awareness, academic self-confidence, or academic self-efficacy.

Thus, this study measured the effectiveness of a semester-long, environment-based tutoring program on the level of environmental perceptions, confidence in mathematics and science, and self-efficacy in mathematics and science of middle- and high-school students. It was hypothesized students in the program would exhibit an increase in their confidence and self-

efficacy levels as well as an increase in their level of concern for the environment and more positive environmental attitudes and behaviors.

Methods

Students' academic self-perceptions and environmental concern were measured with pretest-posttest surveys before and after a nature-based tutoring program. The survey was based on existing questions and scales designed to measure children's environmental attitudes and students' self-confidence levels in mathematics. The survey assessed students' levels of environmental attitudes and concerns, self-confidence and self-efficacy in math and science, and their pro-environmental behavior. It also included open-ended questions inquiring the students' environmental knowledge and specific concerns. The survey took approximately fifteen minutes to complete.

The tutoring program involved a semester of instruction in math or science, which incorporated nature examples, pertinent environmental issues, and natural phenomena. For an hour each week, students in the study received one-on-one tutoring respective to their subject. Study guides for each unit test were given to students throughout the semester; these study guides incorporated environmental and nature-based examples into the curricula and were based upon the Georgia Performance Standards for each subject. Participants were recruited from a list of members of a math-tutoring center and from a nearby neighborhood. Their ages ranged from 11 to 18, and they were in grades 6 through 12.

Results

Statistical tests were conducted on the survey data to assess any relationships among demographic variables and performance on the survey. Independent samples t-tests were conducted to detect significant differences between the experimental and control groups on total

scores for each scale of the post-test survey. Paired-samples t-tests were conducted to detect significant differences within individuals between pre-test and post-test. Further, several analyses of covariance (ANCOVAs) were performed. With the exception of one test, no significant differences were found for any pair of variables. The only significant finding was an ANCOVA testing for a relationship between performance on the post-test math self-confidence scale and the number of nature-based study guides received, when controlling for pretest scores ($F = 4.075$, $p = 0.032$, alpha = 0.05).

However, the survey scales were found to be reliable and valid. Each scale had a Cronbach's alpha value above 0.7, and three of the four scales had Cronbach's alpha values above 0.9. These results indicate the survey questions were consistently understood by participants.

Discussion/Implications

Despite the insignificant findings, there was one notable observation from the study. The main component of the treatment for the experimental group, the study guides, had a significant relationship with students' scores on the post-test math self-confidence scale. This could indicate that completing the nature-based study guides may have influenced participants' self-confidence regarding math. Given that one of the main purposes of the study was to improve the self-confidence and self-efficacy in math of Georgia students, this is an important finding.

There are several potential reasons for the insignificant results. However, the limited sample size was probably the main limitation of this study. Also, the treatment was inconsistent among participants in the experimental group; there was variability in the number of tutoring sessions each student had and the number of study guides each student received. This inconsistency in treatment may have attenuated any effect on the dependent variables.

Additionally, the participants volunteered for the study and hence a lack of randomness in the sample may have influenced the results (e.g., participants may have had pre-existing high levels of self-confidence or positive environmental attitudes).

Due to the lack of significant results and limitations of the study, future studies should strive to obtain a randomized and larger sample and more consistent treatment among participants in the experimental group.

References

Anthony, R.J., Tippett, C.D., & Yore, L.D. (2010). Pacific CRYSTAL project: Explicit literacy instruction embedded in middle school science classrooms. *Research in Science Education, 40*(1), 45-64.

Ayotola, A., & Adedeji, T. (2009). The relationship between mathematics self-efficacy and achievement in mathematics. *Procedia Social and Behavioral Sciences, 1*, 953-957.

Bartosh, O., Ferguson, L., Tudor, M., & Taylor, C. (2009). Impact of environment-based teaching on student achievement: A study of Washington State middle schools. *Middle Grades Research Journal, 4*(4), 1-16.

Culen, G. R., & Mony, P.R.S. (2003). Assessing environmental literacy in a nonformal youth program. *The Journal of Environmental Education, 34*(4), 26-28.

GADOE. (2007). Georgia Performance Standards for Science. Retrieved from https://www.georgiastandards.org/Standards/Pages/BrowseStandards/ScienceStandards.asp.

Hassan, A., & Ismail, M.Z. (2011). The infusion of environmental education in chemistry teaching and students' awareness and attitudes toward environment in Malaysia. *Procedia Social and Behavioral Sciences, 15*(1), 3404-3409.

Lee, J. (2009). Universals and specifics of math self-concept, math self-efficacy, and math anxiety across 41 PISA 2003 participating countries. *Learning and Individual Differences*, *19*(3), 355-365.

Lieberman, G.A., & Hoody, L.L. (1998). *Closing the achievement gap: Using the environment as an integrating context for learning.* San Diego, CA: State Education and Environment Roundtable.

Sarrio, J. (2011, July 10). Cheating scandal adds fuel to debate over high-stakes tests. *The Atlanta Journal-Constitution*.

Smith-Sebasto, N.J., & Cavern, L. (2006). Effects of pre- and posttrip activities associated with a residential environmental experience on students' attitudes toward the environment. *The Journal of Environmental Education, 37*(4), 3-17.

United Nations Council on Environment and Development (1992). *Agenda 21: Programme of action for sustainable development.* United Nations.

UNESCO/UNEP (1975). The Belgrade Charter. *Connect, 1,* 1-2.

UNESCO/UNEP (1977). The Tbilisi Declaration. *Connect, 3,* 1-8.

USDOE, Institute of Educational Sciences, National Center for Education Statistics, National Assessment of Educational Progress. (2013). Retrieved from http://nces.ed.gov/nationsreportcard/subject/publications/stt2013/pdf/2014465GA8.pdf.

U.S. Environmental Protection Agency, National Environmental Education Advisory Council, Environmental Education Division (EPA). (1996). *Report assessing environmental education in the United States and the implementation of the national environmental education act of 1990.* Washington, DC: Author.

Usher, E.L., & Pajares, F. (2009). Sources of self-efficacy in mathematics: A validation study. *Contemporary Educational Psychology, 34*(2), 89-101.

Volk, T. L., Hungerford, H. & Tomera, A. (1984). A national survey of curriculum needs as perceived by professional environmental educators. *The Journal of Environmental Education, 16*(1), 10.

Wheeler, G., Thumlert, C., Glaser, L., Schoellhamer, M., & Bartosh, O. (2007). *Environmental education report: Empirical evidence, exemplary models, and recommendations on the*

impact of environmental education on K-12 students. Olympia, WA: Office of Superintendent of Public Instruction.

Appendix

Table 1 – Demographics

N=38

Variable	N	Percentage
Gender		
Female	21	55.3
Male	17	44.7
Race		
Black or African-American	2	31.6
Asian	12	7.9
White	23	60.5
Grade		
6	10	26.3
7	8	21.1
8	7	18.4
9	6	15.8
10	2	5.3
11	4	10.5
12	1	2.6

Table 2 – Independent t-tests

N = 38

Scale	t	df	p[a]
Environmental attitudes	-0.519	36	0.607
Math self-confidence/self-efficacy	-0.820	36	0.418
Science self-confidence/self-efficacy	-0.917	36	0.366
Environmental behavior	-0.100	36	0.921
Environmental concern	0.785	34	0.438

[a]alpha = 0.05

Table 3 – Paired-samples t-tests

N = 38

Scale	t	df	p[a]
Environmental attitudes	-0.488	37	0.628
Math self-confidence/self-efficacy	-0.471	37	0.641
Science self-confidence/self-efficacy	-0.800	37	0.429
Environmental behavior	-0.378	37	0.707
Environmental concern	0.810	35	0.423

[a]alpha = 0.05

Table 4 – One-way ANCOVA*

N = 25**

Scale	F	P[a]	Eta^2
Math self-confidence/self-efficacy	4.075	0.032	0.280

Number of study guides x posttest score on math self-confidence/self-efficacy
[a]alpha = 0.05
**only participants in the experimental group

Table 5 – One-way ANCOVAs*

N = 38

Scale	F	p[a]	Eta^2
Environmental attitudes	0.241	0.627	0.007
Math self-confidence/self-efficacy	1.131	0.295	0.031
Science self-confidence/self-efficacy	0.788	0.381	0.022
Environmental behavior	<0.001	0.996	<0.000
Environmental concern	0.601	0.444	0.018

Treatment group x posttest scores
[a]alpha = 0.05

Table 6 – Two-way ANCOVAs*

N = 38

Scale	F	p[a]	Eta^2
Environmental attitudes	0.003	0.957	<0.001
Math self-confidence/self-efficacy	0.806	0.376	0.024
Science self-confidence/self-efficacy	0.569	0.456	0.017
Environmental behavior	0.001	0.969	<0.001
Environmental concern	0.783	0.383	0.025

Treatment group & gender x posttest scores

[a]alpha = 0.05

Table 7 – Two-way ANCOVAs*

N = 38

Scale	F	p[a]	Eta^2
Environmental attitudes	3.196	0.055	0.171
Math self-confidence/self-efficacy	1.989	0.154	0.114
Science self-confidence/self-efficacy	0.241	0.787	0.015
Environmental behavior	0.496	0.614	0.031
Environmental concern	1.733	0.195	0.107

Treatment group & race x posttest scores

[a]alpha = 0.05

*all ANCOVAs used pretest scores as a covariate

Table 8 – One-way ANCOVAs*

N = 38

Scale	F	p[a]	Eta[2]
Environmental attitudes	0.193	0.826	0.018
Math self-confidence/self-efficacy	1.422	0.263	0.119
Science self-confidence/self-efficacy	2.325	0.122	0.181
Environmental behavior	0.172	0.843	0.016
Environmental concern	1.492	0.250	0.136

Number of visits x posttest scores

[a]alpha = 0.05

*all ANCOVAs used pretest scores as a covariate

LEISURE AND LIFE SATISFACTION: MUNDANE HAPPINESS

Authors:
Andrew W. Bailey[1]
H.K. Kang[2]

Affiliation:
University of Tennessee-Chattanooga[1]
Southern Wesleyan University[2]

Address:
103 Metro Building, 518 Oak St.
Chattanooga, TN 37403

Introduction

The pursuit of happiness has received much recent attention in politics and academia. A boon in happiness research has revealed that individual attitudes and behaviors may encourage or inhibit the emergence of happiness. Positive affect has been linked to: job satisfaction (Weiss et al., 1999), satisfaction with friends (Lyubomirski et al., 2005), physical & mental health (Mroczck & Spiro, 2005), leisure satisfaction (Riddick, 1985), social capital (Bailey & Fernando, 2012), and outdoor activities (Maas et al., 2009). These studies investigate predictors of global happiness, but neglect individual domains of satisfaction and fail to elucidate routine activities that may promote happiness.

The Happiness Initiative, headed by John DeGraaf and a team of UC San Diego researchers, has endeavored to promote happiness as a true indicator of national progress in the U.S. They have developed a Happiness Index, measuring ten domains of life satisfaction. In cooperation with the Happiness Initiative, the purpose of this study was to: 1) determine which domains of life satisfaction best predict global happiness, and 2) elucidate how routine leisure activities may influence these domains and global happiness.

Methods

This study was conducted at a mid-sized private college in western Michigan. A survey was distributed to 1,000 randomly-selected college students via an online survey tool. A total of 380 students (61% female, *Mean* age = 21) completed the survey, resulting in a 38% response rate. The survey included: The Happiness Index (10 domains,; 70 items), demographic information (3 items), and routine participation in various leisure activities over the last month (5 items). The data were analyzed using Amos 20 to develop a Structural Equation Model. Using an exploratory process, the model was systematically reduced and reanalyzed after each step (Byrne, 2001).

Results

The final model (Figure 1) showed a strong fit for the data (p = .004, X^2 = 70.204/ 42 df, CFI = .987). The satisfaction domains which best predicted global happiness include: Psychological (.452), Social (.260), Physical (.161) and Time (.097). Daily reflection influenced psychological, social, and time satisfaction. Volunteering influenced psychological and social satisfaction. Physical satisfaction was positively impacted by routine physical activity, but negatively impacted by time spent on social networking sites. Finally, time spent outdoors had a positive influence on all satisfaction domains, while also predicting global happiness better than any other leisure item (.181), and better than physical satisfaction. Table 1 illustrates indirect and total effects as well as variance explained for each variable in the model.

Discussion

These results provide insight into the predictors of satisfaction and happiness in a college student sample. There are certainly many paths to happiness, but these results indicate that one's mundane daily activities may have a powerful impact on global happiness. Psychological and

social satisfaction had the strongest influence on overall happiness, indicating that meaningful living and social support should be encouraged for enhanced positive affect (Bailey & Fernando, 2012). Time scarcity and physical well-being did not contribute as strong of an influence in this sample, but that may be due to the nature of participants. College students typically have more leisure time than working adults (c.f. American Time Use Survey; http://www.bls.gov/tus/), especially at this private school where most students can focus on their education without employment obligations. Given the young age of participants in this study, physical ailments have not yet become a major life factor. This may account for the smaller influence of physical well-being on happiness relative to other research (Lyubomirsky et al., 2005).

Worthy of note is the impact of outdoor experience on all satisfaction domains and on global happiness. This highlights the holistic nature of outdoor experiences and their positive effects above and beyond the physical benefits (Mass et al., 2009). Consistent with previous research, reflectivity had a significant influence on most satisfaction domains (Bailey & Russell, 2010). Future research will be needed to determine causal effects of the reflectivity variable. It is feasible that psychological, social and time satisfaction, for instance, could be the cause of having the mental space and leisure time to spend in reflective activities. Finally, regular physical activity and social media use had an influence only on physical satisfaction. Social comparison has been tied to negative mood and body dissatisfaction (Tiggemann & McGill, 2004), providing a precedent for the negative relationship between social media usage and physical satisfaction.

Given the newfound energy behind the pursuit of happiness, recreation and leisure providers would to well to understand and promote activities that encourage happiness and general well-being. It is unlikely that research will present an ideal model of a balanced routine

for optimal happiness. Continued research, however, could direct professionals and laypersons toward activities that encourage and promote enhanced well-being.

References

Bailey, A., & Fernando, I. (2012). Routine and project-based leisure, happiness and meaning in life. *Journal of Leisure Research*, *44*(2).

Bailey, A., & Russell, K. C. (2010). Predictors of interpersonal growth in volunteer tourism: A latent curve approach. *Leisure Sciences*, *32*(4), 352–368.

Byrne, B. M. (2001). *Structural Equation Modeling with Amos*. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, *131*(6), 803–855.

Lyubomirsky, 2005 Happiness Metaan.pdf. (n.d.).

Maas, J., Verheij, R. A., de Vries, S., Spreeuwenberg, P., Schellevis, F. G., & Groenewegen, P. P. (2009). Morbidity is related to a green living environment. *Journal of Epidemiol Community Health*, *63*, 967–973.

Mroczek, D. K., & Spiro, A. (2005). Change in life satisfaction during adulthood: Findings from the Veterans Affairs Normative Aging Study. *Journal of Personality and Social Psychology*, *88*, 189–202.

Riddick, C. C. (1985). Life satisfaction determinants of older males and females. *Leisure Sciences*, *7*, 47–63.

Tiggemann, M., & McGill, B. (2004). The role of social comparison in the effect of magazine advertisements on women's mood and body dissatisfaction. *Journal of Social and Clinical Psychology*, *23*(1), 23–44.

Weiss, H. M., Nicholas, J. P., & Daus, C. S. (n.d.). An examination of the effects of affective experiences and job beliefs on job satisfaction and variations in affective experiences

over time. *Organizational Behavior and Human Decision, 78*, 1–24.

Figure 1. Full Final Structural Equation Model.

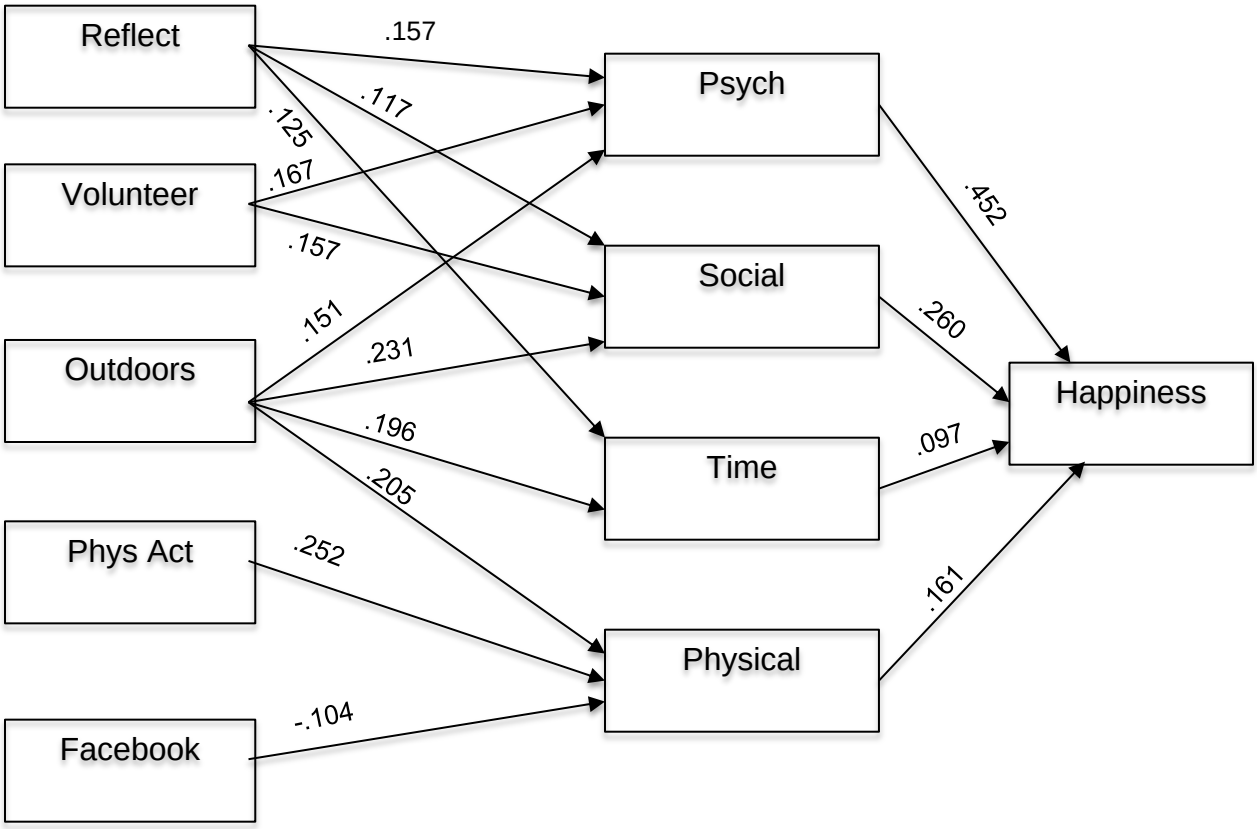


Table 1. Standardized Total Effects, Indirect Effects, and R^2 for all variables.

	Total Effects					Indirect Effects
	Social Sat	Physical Sat	Time Sat	Psych Sat	Happiness	Happiness
Social Media	-	-0.097	-	-	-0.012	-0.012
Outdoors	0.170	0.131	0.155	0.151	0.153	0.153
Phys Actv	-	0.287	-	-	0.035	0.035
Volunteer	0.164	-	-	0.163	0.126	0.126
Reflection	0.100	-	0.155	0.145	0.114	0.114
SocialSat	-	-	-	-	0.292	-
Physical Sat	-	-	-	-	0.121	-
Time Sat	-	-	-	-	0.101	-
Psych Sat	-	-	-	-	0.477	-
R^2	0.084	0.155	0.055	0.092	0.642	

ACTIVE SPORT TOURISM: EFFECTS OF AGE, GENDER, AND DISTANCE TRAVELLED TO PARTICIPATE IN HALF-IRONMAN COMPETITIONS

Author:
Jessica Finnerty-Monu

Affiliation:
Middle Tennessee State University
HHP Department- Leisure Studies
Murfreesboro, TN 31728

Introduction

The "Ironman Hawaii" is the most prestigious Ironman triathlon (3.8km swim, 180km cycle, and 42.2km run) in the world and over tens of thousands of triathletes try to qualify each year (Rust, Knechtle, Knechtle, Pfeifer, Rosemann, Lepers, & Senn, 2013). With the full Ironman growing so rapidly so has the Half-Ironman (1.69km swim, 90km bike, and 21.1km run). In the United States alone, approximately 40% of all triathletes participate in a Half-Ironman triathlon distance race (Knechtle, 2012). As triathlons have increased in popularity so has the age of amateur athletes participating. Studies have looked into age, gender, and performance differences in triathlons, but where and how far participants' travel to compete has not been fully studied. 'Active Sport Tourism' which refers to participation in a sport away from their home community (Gibson, 1998) is a fairly new term. Gibson (1998) first described 'active sport tourism' and compared it to the involvement and specialization of why individuals participated and traveled the way they did. With our society's transportation system anyone can go just about anywhere within the United States or outside the United States within a relatively short amount of time, which has opened up a number of opportunities. The purpose of this study was to examine the possible effects age, gender, and distance traveled has on participation in Half-Ironman triathlon distance competitions throughout a five year time span.

Methods

This study used the results from four Half-Ironman Triathlon distance events from 2008 and 2013. The database was obtained through their websites. The age determinants for this study were determined by the USA Triathlon standards (www.usatriathlon.org), which is followed in every USA Triathlon sanctioned event.

The races were chosen by the locality and their non-Ironman status. The Ironman sanctioned races are great events and should be looked at as well but this study chose USA Triathlon sanctioned events that were not Ironman sanctioned events. The four location events evaluated were White Lake and Beach 2 Battleship both in North Carolina, Kinetic in Virginia, and Rock 'N' Roll Man in Georgia.

Results

Overall, there were 3,695 participants (1,938 in 2008 and 1,757 in 2013) with 2,588 being male (1,385 from 2008 and 1,203 from 2013) and 1,107 being female (553 from 2008 and 554 from 2013) (Table 1). There was an overall increase of 10% of miles traveled to participate from 2008 to 2013. The average miles traveled to participate in 2008 was 203.2 and in 2013 it was 223.2. Table 2 shows that the 70-74, 50-54, and 55-59 age groups had the greatest average mile increase with 61%, 42.9%, and 27.8%. The 60-64 age group had the most significant drop in average miles traveled with a 59.1% decrease followed by the 20-24 age group with a 10.2% decrease.

Males saw the greatest change in average miles traveled to participate in the 70-74, 19 and under, and 45-49 age groups with an increase of 112.6, 49.4, and 49.1 miles. Women saw the greatest change in average miles traveled to participate in the 55-59, 50-54, and 40-44 age

groups with an increase of 118, 70.3, and 66.8 miles.

Table 1 Number of Participants and Average Miles per Age Group

	Male				Female				Combined			
	2008		2013		2008		2013		2008		2013	
	# Partici-pants	Avg. Miles	# Partici-pants	Avg. Miles	# Partici-pants	Avg. Miles	# Partici-pants	Avg. Miles	# Partici-pants	Avg. Miles	# Partici-pants	Avg. Miles
19 & below	13 (0.9%)	179.1	10 (0.9%)	228.5	3 (.6%)	93	3 (0.5%)	95.3	16 (0.8%)	162.9	13 (0.7%)	197.8
20-24	42 (3.0%)	204.8	33 (2.7%)	186.8	24 (4.6%)	209.8	20 (3.6%)	183.6	66 (3.5%)	206.6	53 (3.1%)	185.6
25-29	133 (9.6%)	202.2	111	250.5	87	215.6	84	203	220	207.5	195	230
30-34	199	196.3	164	216.6	90	212.7	109	255.8	289	201.4	273	224.9
35-39	336	183.7	219	193.5	124	242.7	86	198	460	199.6	305	194.8
40-44	275	214.5	237	201.4	106	161.2	110	228	381	221.2	347	209.8
45-49	217	179.8	183	228.9	61	298.6	65	238.8	278	210.9	248	231.5
50-54	108 (7.8%)	238.1	143	245.9	21 (4.0%)	229.9	53 (9.6%)	300.2	129	223.6	196	319.6
55-59	32 (2.3%)	266.9	60 (5.0%)	268.6	4 (0.8%)	162	21 (4.0%)	280	36 (1.9%)	260.4	81 (4.6%)	332.7
60-64	21 (1.4%)	210.6	25 (2.1%)	225.2	5 (0.9%)	233.8	3 (0.5%)	271	26 (1.4%)	250.0	28 (1.6%)	102.3
65-69	4 (0.3%)	355.8	16 (1.3%)	220.9	0 (0%)	0	0 (0%)	0	4 (0.2%)	118.2	16 (0.9%)	106.8
70-74	5 (0.4%)	329.4	2 (0.1%)	442	1 (0.2%)	131	0 (0%)	0	6 (0.3%)	274.5	2 (0.1%)	442
Overall	**1385**		**1202**		**526**		**554**		**1911**		**1757**	

Table 2 Difference of Average Miles Traveled to Participate in Half-Ironman from 2008 to 2013

	Male	Female	Combined
19 & Under	**49.4**	2.3	34.9 (17.6%)
20-24	-18	-26.2	-21 (-10.2%)
25-29	48	-12.6	22.5 (10.8%)
30-34	20.3	43.1	23.5 (11.7%)
35-39	9.8	-44.7	-4.8 (-2.4%)
40-44	-13.1	**66.8**	-11.4 (-5.2%)
45-49	**49.1**	-59.8	20.6 (9.8%)
50-54	7.8	**70.3**	**96 (42.9%)**
55-59	1.7	**118**	**72.3 (27.8%)**
60-64	14.6	37.2	-147.7 (-59.1%)
65-69	-134.8	0	-11.4 (-9.6%)
70-74	**112.6**	-131	**167.5 (61%)**
TOTAL	17.7	24.4	20 (9.8%)

Conclusions

The current study was a great exploratory study into active sport tourism with a 10% increase in the average amount of miles an individual will travel to participate in a half-ironman distance competition. The regression analysis of the results did not indicate that any age group or gender was more likely or less likely to travel over another but what we did find was that there was an overall increase of the distance traveled throughout many age groups. While comparing genders we found that females are more likely to travel a farther distance to participate in a half-ironman than males are with females currently averaging 233.1 miles and males currently averaging 218.7 miles.

Race directors should take this knowledge and consider expanding their marketing and promotions so they can maximize the number of participants. While marketing the event they should also market the nearby attractions to entice participants to come for the weekend.

Future Research

This was a great exploratory study looking into 'Active Sport Tourism' but further analysis should be done on this topic. Triathlons, with three disciplines, involve more skill than a single discipline event such as a marathon. Therefore it would be interesting to compare these results with results from marathons, half-marathons, cycling, etc. The events in this study were all non-Ironman sanctioned events, future research should compare Ironman and non-Ironman sanctioned events. Finally, future research should dive into why individuals choose the event they did. That knowledge will allow the researcher to go deeper into the understanding of the participant's choices.

References

Gibson, H. (1998). Active sport tourism: Who participates? *Leisure Studies, 17*, 155-170.

Knechtle, B. (2012). Age and Gender Differences in Half-Ironman Triathlon Performances – the Ironman 70.3 Switzerland from 2007 to 2010. *Journal of Sports Medicine, 3*, 59-66.

Rust, C. A., Knechtle, B., Knechtle, P., Pfeifer, S., Rosemann, T., Lepers, R., & Senn, O. (2013). Gender Difference and Age-Related Changes in Performance at the Long-Distance Duathlon. *Journal of Strength and Conditioning, 27*(2), 293-301.

A PRELIMINARY EXAMINATION OF COLLEGE OUTDOOR PROGRAM STAFF CONNECTEDNESS TO NATURE

Authors:
Eric Frauman
Francesca Shaffer

Affiliation:
Recreation Management Program, Appalachian State University

Address:
111 Rivers St., Box 32071, Boone, North Carolina 28608

Introduction

A byproduct of the adventure education movement of the 1960's, non-academic college and university outdoor programs have flourished in recent decades with hundreds of programs throughout the United States (Poff, 2013). Generally administered by full-time professional staff outdoor programs provide structured training and leadership opportunities for students interested in facilitating outdoor recreation experiences for others. While historically the emphasis of college and university outdoor programs has been on facilitating adventure-based opportunities (e.g., backpacking, rock climbing, rafting, hiking), primarily on public lands, offering limited outdoor education to reduce negative impacts, recent calls from organizational bodies such as the Association of Outdoor Recreation and Education and Wilderness Education Association have emphasized "promoting ecologically sound stewardship of the natural environment" (http://www.aore.org/) and "education in the preservation of this country's wild land areas" (http://www.weainfo.org/about).

Although primarily nonempirical, ecologists have long theorized about humans' psychological relationship to the natural world. The importance of feeling connected to nature is a theme in the writing of ecologists (Leopold, 1949; Orr, 1994; Roszak, 1995). They have argued

that this connection to nature is a key component of fostering ecological behavior. Schultz (2002, p. 67) suggested connectedness to nature is "the extent to which an individual includes nature within his/her cognitive representation of self." On the other hand, Mayer and Frantz (2004), citing limitations of previous studies designed to measure a more cognitive connection to nature, believed measuring one's affective sense of connectedness to nature was most important for empirical progress to be made concerning the construct. They developed and tested a scale designed to measure individuals' experiential sense of oneness with the natural world.

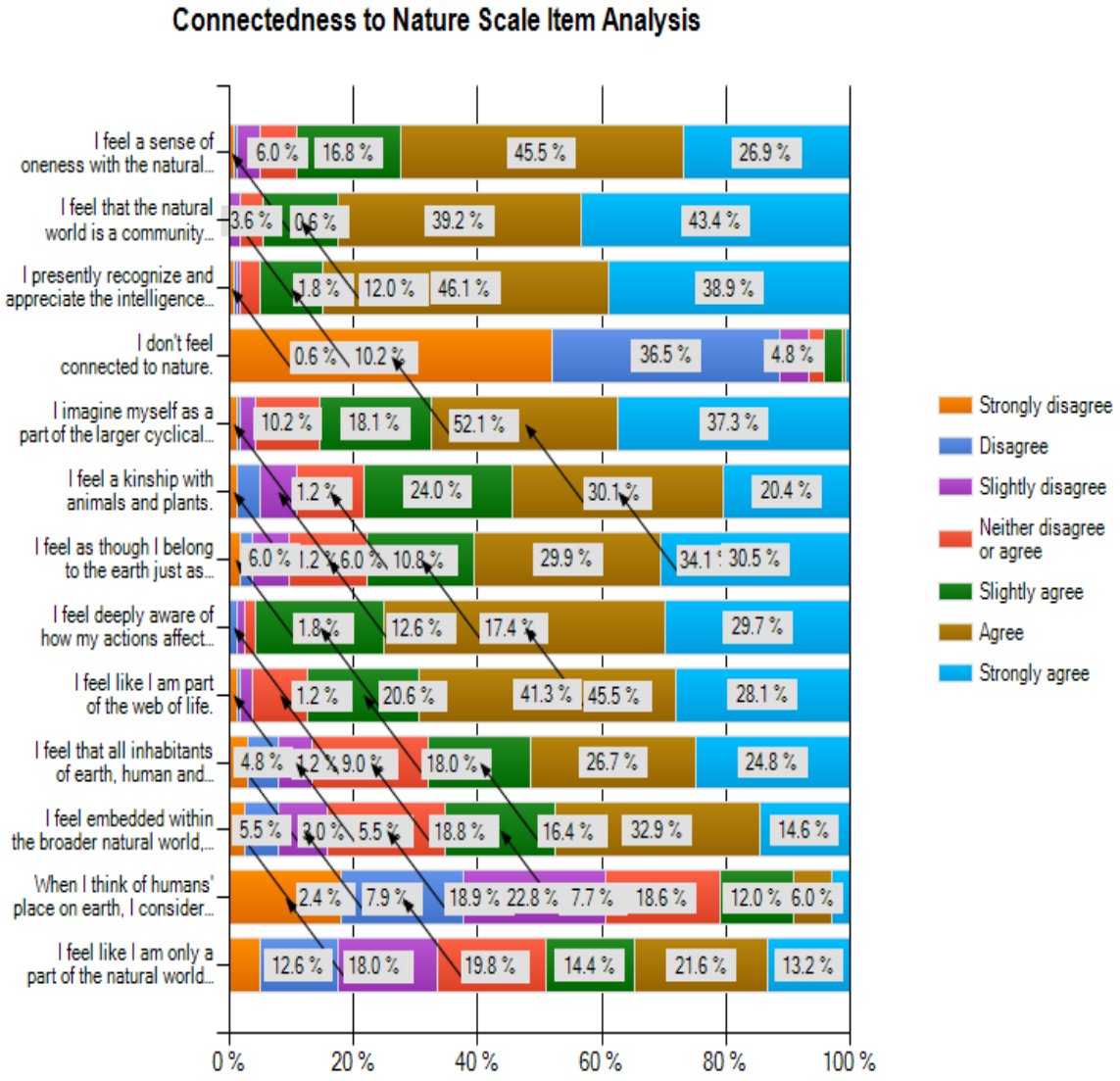
Given the increasing attention towards stewardship education, what is little known is how many outdoor programs provide training in outdoor education and environmental education, and furthermore, how each may relate to connectedness to nature using Mayer and Frantz's (2004) conceptualization and measure. As such the primary purpose of this paper was to examine staff connectedness to nature and how other factors (e.g., outdoor education, environmental education) relate to connectedness to nature operating under the assumption that outdoor programs play an important role both in influencing the connectedness to nature of staff and participants.

Methods

A 17-question electronic survey was developed and administered to members of the Association of Outdoor Recreation and Education via a listserve invitation in November 2013. The survey included questions linked to connectedness to nature, outdoor education, environmental education, as well as other questions. The "connectedness to nature" measure consisted of 13 items using a 7-point level of agreement Likert scale (see Mayer & Frantz, 2004), with the outdoor education and environmental education questions using a "yes/no" format.

Results

To date, one-hundred and sixty-eight college or university outdoor program staff have completed the survey. All 13 connectedness to nature measure items were reliable with an overall scale Cronbach value of .892. **Note**: Additional analysis found that none of the items positively affected the overall Cronbach value if deleted. As such, all 13 items were kept. Overall mean scores for connectedness to nature items ranged from 4.45 to 6.31 where 1 = "strongly disagree" and 7 = "strongly agree" with an overall mean of 72.6 (*s.d.* = 11.3) out of a possible 91. Seven of the 13 items had mean scores greater than 5.75 with each item having a standard deviation of 1.0 or more. **Note**: Two of the items were reverse scored but are depicted as posed in the survey in the Figure below.



Over half (54.1%) of the sample were male with females having a statistically significant ($p < .05$) greater overall connectedness to nature score ($m = 75.0$) than males ($m = 70.6$). Training in outdoor education didn't differentiate respondents statistically with those receiving training (76.6%) having an overall connectedness to nature mean score of 72.6 and those without 73.0. Nonsignificant results were also found for those receiving environmental education training (22.6%) having a connectedness to nature score of 74.8 and those without 71.9. Length of time working with an outdoor program also didn't reveal a statistically significant relationship to

overall connectedness to nature with a correlation value of .029 determined.

Lastly, when asked the type of outdoor recreation experience they commonly seek, an Analysis of Variance (ANOVA) test found respondents "more interested in the achievement of activity goals versus experiencing nature and the natural world" to be significantly (p = .019) different (m = 64.1) from those:

a) " more interested in experiencing nature and the natural world versus achievement of activity goals" (m = 72.7),

b) "I am equally interested in experiencing nature and achievement of activity goals (m = 73.1), and

c) "first and foremost more interested in experiencing nature and the natural world versus achievement of activity goals" (m = 77.4).

Conclusions and Implications

While data collection is ongoing, respondents collectively seem connected to nature. Although a majority receives outdoor education training, fewer get environmental education training through their respective outdoor programs. Neither outdoor education nor environmental education training seems to statistically differentiate those receiving it from those not, nor does years of experience working with outdoor programs have a relationship to connectedness to nature. It is plausible that experience outside formal outdoor program training may explain these findings.

On the other hand, females are statistically more connected to nature than males, as are respondents driven more by experiencing nature versus achievement of recreation activity goals. While other factors may offer additional insight into the findings (e.g., student versus

professional staff, life experiences previous to working with an outdoor program), outdoor program administrators should consider looking at how gender and motives sought in recreation may have implications for outdoor program outcomes. Particularly if some of those outcomes are premised on the delivery of outdoor education and environmental education to participants in the field.

Developing environmental education training may have significant implications for connectedness to nature. Additional research should examine how outdoor education, environmental education, outdoor program experience, and gender interact with connectedness to nature as a more connected to nature staff may have a greater positive influence on the connectedness to nature of their respective participants with resulting benefits to planet Earth.

References

Leopold, A. (1949). A Sand County Almanac: With essays on conservation from Round River. New York: Ballantine Books.

Mayer, F.S., & Frantz, C.M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology 24*, 503–515.

Orr, D. W. (1994). Earth in mind: On education, environment, and the human prospect. Island Press.

Roszak, T. (1995). Where psyche meet Gaia. In T. Roszak, M. E. Gomes, & A. D. Kanner (Eds.), Ecopsychology: Restoring the earth, healing the mind. San Francisco: Sierra Club Books.

Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In P. Schmuck, & W. P. Schultz (Eds.), Psychology of sustainable development. Dordrecht: Kluwer Academic Publishers.

CONNECTING THE RURAL PERIPHERY THROUGH IT: USE OF INTERNET AND TECHNOLOGY AMONG RURAL LANDOWNERS TO CONSERVE NORTH CAROLINA'S WORKING LANDS

Authors:
Deidre M. Peroff[1]
Duarte B. Morais[1]
Nils H. Peterson[2]
Jessica Pope[3]

Affiliation:
Department of Parks, Recreation, and Tourism Management[1]
Department of Fisheries, Wildlife, and Conservation Biology[2]
Department of Natural Resources[3]
College of Natural Resources
North Carolina State University

Address:
College of Natural Resources
North Carolina State University
2820 Faucette Dr., Campus Box 8001
Raleigh, NC 27695

Background

Since the historic green revolution of the mid-20th century, the use of information technology (IT) has increased substantially among rural landowners with working agricultural or forestry lands. Some authors note that IT can allow remote rural landowners to be more accessible and more connected; improving ease of disseminating policies, new knowledge, and support for development programs. Additionally, landowners use internet and technology for a number of purposes including, but not limited to: obtaining agricultural and service information, contacting other farmers and advisory services, record-keeping, and input or commodity price tracking (Mishra & Park, 2005). With continued struggles that threaten the livelihoods of small-scale farmers, small landowners in particular have sought ways to be creative in diversifying their lands to remain financially feasible, such as through agritourism (Barbieri, Mahoney, &

Butler, 2008; McGehee & Kim, 2004). Further, the provision of nature-based recreation and agritourism may be better supported through social media, websites, blogs, and online processing of sales for experiences and products.

Despite a rapid adoption of IT among larger and corporate-sponsored agricultural businesses, smaller and underserved landowners are often less technologically advanced in their management practices. Additionally, research has shown that farmers aren't using internet due to poor service, but that "reasons for non-use can be quite varied, including unfamiliarity with the technology, the lack of a computer, no perceived need, and concerns about Internet connections, security or cost" (Briggeman & Whitacre, 2010, p. 571).

In recent years, several online market-based initiatives connecting small landowners with recreation and tourism markets (e.g., People-First Tourism) and with other ecosystem services incentives (e.g., MBCI) have been created. Therefore, understanding the degree of IT adoption among small rural landowners of working lands, and the way they use this technology for the management and conservation of their lands is greatly needed. Accordingly, this study examines ways in which rural landowners in North Carolina use IT (e.g. cell phones, farm technologies, and internet).

Methods

Through 38 in-depth semi-structured qualitative interviews conducted in rural south-central North Carolina in summer 2013, we examined *how* landowners are connected to technology and the internet, *why* or *why not* they are connected, and how they believe technology could benefit their business in the future. In addition we also investigated factors that influenced the level and type of information technology use among owners of working lands. Data were analyzed through immersive reading and coding of interviews and constant comparison among

the authors. Common themes emerging from the data were identified using a grounded theory approach (Charmaz, 2006).

Results

Findings revealed that trust in equipment and in the IT industry critically influence individuals' decision to adopt and use technology for everyday and land management purposes. Namely, informants noted concerns over the durability of some new devices (e.g. smart phones), and many were worried about the confidentiality of their data. Additionally, informants' adoption of technology was hindered when they identified with a rural heritage of self-sufficiency and tradition such as seeking advice from neighbors or relatives rather than internet or agencies. Further, concerns with the costs of technology also kept many informants from embracing these tools. Some noted that they did not want to devote time to learn new technology or the money to buy new devices. Lastly, older participants in particular simply expressed there was "no need" to change their practices by introducing new technologies into their business.

Discussion/Implications

Results of this study will help inform tourism, conservation and rural development practitioners on how to better disseminate information about innovative market-based programs (such as through the use of basic phones, email, and informational websites). Additionally, we recommend that agencies and organizations focus on building relationships with individual landowners to gain trust. For example, the data revealed that it may be helpful to provide hands-on assistance to landowners when learning new technologies. Lastly, financial support programs may be helpful to make the adoption of new technologies more affordable for small-scale landowners.

References

Barbieri, C., Mahoney, E., & Butler, L. (2008). Understanding the Nature and Extent of Farm and Ranch Diversification in North America*. *Rural Sociology, 73* (2), 205-229.

Briggeman, B. C., & Whitacre, B. E. (2010). Farming and the Internet: Reasons for Non-use. *Agricultural & Resource Economics Review*, *39*(3), 571.

Charmaz, K. (2006). Constructing Grounded Theory: *A Practical Guide Through Qualitative Analysis*. London: Sage Publications Limited.

McGehee, N. G., & Kim, K. (2004). Motivation for agri-tourism entrepreneurship. *Journal of travel research*, *43*(2), 161-170.

Mishra, A. K., & Park, T. A. (2005). An empirical analysis of Internet use by US farmers. *Agricultural and Resource Economics Review*, *34*(2), 253.

BIRDER FRIENDLY BUSINESSES: HELPING NORTH CAROLINA BECOME A LEADING NATURE-BASED TOURISM DESTINATION

Authors:
Ginger G. Deason
Erin Seekamp

Affiliation:
Department of Parks, Recreation, and Tourism Management
College of Natural Resources
North Carolina State University

Address:
Box 8000
Raleigh, NC 27695

Problem Statement

According to the US Fish and Wildlife Service (USFWS, 2013), birding is the most popular form of wildlife viewing in the United States. The FWS 2013 data revealed there were over 46 million self-identified birders in the country, just under 15% of the population, with almost $55 billion spent that year on wildlife viewing. The economic impacts of birding are not irrelevant to small and rural communities, yet these communities and the businesses that exist in them sometimes lack the knowledge necessary to successfully cater to birders in order to maximize their profits from this usually seasonal activity (NCBT, 2013). The North Carolina (NC) Birding Trail is a partnership between several agencies and organizations in the state that is dedicated to establishing NC as a leading nature-based tourism destination. Their Birder Friendly Business Program was designed in 2003 to provide tools and information to local businesses that would help them to gain knowledge and better market to birders traveling through NC on the Birding Trail. However, birders' preferences and how they decide to visit businesses along the Trail are unknown. This study will examine birder preferences in Eastern North Carolina.

Methods

This study used structured interviews of birders at a birding festival in the Outer Banks, NC in October 2013 to identify techniques local businesses could adopt to better cater to birders and thus increase their income. Fifty-three birders were asked a variety of questions to: a) identify key website integration factors for the NC Birding Trail website; b) quantify the likelihood of birders utilizing the website to identify businesses along the trail; c) identify key types of services sought by birders along the birding trail; and d) identify promotional materials that businesses could use to attract birders to Bird Friendly Businesses.

Results

Preliminary results show birders would be extremely likely to visit businesses that create bird-friendly habitat, place feeders outside, and have a list of recent bird sightings during peak birding seasons. Results also show many birders are extremely likely to visit the NC Birding Trail website to plan their next trip, and that hotels and restaurants wanting to cater to birders should provide an early breakfast.

Implications

These results will be used to help businesses located on the NC Birding Trail improve their ability to attract and cater to birders. Results will also inform the development of a survey research project that will be provided to in-state and out-of-state birders. More detailed information from this second survey will be used to revamp the Birder Friendly Business Program, which will be relaunched by NC State University's Tourism Extension as an online training program for local entrepreneurs.

References

NCBT (North Carolina Birding Trail), 2013. Who We Are. Retrieved on April 28, 2013, from http://ncbirdingtrail.org/who-we-are/

USFWS, 2013. *Birding in the United States: A Demographic and Economic Analysis. Addendum to the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.* Report 2011-1. Retrieved April 28, 2013, from http://pcjv.org/docs/2011%20Birding%20Report--FINAL.pdf

DOES SCHOOL SPORT CONNECT CHILDREN TO SCHOOL?

Authors:
Gareth J. Jones, M.S., North Carolina State University
Michael B. Edwards, Ph.D., North Carolina State University
Jonathan M. Casper, Ph.D., North Carolina State University
Jason N. Bocarro, Ph.D., North Carolina State University

Affiliation:
Department of Parks, Recreation & Tourism Management, College of Natural Resources
North Carolina State University

Address:
Department of Parks, Recreation & Tourism Management
3035 Biltmore Hall
North Carolina State University
Raleigh, NC, 27695

Problem Statement

School sport participation may enhance perceptions of school belongingness (Brown & Evans, 2002), typically defined as the connection adolescents feel towards the people and institutional values at their school (McNeely, Nonnemaker, & Blum, 2002). Interest in school belongingness has increased due to its association with lower rates of risky behaviors amongst adolescents (Calabrese & Poe, 1990; Jenkins, 1997), increased healthy behaviors (Hendrix, Sederberg, & Miller, 1990; Goodenow & Grady, 1993), and positive well-being (Marsh, 1992). Sport provides a particularly useful mechanism for promoting school belongingness, as it provides opportunities for *active* participation in activities that identify students with school (Finn, 1989). Furthermore, due to their proximity and affiliation with educational resources (i.e. facilities, coaches, transportation), schools are ideally positioned to provide extra-curricular sport opportunities (Kanters, Bocarro, Edwards, Casper, & Floyd, 2013), and may be the best setting to direct sports towards task orientation and behavioral goals (Trudeau & Shephard, 2008).

Schools in the United States predominantly employ interscholastic sport programs, which restrict participation to a small percentage of the student population that is athletically gifted enough to make the team and can commit the time and resources required of varsity athletes (Casper, Bocarro, Kanters, & Floyd, 2011; Lee et al., 2006). Critics of this model suggest it creates additional barriers for minority and low-income students, who are already less likely to participate in extracurricular activities (Kanters et al., 2013). Additionally, since highly interscholastic programs primarily emphasize competition and repetitive skill enhancement, some suggest they are not appropriate contexts to deliver physical activity or positive developmental outcomes (Coakley, 2011). Recently, the limitations of interscholastic sports to provide maximum benefits to all students has led to the recommendation of alternative policies that promote inclusive participation, broader goals, and higher rates of physical activity (i.e. intramurals and clubs sports) (Bocarro, Kanters, Edwards, Casper, & McKenzie, 2014).

Despite these recommendations, proponents of interscholastic sport policies maintain the traditional approach develops a stronger sense of school belongingness amongst students, which translates to enhanced school commitment, stronger identification with school values, and improved grades (National Federation of State High School Associations, n.d.). They argue shifting school sports models away from interscholastic sports to less competitive models may deprive schools of an important mechanism for keeping students engaged (Fox, Barr-Anderson, Neumark-Sztainer, & Wall, 2010), particularly low income students.. A particularly popular narrative is that low income students are only engaged in school so they can play on a varsity sports team.

As researchers continue to suggest moving away from competitive school sports to more inclusive physical activities, this assumption presents a critical barrier to policy change.

Therefore, the purpose of this study is to examine the association of two school sport policies (interscholastic and intramural sports) on school belongingness.

Methods

Data were collected from students in four urban middle schools in North Carolina. Two middle schools were purposely selected because they delivered extra-curricular sports exclusively through intramural programs that emphasized participation and did not compete with other schools. An additional two middle schools that provided traditional interscholastic sports were then chosen based on demographic and geographic similarities with the two intramural schools. All students in each school were invited to participate in an online survey measuring sport participation, school belongingness, and constraints/attitudes towards sport. A total of 2,582 students completed the survey (response rate=89.8%) prior to the conclusion of the school year. Initial analyses compared school sport participants (N=609) to students who did not participate in school sports (N=1,603), and all subsequent analyses dealt exclusively with the sub-sample of students who participated in extra-curricular sports during the school year. Tests of mean differences (*t*-tests) were used to examine differences in mean school belongingness scores between the two sport policies, and analysis was repeated with selected demographic subgroups to investigate the potential effects of race, socioeconomic status (SES), and gender. Cohen's d was used as a measure of effect size.

Results

Results indicated that both interscholastic ($t=2.98$, $p<.05$, $d=.32$) and intramural ($t=3.18$, $p<.05$, $d=.25$) sport participants had slightly higher levels of school belongingness than students who did not participate in sports (Tables 1 & 2). When compared by policy, interscholastic sport participants had slightly stronger school belongingness than intramural participants ($t=3.11$,

p<.05, *d*=.26), although the magnitude of this difference was small (Table 3). Repeated analysis within demographic subgroups revealed that although males in interscholastic schools reported slightly stronger school belongingness than males in intramural schools (t=3.11, p<.05, *d*=.32), there was no statistically significant difference amongst females (t=1.67, p>.05) (Tables 4 & 5). Similarly, although non-white sport participants in interscholastic schools reported higher levels of school belongingness than non-white intramural participants (t=2.24, p<.05, *d*=.27), there was no statistically significant different amongst white students (t=1.67, p>.05) (Tables 6 & 7). Interestingly, although students who qualified for free or reduced lunch showed no statistically significant differences in school belongingness based on sport policy (F=.13, p>.05), students who did not qualify for free or reduced lunch showed stronger school belongingness in interscholastic schools than intramural schools (F=9.59, p<.05, *d*=.27) (Tables 8 & 9). This result seemingly contradicts popular narratives outlined previously, which suggests low income youth are only engaged in school to play varsity sports.

Discussion/Implications

Recent research has indicated intramural policies may provide more opportunities for participation and physical activity than interscholastic models, particularly amongst low income and minority students (Kanters et al., 2013). However, proponents of interscholastic sport argue that low income and minority students need varsity sports as a mechanism for school engagement, and that intramurals may not provide the same level of connectedness. Our results indicated that sport participation in both models were associated with an increase in school belongingness compared to non-participants, and that differences between policies were typically marginal. Rather than abandoning interscholastic sports, future policies should consider expanding existing school sport models so more kids can accumulate the benefits that current

participants gain.

References

Bocarro, J. N., Kanters, M., Cerin, E., Floyd, M. F., Casper, J., Suau, L.J., & McKenzie, T. (2012). School sport policy and school-based physical activity environments and their association with observed physical activity in middle school children. *Health & Place, 18*, 31-38.

Brown, R. & Evans, W. P. (2002). Extracurricular activity and ethnicity: Creating greater school connection among diverse student populations. *Urban Education, 37*(41), DOI: 10.1177/0042085902371004.

Calabrese, R. & Poe, J. (1990). Alienation: An explanation of high dropout rates among African-American and Latino students. *Educational Research Quarterly, 14*, 22-26.

Casper, J., Bocarro, J. N., Kanters, M. A., & Floyd, M. F. (2011). "Just let me play!" Understanding constraints that limit adolescent sport participation. *Journal of Physical Activity and Health, 8*(S32-39).

Coakley, J. (2011). Youth sports: What counts as "positive development?" *Journal of Sport and Social Issues, 35*. DOI: 10.1177/0193723511417311.

Finn, J. (1989). Withdrawing from school. *Review of Educational Research, 59*, 117-142.

Fox, C. K., Barr-Anderson, D., Neumark-Sztainer, D., & Wall, M. (2010). Physical activity and sports team participation: Associations with academic outcomes in middle school and high school students. *Journal of School Health, 80*(1). DOI: 10.1111/j.1746-1561.2009.00454.x.

Goodenow, C. & Grady, K. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *Journal of Experimental Education, 62*, 60-71.

Hendrix, V., Sederberg, C., & Miller, V. (1990). Correlates of commitment/alienation among high school seniors. *Journal of Research and Development in Education, 23*, 129-135.

Jenkins, P. (1997). School delinquency and the school social bond. *Journal of Research in Crime and Delinquency, 34*, 337-367.

Kanters, M. A., Boccaro, J. N., Edwards, M. B., Casper, J. M., & Floyd, M. F. (2013). School sport participation under two school sport policies: Comparisons by race/ethnicity, gender, and socioeconomic status. *Annals of Behavioral Medicine, 45*(Suppl 1), S113-S121.

Lee, S. M., Burgeson, C. R., Fulton, J. E., & Spain, C. G. (2007). Physical education and physical activity: Results from the School Health Policies and Programs Study 2006. *Journal of School Health, 77*(8), 435-63.

Marsh, H. (1992). Extracurricular activities: Beneficial extension of the traditional curriculum or subversion of academic goals? *Journal of Educational Psychology, 84*, 553-562.

McNeely, C. A., Nonnemaker, J. M., & Blum, R. W. (2002). Promoting school connectedness: Evidence from the national longitudinal study of adolescent health. *Journal of School Health, 72*(4), 138-146.

National Federation of State High School Associations. (n.d.). The Case for High School Activities. Retrieved January 6th, 2014 from file:///C:/Users/gjjones/Downloads/The%20Case%20for%20High%20School%20Activities_2013%20(2).pdf.

Trudeau, F. & Shephard, R. J. (2008). Physical education, school physical activity, school sports and academic performance. *International Journal of Behavioral Nutrition and Physical Activity, 5*(10). DOI:10.1186/1479-5868-5-10.

Table 1

School belongingness in schools with interscholastic sport policies

Sport Participation	N	School Belongingness	S.D.	p	d
No School Sport	1,046	3.15	0.52	<.05	0.32
At Least One School Sport	283	3.31	0.48		
Total	1,329	3.18	0.52		

Table 2

School belongingness in schools with intramural sport policies

Sport Participation	N	School Belongingness	S.D.	p	d
No School Sport	415	3.05	0.53	<.05	0.25
At Least One School Sport	272	3.18	0.52		
Total	687	3.1	0.53		

Table 3

School Belongingness amongst sport participants by sport policy

Sport Participation	N	School Belongingness	S.D.	p	d
Interscholastic	283	3.31	0.48	<.05	0.26
Intramural	272	3.18	0.52		
Total	555	3.25	0.51		

Table 4

School Belongingness by Sport Policy (Males Only)

Sport Participation	N	School Belongingness	S.D.	p	d
Interscholastic	141	3.34	0.51	<.05	0.32
Intramural	177	3.17	0.54		
Total	318	3.24	0.53		

Table 5

School Belongingness by Sport Policy (Females Only)

Sport Participation	N	School Belongingness	S.D.	p	d
Interscholastic	141	3.28	0.45	>.05	0.22
Intramural	90	3.17	0.5		
Total	231	3.24	0.47		

Table 6

School Belongingness by Sport Policy (White Students Only)

Sport Participation	N	School Belongingness	S.D.	p	d
Interscholastic	164	3.33	0.47	>.05	0.21
Intramural	107	3.23	0.48		
Total	271	3.29	0.47		

Table 7

School Belongingness by sport policy (Non-White Students Only)

Sport Participation	N	School Belongingness	S.D.	p	d
Interscholastic	119	3.29	0.5	<.05	0.27
Intramural	165	3.14	0.55		
Total	284	3.2	0.53		

Table 8

School Belongingness by sport policy (Free/Reduced Lunch Only)

Sport Participation	N	School Belongingness	S.D.	p	d
Interscholastic	64	3.23	0.59	>.05	0.23
Intramural	84	3.1	0.54		
Total	148	3.16	0.56		

Table 9

School Belongingness by sport policy (Non-Free/Reduced Lunch Only)

Sport Participation	N	School Belongingness	S.D.	p	d
Interscholastic	219	3.33	0.44	<.05	0.27
Intramural	185	3.2	0.51		
Total	404	3.28	0.48		

PARK VISITORS' ACCEPTANCE OF THE AMERICA'S GREAT OUTDOORS INITATIVE

Authors:
Michael J. Bradley*
Justin T. Richardson*
Hunling Liu**
I-Chun Wu**

Affiliation:
*Department of Recreation and Park Administration - Eastern Kentucky University
** School of Applied Health & Educational Psychology - Oklahoma State University

Address:
405 Begley Bldg.
Richmond, KY 40475

Problem Statement

In April 2010, President Barack Obama signed into action the America's Great Outdoor Initiative, a program designed to preserve many natural resources in the United States for future generations. Managed by the Department of the Interior, the agenda of the initiative was to cultivate a plan for conservation and recreation developed with and by the American people. Through local grassroots efforts, the Obama administration sought to improve conservation policies as well as develop and improve connections between the federal, state, local, and tribal governments.

Since the inception of President Obama's America's Great Outdoor (AGO) Initiative in 2010, many federal, state, and other land management agencies have begun to utilize the plans within the initiative as a support mechanism for upcoming projects and programs. While the initiative remarks wide participation in the planning process, many of the sites within selected states were not favorable to a representative sample. Thus, little is known as to citizens' feelings towards and related to the AGO initiative.

The state of Oklahoma was one such state where only single focus group from a rural

community was used as the state's voice for all things related to the AGO initiative. While the focus group surely representing their demographic well, a wider range of inclusion is necessary to gauge Oklahoman's personal response to AGO. The researchers believed a research study to gauge Oklahoman's response to AGO was necessary and could aid in an enhanced understanding of Oklahoman's view towards several of the AGO vision statements.

Methods

The researchers developed a survey to solicit feedback related to the ten vision statements related to the AGO initiative. Each respondent ranked their agreement with each statement on a 1 to 5 Likert-style scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree). In addition to this, each respondent was asked to give typical demographic information related to age, sex, income, education level, ethnicity, race, distance from research site, visitor type, and length of time elapsed since current and previous visit.

The researchers chose four geographically representative Oklahoma state parks each located in the state's regional quadrants. A total of 403 park visitors participated in the survey from Sequoyah State Park, Beaver's Bend State Park, Quartz Mountain Arts Resort and Conference Center, and Boiling Springs State Park.

During the on-site survey, researchers approached every other known adult to participate or selected one adult per user group. The researchers approached 711 potential respondents to participate in the research survey. Of the 403 individuals began the survey process, only 355 surveys were considered as complete cases and used in data analysis. Thus, the response rate for the entire research study was 49.9%.

To calculate the mean AGO score for each AGO statement, the individual participant scores were summated for each environmental statement and divided by 403. While a majority of

the statements' mean scores centralized near a score of 4, two statements (1 & 7) attained scores statistically lower, moving the mean score for those statements closer to a score of 3. To calculate a research participant's raw AGO score, each of the scores from the ten questions were summed and the summation was divided by ten. This mean score provided each participant with an overall "AGO score." These mean scores were used in later calculations. The average overall AGO score, calculated by summating all participant scores and dividing by 355, was 3.73. A hierarchical multiple regression was performed to estimate how park visitors' demographic characteristics affected their place attachment in the parks. This process was used to investigate which park visitors' demographic characteristics account for a significant variance on their attachment to the Oklahoma State Parks.

Results

As may be seen in Figure 1, the overall response score per statement were generally within the neutral range. While overall mean scores ranged up to 4.38 (AGO 9), most scores were within the range of 3 to 4 on the Likert scale used. While the data may not directly AGO, or promote projects and programs utilizing it as a support mechanism, the information attained in this research study may be positive news. In that there was not a widely exerted effort to include many Oklahomans in the initial AGO process, most Oklahomans were neutral (3) to in agreement with (4) each vision statement.

Conclusions

More information is necessary and the researchers recommend further inquiry to enhance understand of Oklahoman's views related to the vision statements within the AGO Initiative.

References

Department of the Interior (2011). *America's Great Outdoors: A promise to future generations.* Retrieved from http://www.doi.gov/americasgreatoutdoors/documents/upload/AGO-Report-With-All-Appendices-3-1-11.pdf

Dias, J. J. & Whitaker, R. C.(2013). Black Mothers' Perceptions about Urban Neighborhood Safety and Outdoor Play for their Preadolescent Daughters. *Journal of Health Care for the Poor and Underserved* 24(1), 206-219.

Payan, R. (2012). How do we keep conservation alive when kids have less and less contact with nature. *University of Arizona Campus Repository*, Retrieved from http://Arizona.openrepository.com/Arizona/handle/10150/223314

Rothermel, D. (2014 02 24). *America's great outdoors stories submissions. Retrieved from http://www.outdoors.org/conservation/ago-stories.cfm?RenderForPrint=1*

Figure 1
Mean Response Values of AGO Statements

America's Great Outdoors*	Mean**	Standard Deviation
AGO 1	3.17	1.195
AGO 2	3.59	1.080
AGO 3	4.02	0.899
AGO 4	4.32	0.683
AGO 5	3.59	1.058
AGO 6	3.49	1.059
AGO 7	3.19	1.181
AGO 8	4.17	0.810
AGO 9	4.38	0.652
AGO 10	3.37	1.191

*N=403 for all 10 statements
**Likert Scale 1-5, 1=Strongly Disagree to 5=Strongly Agree

SITE IMPORTANCE ATTRIBUTES AND SUBGROUPS OF FLORIDA NATIONAL SCENIC TRAIL VISITORS

Authors:

Ramesh Paudyal & Taylor V. Stein

School of Forest Resources and Conservation

University of Florida, Gainesville, FL 32611

Introduction

Hiking is one of the popular outdoor activities in the USA with about one third of American adults (79 million people) hiked in 2008. This participation is predicted to increase by 3 – 10 percent by 2060 (Bowker et al., 2012). Scenic trails provide popular destinations for hikers. The Florida Trail is one of the eleven national scenic trails in the United States. Stretched across 1,000 miles from Big Cypress National Preserve to Gulf Islands National Seashore, Florida National Scenic Trail (FNST) traverses through the most beautiful, unique landscapes in the entire state of Florida. In order to provide opportunity of quality experience to visitors, adequate knowledge and information about number and characteristics of the visitors and types of experience they prefer are important. Realizing this need, researchers form University of Florida, in collaboration with US Forest Service and Florida Trail Association started a collaborative visitors' assessment project in 2003. The purpose of this collaborative project is to determine reliable use estimates of annual trail visits to FNST and gather information about who FNST visitors are and why they visit the trail. Using counters, on-site interview, and mail back questionnaire, information related to number of visitors, demographics, trail use, motivation, recreation experience preferences etc. have been collected from 27 segments of FNST. The visitors' assessment from 2003 to 2011 has shown that FNST receives between 225,000 and 350,500 visits per year (Wan, Fisch, Bild, & Stein, 2011). To further improve our understanding

of visitor's preferences, this particular study attempts answer the research questions: 1. what are the major attributes that are important to FNST visitors? 2. What are the categories and characteristics of FNST visitors based on their importance in selecting a recreation site?

Theoretical Framework

Researchers have sought to understand how and why consumers make their recreation decisions. A significant body of literature explains motivation as one of the major determining factor in choosing a tourism or recreation site/activity (Baloglu & Uysal, 1996; Crompton, 1979; Dann, 1981; Kim, Lee, & Klenosky, 2003). One of the widely adopted theoretical frameworks for tourism and recreation motivation research is the push pull theory (Crompton, 1979). As this theory suggests push and pull factors are the important constituents in motivating tourist and recreationist (Dann, 1981). Push and pull factors are related to two separate decisions made at two separate points of time, one focuses on whether to go, whereas the other focuses on where to go (Klenosky, 2002). Push factors refer to the internal motives of the individual, while pull factors are the destination features and attractions (McCool & Moisey, 2001). Once recreationist declare their recreation intention, destination attributes influence his/her decision of selecting a specific site (Baloglu & Uysal, 1996).

Recreationists and tourists are heterogeneous because they exhibit different range of skills, attitudes, preferences and behavior (Needham, Vaske, Donnelly, & Manfredo, 2007). Inherent heterogeneity in user community could create additional challenge for FNST managers in providing satisfaction to diverse visitors. One common approach for understanding needs and preference of heterogeneous public is to segment them into homogenous subgroups (Hubert & Gipson, 1996; Kyle, Norman, Jodice, Graefe, & Marsinko, 2007; Needham, 2010). Taking this token, this study segments a sample of FNST visitors into homogenous subgroups based on their

reported importance of pull attributes in selecting a recreation site and examines and contrasts these subgroups by demographics, trip characteristics, and reported importance of push attributes.

Methodology

This study is based on the onsite survey data from 2011 to 2013 (n=328). We used an index of 14 items to measure the pull factors and Recreation Experience and Preference (REP) Index of 23 items, representing six domains, to measure the push factors (Driver, 1983). Response score for both pull and push factors ranged from 1 (Not at all important) to 5 (very important). Also we used a questionnaire to ask respondents about their trip related and demographic information.

We used a Principal Component Analysis (PCA) on a correlation matrix with varimax rotation to identify major components of pull factors, and a Cronbach's alpha to test the reliability of the index items (Cronbach & Shavelson, 2004). An alpha coefficient ≥ 0.7 indicates the acceptable internal consistency among the items to be reliable for measuring respective domain (George & Mallery, 2003). We selected the number of components based on Kaiser Criteria, which suggests retaining components with eigenvalue greater than one (Kaiser, 1960). Then, we used a K-means clustering algorithm to segment respondents into homogenous subgroups. We first extracted and compared two to five cluster solutions, and finally selected the one with most meaningful and interpretable subgroups. Then we compared subgroups using Chi-square and ANOVA for demographics, trip characteristics, and recreation experience preferences (push factors). We used SPSS 22 to perform the statistical analyses.

Results and Implications

Some 60% of the respondents were male and rest were female; 58% were married and 34% were single. Almost 83% were white and 63% had education level of at least college graduate. Some 19% had annual income below $30,000, whereas 30% had annual income of more than $90,000. The returning and the first time visitors were almost equal. About 80% had none or low (1 – 6 times) past use frequency, whereas some 13% visited FNST for more than 20 times. Similarly, 30% spent one hour or less time on the trail and 47% spent few hour to half a day, whereas 18% spent more than a day on the trail. Likewise, about 60% of the respondents hiked less than 5 miles, whereas 25% hiked more than 10 miles on the trail.

Based on the percentage of respondents who reported 'very high important', wilderness and undisturbed natural environment (61%), good environmental quality of air, water, and soil (49%), chance to see wildlife/bird (39%), natural water features (35%), and good camping (34%) were the most important pull factors for visitors in FNST for selecting a recreation site (Figure 1). Similarly, based on the percentage of respondents who reported 'not at all important,' good big game hunting (72%), good small game hunting (70%), good fishing 52%), and local crafts and handiwork (46%) were the least important pull factors (Figure 2).

PCA yielded three distinct components of pull attributes, which explained 61% of the variance (Table 1). Three items related to consumptive recreation (good fishing, good big game hunting, and good small game hunting) formed first component. Similarly, four items related to non-consumptive recreation (to see the natural water features, wilderness and undisturbed nature, chance to see wildlife/birds, and good camping) formed second component. Likewise, three items related to convenience (easy access to the area, close to home, and available parking) scored high on the third component. Test of reliability score (Cronbach's alpha) for the first, the

second, and the third components were 0.83, 0.70, and 0.71 respectively, which were above or equal to the acceptable limit score of reliability (George & Mallery, 2003). Thus the three distinct components of pull factors identified through PCA, were "Consumptive Recreation", "Non-consumptive Recreation", and "Convenience."

Cluster analysis revealed four meaningful and significantly different ($p \leq 0.01$) subgroups of respondents (Table 2). Based on the mean score in a scale of 1 (not at all important) to 5 (very important), the first subgroup scored least in all 10 pull attributes retained from PCA. This group included 22% of the respondents and is given the name "Low Enthusiasm". The second-subgroup scored high in the consumptive recreation related attributes (easy access, close to home, and parking) than in the other attributes. Thus, this subgroup is given the name "Convenience," which includes 26% of the respondents. The third subgroup scored high in the non-consumptive recreation related attributes (natural water features, wilderness and undisturbed nature, chance to see wildlife/birds, and good camping) than in the other attributes. Therefore, this sub-group is given the name "Non-consumptive," which included 31% of the respondents. The fourth subgroup scored high in the consumptive recreation related attributes (good fishing, good big game hunting, and good small game hunting) than in the other attributes. Thus, this subgroup is given the name "Consumptive," which included 21% of the respondents.

Subgroups differed significantly in terms of race/ethnicity, education, and trip characteristics (Table 3 and Table 4). Respondents in the 'consumptive' subgroups were more likely to be returning users ($p \leq 0.01$), had higher past use frequencies ($p \leq 0.01$), and hiked farther on the trail ($p \leq 0.1$) than the respondents in the other subgroups (Table 4). The 'consumptive' subgroup also included fairly higher percentages of non-whites ($p \leq 0.05$) (Table 3) and scored high in many recreation experience preference domains (Table 5). This is an

important constituent of the USFS and could serve as the agency's 'Champion' in marketing the FNST to the other audiences. FNST sections rich in water features, wilderness, and wildlife along with camping facilities might better attract 'Non-consumptive' users. These visitors could be very important for FNST because of their highest numbers. Also this group could help benefit the local economy as they reported spending longer time on the trail than the visitors in the other groups ($p \leq 0.01$), and perhaps they spent more money as well.

Respondents in the 'Convenience' subgroups were more likely to be married ($p \leq 0.1$) (Table 4) and placed higher importance on nature and health related experiences ($p \leq 0.01$) (Table 5). This group could be attracted to the FNST by providing better services in convenience related attributes such as close access and parking, bathroom, and family environments. For example, Fjelstul (2013) also found clean bathroom as one of the major pull attribute in selecting a campground by campers. Similarly, Jeong (1997) also found convenience as one of the domains of pull factors in a context of national parks in Korea. The 'Low Enthusiasm' subgroup included higher percentages of first time visitors ($p \leq 0.01$) and respondents having education level above college graduate ($p \leq 0.01$) than visitors in the consumptive and convenience subgroups. They placed the least importance on all recreation experience preference domains ($p \leq 0.01$) (Table 5), spent fewer time on the trail ($p \leq 0.01$), and travelled the least on the trail ($p \leq 0.1$) (Table 4) in comparison to the respondents in the other groups.

Conclusions

We found 'wilderness and undisturbed natural environment', 'good environmental quality of air, water, and soil' 'chance to see wildlife/bird', natural water features', and 'good camping' as the most important pull attributes for FNST visitors. Further, we identified four subgroups of FNST visitors based on their reported importance in selecting a recreation site as:

Low Enthusiasm, Convenience, Non-consumptive, and Consumptive. Respondents in the 'consumptive' subgroups placed higher importance on big game, small game, and fishing. They were more likely to be returning users, had higher past use frequencies, and hiked farther on the trail than the respondents in the other groups. This group could serve as 'Champion' in marketing FNST. Visitors in the 'non-consumptive' subgroup placed higher importance in water features, wilderness, and wildlife viewing. These visitors could help benefit the local economy as they reported spending longer time on the trail than visitors in other groups. Respondents in the 'Convenience' subgroup were more likely to be married and they placed higher importance on easy access, close to home, and parking. The 'Low Enthusiasm' subgroup included higher percentages of first time visitors. They spent fewer time and travelled the least on the trail in comparison to other groups. However, what factors pushed or pulled these visitors to the FNST for their first time visit, and what attributes might help them spend more time on the trail or return to the trail is still not clear. Further research could help to better understand this group. The findings of this study could be useful to Forest Service personnel in justifying funding for the management of FNST in future. Researchers, planners, and managers could also benefit by extending the finding of this study to the other similar trail settings. There could be other pull factors, important to specific group of visitors, which this study did not identify/include. So, further research is needed to explore other diverse possible attributes that may attract visitors to FNST.

References

Baloglu, S., & Uysal, M. (1996). Market segments of push and pull motivations: a canonical correlation approach. *International Journal of Contemporary Hospitality Management, 8*(3), 32-38.

Bowker, J. M., Askew, A. E., Cordell, H. K., Betz, C. J., Zarnoch, S. J., & Seymour, L. (2012). *Outdoor Recreation Participation in the United States--Projections to 2060: A Technical Document Supporting the Forest Service 2010 RPA Assessment*: US Department of Agriculture, Forest Service, Southern Research Station.

Crompton, J. L. (1979). Motivations for pleasure vacation. *Annals of Tourism Research, 6*(4), 408-424.

Cronbach, L. J., & Shavelson, R. J. (2004). My Current Thoughts on Coefficient Alpha and Successor Procedures. *Educational and Psychological Measurement, 64*(3), 391-418.

Dann, G. (1981). Tourist motivation an appraisal. *Annals of Tourism Research, 8*(2), 187-219.

Driver, B. (1983). Master list of items for recreation experience preference scales and domains. *USDA For. Serv. Rocky Mountain Forest and Range Experiment Station, Ft. Collins, Colo. Unpubl. doc*.

Fjelstul, J. (2013). Exploring Pull Factor Influences at Campgrounds by RV Association Members. *Journal of Tourism Insights, 4*(1), 2.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step : a simple guide and reference, 11.0 update* (4th ed. ed.). Allyn and Bacon: Boston.

Hubert, W. A., & Gipson, R. D. (1996). Angler survey contributes to socially acceptable modification of harvest regulations to preserve cutthroat trout fishery in Snake River, Wyoming, USA. *Environmental Management, 20*(5), 707-713.

Jeong, I. (1997). A study on attributes of attractions of the Bukhansan National Park and visitors' attitudes. *Unpublished Master's dissertation, Hanyang University, Seoul, Korea*.

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*, 141-151.

Kim, S. S., Lee, C. K., & Klenosky, D. B. (2003). The influence of push and pull factors at Korean national parks. *Tourism management, 24*(2), 169-180.

Klenosky, D. B. (2002). The "pull" of tourism destinations: A means-end investigation. *Journal of Travel Research, 40*(4), 396-403.

Kyle, G., Norman, W., Jodice, L., Graefe, A., & Marsinko, A. (2007). Segmenting anglers using their consumptive orientation profiles. *Human Dimensions of Wildlife, 12*(2), 115-132.

McCool, S. F., & Moisey, R. N. (2001). *Tourism, recreation, and sustainability: Linking culture and the environment*: CABI Publishing.

Needham, M. D. (2010). Value orientations toward coral reefs in recreation and tourism settings: a conceptual and measurement approach. *Journal of Sustainable Tourism, 18*(6), 757-772.

Needham, M. D., Vaske, J. J., Donnelly, M. P., & Manfredo, M. J. (2007). Hunting specialization and its relationship to participation in response to chronic wasting disease. *Journal of Leisure Research, 39*(3), 413.

Wan, B., Fisch, J., Bild, E., & Stein, T. (2011). Florida National Scenic Trail Visitor Assessment: School of Forest Resources and Conservation, University of Florida.

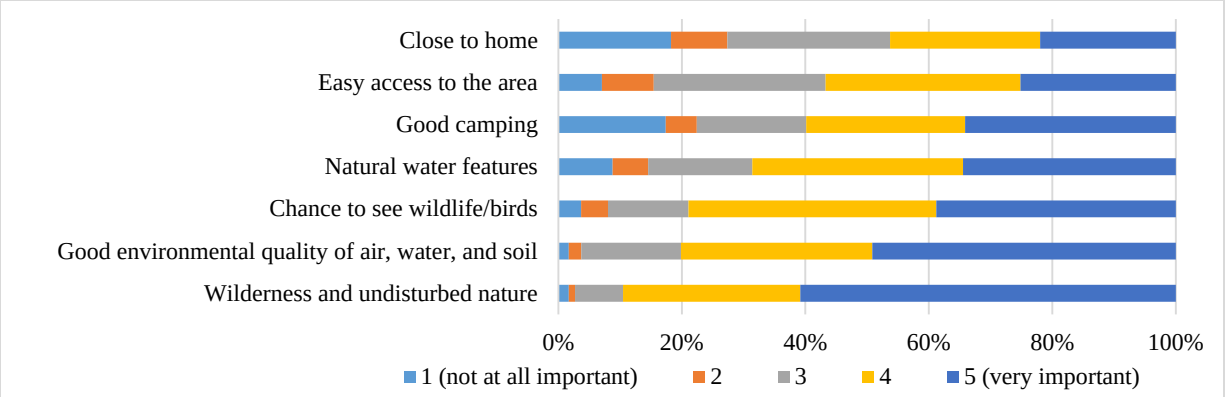


Figure 1. Highly important pull factors based on percentage of respondents indicating 'very important'

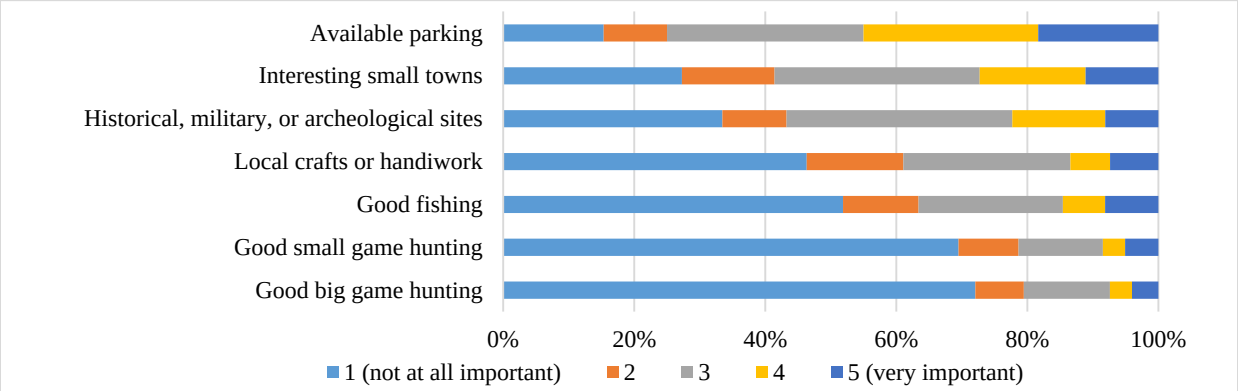


Figure 2. Least important pull factors based on percentage of respondents indicating 'not at all important'

Table 3. Principal component analysis of importance in choosing leisure destination sites

		Principal Components			
Items	n	1	2	3	Cranach's alpha
Good fishing	295	**0.83**	0.20	0.00	
Good big game hunting	297	**0.89**	0.02	0.20	0.83
Good small game hunting	295	**0.82**	-0.01	0.29	
To see the natural water features	296	0.20	**0.64**	-0.24	
Wilderness and undisturbed nature	296	-0.08	**0.73**	0.11	0.70
Chance to see wildlife/birds	299	-0.07	**0.75**	0.17	
Good camping	299	0.23	**0.61**	0.07	
Easy access to the area/being easy to get to	298	0.08	0.07	**0.77**	
Close to home	296	0.18	-0.12	**0.69**	0.71
Available parking	300	0.14	0.24	**0.71**	
Valid N (list wise)	282				

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
Among 14 items of pull factors, four items (historical, military, or archeological sites, good environmental quality of air, water, and soil, interesting small towns, and local crafts or handiwork) were removed from PCA because they scored almost equal in more than one components.

Table 4. Comparison of four sub-groups identified through K-means clustering algorithm for the average response to the items of importance in choosing leisure destination sites.

Importance items	Overall mean (N=282)	Subgroups 1 (n=63)	2 (n=72)	3 (n=88)	4 (n=59)	ANOVA Significance	Tukey's post hoc
Fishing	2.1	1.3	1.6	2.0	**3.7**	***	4>3,2>1
Big game	1.6	1.1	1.2	1.1	**3.4**	***	4>3,2,1
Small game	1.7	1.1	1.4	1.2	**3.4**	***	4>3,2,1
Water features	3.8	3.3	3.2	**4.4**	4.1	***	3,4>2,1
Wilderness	4.5	4.1	4.5	**4.7**	4.4	***	3>1
Wildlife	4.1	3.3	4.3	**4.4**	4.0	***	3,2>4>1
Camping	3.6	1.6	4.0	**4.4**	4.0	***	3>4,2>1
Easy access	3.6	3.2	**4.3**	3.0	4.0	***	2,4>3,1
Close to home	3.2	2.8	**4.2**	2.2	4.0	***	2,4>1>3
Parking	3.2	2.5	**3.9**	2.9	3.6	***	2>4>3,1

*Responses were measured in a scale of 1 (Not at all important) to 5 (Very important). ***significant at 1% level*

Table 5. Comparison of subgroups of respondents by demographic characteristics

	Overall sample (%)	Percentages of respondents by subgroups: Low Enthusiasm	Convenience	Non-consumptive	Consumptive	Chi-square significance
Gender						ns
Male	60.3	54.2	65.9	72.9	63.1	
Female	39.7	45.8	34.1	27.1	36.9	
Marital status						*
Married	57.5	57.4	66.7	47.7	61.0	
Single	33.6	31.1	25.0	42.0	33.9	
Widowed	3.6	6.6	2.8	1.1	5.1	
Divorced	5.4	4.9	5.6	9.1		
Race/Ethnicity						
White	91.4	91.9	91.7	96.6	82.8	**
Hispanic	3.6	4.8	4.2	4.5	-	ns
African American	1.4	1.6	2.8	-	1.7	ns
Asian American	3.2	4.8	1.4	-	8.6	**
Hawaiian/American Indian	2.9	-	2.8	-	10.3	***
Education						***
High School or below	8.6	4.9	18.1	3.4	8.5	
Some College	28.6	19.7	23.6	29.5	42.4	
College Graduate	37.5	42.6	33.3	45.5	25.4	
Some graduate school or above	25.4	32.8	25.0	21.6	23.7	
Income						ns
Less than 30,000	18.7	13.0	16.4	26.5	15.1	
30,000 - 60,000	26.8	33.3	19.4	26.5	30.2	
60,000 - 90,000	24.5	24.1	32.8	19.3	22.6	
90,000 or more	30.0	29.6	31.3	27.7	32.1	

*ns: not significant. ***significant at 1% level, **significant at 5% level, and *significant at 10% level.*

Table 6. Comparison of subgroups by trail use characteristics.

	Overall sample (%)	Percentage of respondents by subgroups				Chi-square significance
		Low Enthusiasm	Convenience	Non-consumptive	Consumptive	
Trail use						***
First time user	49.3	58.7	45.8	56.8	32.2	
Returning user	50.7	41.3	54.2	43.2	67.8	
Past use frequency						***
None	55.8	63.5	55.1	63.2	37.3	
Low (1-6)	23.4	9.5	23.2	28.7	30.5	
High (7-20)	7.6	12.7	7.2	4.6	6.8	
Very High (>20)	13.3	14.3	14.5	3.4	25.4	
Time spent						***
1 hour or less	30.0	29.0	37.5	23.9	31.0	
Few hour - half a day	46.8	59.7	41.7	42.0	46.6	
One whole day	5.0	4.8	4.2	1.1	12.1	
More than one day	18.2	6.5	16.7	33.0	10.3	
Miles Hiked						*
Less than a mile	10.4	14.8	9.7	8.0	10.2	
1 - 5 miles	47.9	49.2	54.2	48.9	37.3	
5 - 10 miles	16.8	19.7	15.3	20.5	10.2	
> 10 miles	25.0	16.4	20.8	22.7	42.4	

*ns: not significant. ***significant at 1% level, **significant at 5% level, and *significant at 10% level.*

Table 7. Comparison of subgroups by domains of Recreation Experience Preferences (push factors)

Recreation Experience Preference (REP) constructs	Overall mean	Subgroups					
		Low Enthusiasm (1)	Convenience (2)	Non-consumptive (3)	Consumptive (4)	ANOVA significance	Tukey's post hoc[a]
Enjoy Nature (4 items)	4.6	4.3	4.7	4.7	4.6	***	2,3,4>1
Health (4 items)	4.4	4.3	4.6	4.3	4.5	***	2>1
Social Interaction (4 items)	3.5	3.0	3.6	3.4	4.0	***	4>2,3>1
Learning (4 items)	4.0	3.4	4.1	4.0	4.3	***	4,2,3>1
Achievement (4 items)	3.3	2.6	3.4	3.3	4.0	***	4>2,3>1
Solitude (3 items)	3.8	3.2	4.0	3.7	4.1	***	4,2,3>1

*Responses were measured in a scale of 1 (Not at all important) to 5 (Very important). ***significant at 1% level.*
[a] *Indicates group difference at 5% level*

DIVERSIFYING A LOCAL ECONOMY IN EASTERN KENTUCKY: AN ELKHORN CITY CASE STUDY

Authors:
Michael J. Bradley*
Ryan L. Sharp*
Justin Kurtz*
Chsley Gum*
Stephanie McSpirit*
Shaunna Scott**

Affiliation:
*Department of Recreation and Park Administration
Eastern Kentucky University
** University of Kentucky

Address:
405 Begley Bldg.
Richmond, KY 40475

Problem Statement

As with many mining towns across eastern Kentucky, coal mining no longer provides the economic boom or employment base that it once did for Elkhorn City. The small town, with a current population base of approximately one thousand residents, lies in the heart of the eastern Kentucky coalfields in Pike County, KY. Pike County is the principal coal-producing county in the state of Kentucky (KGS). Figure 1 provides a summary of coal production statistics for the county for the past thirty years. The figure shows that deep mine methods, which employ a large workforce, have precipitously declined over the years being replaced with more capital-intensive surface methods. However, the figure also shows that, despite increased capitalization, coal production has still steadily declined in Pike County. Overall coal production levels for the county reached their peak in 1998-1999, with over 71 million metric tons of coal extracted during that period (Figure 1). However, by 2010-2011, coal production had dropped drastically

to less than half of previous peak production levels. By 2010-2011, only an estimated 32 million metric tons had been mined in Pike County.

Since the last coal boom of the 1990s, Pike County, Elkhorn City and other eastern Kentucky communities have changed significantly. The coal producing counties of eastern Kentucky are facing some of the steepest unemployment trends within the state, an estimated 24% in Elkhorn City alone (USA City Facts). High unemployment rates have dramatically affected communities and families across the region and subsequently, many in the coalfields have begun to discuss how they might bring new jobs into their communities and jump-start their local economies.

As a means to infuse traditional coal producing communities suffering from the lack of coal production with a new or refreshed economic source, Kentucky Governor and First Lady Beshear developed the idea of Kentucky Trail Towns. These communities would potentially be hotspots for outdoor recreation, providing tourism income that could bolster the local economies. In order to be included on the list for trail town designation, communities must be strategically located near a national or state designated hiking, horse, biking, ATV trail or river way (Kentucky Trail Towns, n.d.).

Kentucky Trail Towns

Elkhorn City easily fits the description of a Kentucky Trail town as it is surrounded by several major trails and other natural amenities; one of the major ones being that it is a gateway community to the Breaks Interstate Park (Breaks). With Breaks in its backyard, Elkhorn City also sits at the trailhead to the Pine Mountain Trail and is a stopping off point for hikers of the Great Eastern Trail and the Trans America Bike trail. One other major asset is that the Russell Fork River runs through Elkhorn City and many seasoned and world-class kayakers, and other

white water enthusiasts, routinely enjoy the rapids of the Russell Fork. Being designated an official Kentucky "Trail Town" will help Elkhorn City to promote and market its many natural assets and amenities and will help bring much needed tourist dollars into a community that is experiencing a major decline in its traditional coal mining economy. Interestingly, Elkhorn City's Heritage Council has been developing an alternative economic development plan for the town that focuses on promoting the area's natural assets, the Russell Fork River.

Collaborative Efforts

Over the past year, students and faculty from Eastern Kentucky University's (EKU) Department of Recreation and Park Administration and Department of Sociology have initiated a partnership with the Elkhorn City Heritage Council. Through a series of site visits, teleconference calls, grant-writing projects, research projects, and much more, we have begun to collaborate with the Heritage Council to assist the town in their tourism and recreational development plans and more recently, in obtaining their Trail Town designation.

Since the Fall of 2012, Dr. Stephanie McSpirit and her students have formally interviewed over twenty local residents, either involved with the Heritage Council, the small business association or city government on their views on the challenges and opportunities facing recreational development in the area. Dr. McSpirit has also visited Elkhorn City twice to facilitate a grant-writing workshop in Elkhorn City. Local attendees began developing grants for various projects in the Elkhorn City area, including a community garden, local art museum, environmental education, and many more ideas continue to benefit from these workshops.

In the Fall of 2013, there were multiple teams working in the field in Elkhorn City through the EKU Department of Recreation and Park Administration. Dr. Michael Bradley's Recreation and Park Interpretive Services class (REC 516/716) assisted the process by

developing a comprehensive interpretive plan to be presented to the Elkhorn City Heritage Council (Figure 2). Groups focused on creating interpretive plans for sensory, digital, signage, and collectables. The class visited Elkhorn City during two weekends in October.

In addition, Dr. Ryan Sharp's graduate Research Methods class (REC 801) collected surveys from paddlers, hikers, and visitors during two weekends in October (October 12-13, October 26-27) 2013. The field weekends in October were selected due to the high volume of white water enthusiasts who converge on the Russell Fork River to enjoy the world-class rapids due to the annual release of water from the John W. Flannagan Dam. The survey questionnaire consisted of current visitors experience and opinions for the future of tourism in Elkhorn City. Students were successful in collecting over 250 visitor surveys during this period. The information collected will be used to determine the needs and preferences of natural resource visitors to the area and serve as a foundation for information collection related to other types of natural resource visitors and tourists to the Elkhorn City and Breaks Interstate areas.

Finally in a collaborative effort with the University of Kentucky (UK) Dr. Shaunna Scott of UK took a group of EKU and UK students to Elkhorn City during UK's spring break (Mar 17-22) to conduct a survey of Elkhorn City residents. The survey gathered information about local perceptions of the economy, community assets, environmental quality and quality of life. It also addressed opinions about and current usage of community assets and facilities and the local's knowledge about the adventure tourism plan, and visions of the economic future of the area.

Lasting Effects

The academic and community partnership resulted in the completion of several projects that work toward a progressive model of economic diversification. In all there are 32 towns

eligible for the Trail Town certification (Figure 3). Of the 32 towns, 12 lie within the EKU service area and represent future opportunities to continue the collaborative model established with Elkhorn City. In addition to the work completed in Elkhorn City the collaborative model developed between Eastern Kentucky University and the Elkhorn City Heritage Council may benefit other academic departments and communities that seek to broaden their local economies to include a larger portion of recreation and tourism.

References

Appalachian Regional Commission. (n.d.). ARC, EPA, and USDA Offer 2013 "Livable Communities" Assistance with Developing Local Food Systems - Appalachian Regional Commission. Retrieved October 14, 2013, from http://www.arc.gov/news/article.asp?ARTICLE_ID=414

CensusViewer. (n.d.). Retrieved October 14, 2013, from http://censusviewer.com/

Combs, L. (n.d.). Enough already! -floydcountytimes.com. Retrieved August 2, 2013, from http://www.floydcountytimes.com/news/opinion/2376832/Enough-already

Green, G. P., & Goetting, A. (Eds.). (2013). Mobilizing communities: asset building as a community development strategy. [S.l.]: Temple University Press.

Kentucky Geological Survey (KGS). (n.d.). Kentucky Coal Production 1790-2001, Kentucky Geological Survey, University of Kentucky. Retrieved October 14, 2013, from http://www.uky.edu/KGS/coal/production/kycoal01.htm

Kentucky Trail Town. (n.d.). Kentucky Trail Towns: A How-to-Guide for Communities. Frankfort: Kentucky Office of Adventure Tourism. Retrieved from http://www.kentuckytourism.com/!userfiles/Industry/Adventure/4%20-%20Trail%20Town%20How%20to%20Guide.pdf

KET, Kentucky Educational Television. (2013). Healthy Competition: How County Health Rankings are Catalyzing Change. Retrieved from http://www.ket.org/health/healththree60/rankings.htm

Kretzmann, J. P., & McKnight, J. (1993). Building communities from the inside out: a path toward finding and mobilizing a community's assets. Evanston, Ill.; Chicago, IL: The

Asset-Based Community Development Institute, Institute for Policy Research, Northwestern University ; Distributed by ACTA Publications.

McSpirit, S., Faltraco, L., & Bailey, C. (2012). Confronting Ecological Crisis in Appalachia and the South: University and Community Partnerships. Lexington: The University Press of Kentucky.

McSpirit, S., Hardesty, S., & Welch, R. (2002). Researching Issues and Building Civic Capacity after an Environmental Disaster. Journal of Appalachian Studies, 8(1), 132–143.

Needham, M. D., & Vaske, J. J. (2008). Hunter Perceptions of Similarity and Trust in Wildlife Agencies and Personal Risk Associated with Chronic Wasting Disease. Society & Natural Resources, 21(3), 197–214.

Russell Fork River Connection: A Conceptual Plan for an Interstate Trail and Open Space Network. 2005. (2005).

Sierra Club. (n.d.). Reports and Fact Sheets - Beyond Coal - Sierra Club. Retrieved October 14, 2013, from http://www.sierraclub.org/coal/factsheets.aspx

Sustainable Pike County. (n.d.). Retrieved October 14, 2013, from https://www.facebook.com/SustainablePikeCounty

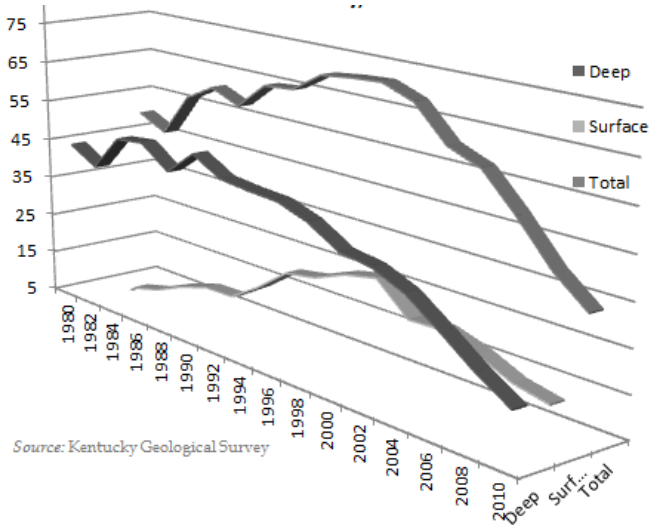
Sustainable Williamson. (n.d.). Retrieved October 17, 2013, from https://www.facebook.com/SustainableWilliamsonWV

UsaCityFacts. (n.d.). UsaCityFacts - Census Data for All Cities. Retrieved October 14, 2013, from http://www.usacityfacts.com/

Wilson, E. (2013a, June 18). The Trail Town Certification Process.

Wilson, E. (2013b, August 14). Elkhorn City-University Partnership Plan.

Figure 1: Coal Production Trends (millions of tons) for Pike County, 1980-2010



Source: Kentucky Geological Survey

Figure 2: EKU students at Breaks Interstate Park, Field Weekend October 12-13, 2013

Photo Credit: Dr. Michael Bradley, Department of Parks and Recreation, EKU

Figure 3: Potential Trail Towns by County, EKU Service Region, and other Towns in Eastern Kentucky

Town	County	Region
Alexandria	Campbell	
Berea	Madison	EKU Service Region
Beattyville	Lee	EKU Service Region
Buckhorn	Perry	EKU Service Region
Carrollton	Carroll	
Campbellsville	Taylor	
Cumberland, Lynch & Benham	Harlan	EKU Service Region
Dawson Springs (Certified)	Caldwell	
Elkhorn City	Pike	Eastern Kentucky
Evarts	Harlan	EKU Service Region
Frankfort	Franklin	
Frenchburg	Menifee	Eastern Kentucky
Great River Road Communities	Clinton	
Greensburg	Green	
Harrodsburg	Mercer	
Jenkins	Letcher	Eastern Kentucky
Livingston (Certified)	Rockcastle	EKU Service Region
London	Laurel	EKU Service Region
Stearns	McCreary	EKU Service Region
McKee	Jackson	EKU Service Region
Middlesboro	Bell	EKU Service Region
Morehead	Rowan	Eastern Kentucky
Munfordville	Hart	
Hartford	Ohio	
Olive Hill	Carter	
Paintsville	Johnson	Eastern Kentucky
Raceland	Greenup	
Sadieville	Scott	
Salyersville	Magoffin	
Slade	Powell	EKU Service Region
Whitesburg	Letcher	Eastern Kentucky
Hazard	Perry	EKU Service Region

Source: KY Office of Adventure Tourism

VISITATION FREQUENCY AND LEVEL OF SUPPORT FOR BLACK BEAR MANAGEMENT OPTIONS AT BIG SOUTH FORK NATIONAL RIVER AND RECREATION AREA

Authors:
Robert M. Lakes
Ryan L. Sharp
Michael J. Bradley

Affiliation:
Recreation and Park Administration Department
Eastern Kentucky University

Address:
405 Begley Bldg.
Richmond, KY 40475

Problem Statement

Occurring through natural migration and repopulation efforts, black bear populations are growing throughout the southeast region of the United States (Stambaugh 2011). As human populations continue to rise in this region ("Tennessee Bear Population" 2007; Lindsey & Adams 2006; Baruch-Mordo, Breck, Wilson, & Theobald 2008), human-bear interaction opportunities such as hiking, riding horses, fishing, and rafting, and also local stakeholders encountering black bears on their property, are increasing and steps are needed to understand the human dimensions of possible black bear management options. One area positioned for a marked increase in human/bear interactions is Big South Fork National River and Recreation Area (BISO). To identify management options and make the best decisions for the growing black bear population, BISO managers need information about park visitor beliefs and concerns. The purpose of this study is to add to the scholarly research of the differing visitor perceptions related to visitation frequency concerning black bear management in general and specifically at BISO. The researchers elicited information to evaluate park visitors' interactions with bears at BISO.

Such information may provide details necessary to evaluate and alleviate any public unease concerning management options, and provide a habitat suitable for a managed black bear population.

Methods

The BISO is 125,000 acres of plateaus and gorges, and the South Fork of the Cumberland River is located in northern Tennessee and southern Kentucky. BISO provides ideal habitat for many species of wildlife, including black bears. In 2012, BISO had 600,161 visitors with the main activities being hiking, backcountry and site camping, horseback riding, wildlife viewing, kayaking, canoeing and train riding.

The researchers, with BISO management personnel, developed a questionnaire that was further guided by the tailored design method for survey construction (Dillman 2007). The survey was pilot tested (N=71) with BISO visitors (including tests for reliability and validity), and adjusted appropriately. The investigators used a randomized probability sampling approach, and data was collected during the summer of 2013. Intercept locations were visitor attraction sites (e.g., visitor center and trailheads). Vaske (2008) suggested that a sample size of 400 is considered a suitable number for generalizing to a population at the 95% confidence level with a ±5% margin of error for most parks, recreation, and human dimension studies. A total of 386 visitors completed the survey with a response rate of 72%. Frequency and descriptive analysis was conducted, as well as ANOVA to measure differences between types of park visitors, and their views on black bear management options.

Results

Survey respondents represented 27 states, with 55% coming from Tennessee and Kentucky. First time (49.4%) and repeat (50.6%) visitors were represented equally, with an

average age of 51, and 53.7% of the participants being women. Most visitors participated in hiking (48%), wildlife viewing (41%), and camping (33%) while at the park.

Repeat visitors felt it was more important to manage wildlife than did first time visitors ($F_{(1,349)} = 6.88$, $p = 0.01$). The question "Have you seen or received any information about black bears in the park?" was asked to all visitors (Table 1). Those who responded "yes" (50.3%) were more in favor educating the public about bears ($F_{(1,308)} = 7.71$, $p = 0.01$), euthanizing problem bears ($F_{(1,311)} = 5.69$, $p = 0.02$), and conditioning bears to stay away from people ($F_{(1,310)} = 8.88$, $p \leq 0.01$). Visitors who supported bear hunting (43.1%) felt that regulated hunts in the park are a valid management technique more so than those who opposed hunting (23.7%), and those that were unsure (33.2%) ($F_{(2,323)} = 75.54$, $p \leq 0.01$).

Conclusions

Visitors who received information about bears while at the park were more in favor of management actions, thus supporting past research findings (Lafon et al. 2004). The results suggest that directed and concerted educational efforts may garner increased support for the control of black bears through hunting, relocation and euthanizing problem bears. Frequent visitors were more likely to support wildlife management, which suggests that frequent exposure to educational messages may have an impact on black bear management preferences and techniques. To increase support for black bear management, managers at BISO may want to develop a targeted education plan discussing possible management techniques. The park may also consider developing a hunting education component, as those visitors who were opposed to hunting did not see this as a valid management technique.

An increase in collaborative research will give park managers necessary scientific data to present as evidence to legislators of the importance of funding educational and managerial

efforts within the parks. The findings from this research can allow park managers to design effective educational programs. Programs designed to target specific audiences, with different belief systems and value orientations, may provide the greatest impact for the money spent (Sharp et al. 2012). Having the ability to scientifically show legislators why money is needed for educational programs is instrumental for park managers during budget negotiations. Strong scientific data allows park managers to have valuable information when dealing with the public concerning management options, especially in cases of charismatic mega-fauna such as black bears.

References

Baruch-Mordo, S., Breck, S.W., Wilson, K.R. & Theobald, D.M. (2008). Spatiotemporal distribution of black bear human conflicts in Colorado, USA. *Journal of Wildlife Management, 72*, 1853-1862.

Dillman, D. A. (2007). *Mail and internet surveys: The tailored design method*. Hoboken: John Wiley & Son, Inc.

Lafon, N.W., McMullin, S.L., Steffen, D.E., Schulman, R.S., (2004). Improving stakeholder knowledge and agency image through collaborative planning. *Wildlife Society Bulletin, 32*, 220-231.

Lindsey, K. J., & Adams, C.E. (2006). Public demand for information and assistance at the human-wildlife interface. *Human Dimensions of Wildlife, 11*, 267-283.

Sharp, R.L., Larson, L.R., Green, G.T. & Tomek, S. (2013). Comparing interpretive methods targeting invasive species management at Cumberland Island National Seashore. *Journal of Interpretation Research*, *17*(2).

Stambaugh, C. (2011). Kentucky bear population healthy, growing. *Kentucky Angling News Magazine*.Retrieved from http://www.kentuckyangling.com/magazine/2011/06/kentucky-bear-populations-healthy-expanding/

Tennessee bear population-Highest in 20 years. (2007). The Chattanoogan.com. Retrieved from http://www.chattanoogan.com/2007/5/16/107416/Tennessee-Bear-Population---Highest.aspx

Vaske, J. J. (2008). Survey research and analysis: Applications in parks, recreation and human dimensions. State College: PA: Venture Publishing.

Table 1

Informed versus uninformed visitors concerning non-lethal black bear management options in BISO.

Support for Control Item	Information Mean	S.D.	No Information Mean	S.D.	F^*
Educate the public about human-bear conflicts.	4.77	.585	4.54	.868	7.710
Euthanize bears that repeatedly cause problems for people.	3.43	1.220	3.10	1.277	5.687
Condition bears to stay away from popular areas.	4.27	.825	3.94	1.118	8.870

Based on a five point scale-1=unacceptable in all cases to 5=acceptable in all cases. $^*p \leq 0.05$

SOCIAL EQUITY AND PUBLIC ACCESS IN APPALACHIAN KENTUCKY

Authors:
Michael J. Bradley*
Stephen Sims*
Hungling Liu**
Ryan L. Sharp*

Affiliation:
*Recreation and Park Administration Department
Eastern Kentucky University
** Oklahoma State University

Address:
405 Begley Bldg.
Richmond, KY 40475

Problem Statement

The purpose of this study was to identify barriers associated with social equity at state parks and to identify variables that decrease social equity profiling. It is important to remember that "leisure services are an eclectic, multi-faceted field providing a mix of services with widely differing characteristics" (Compton & Wicks, 1988, p. 294).

It is important for state park systems to ensure equal access and opportunities for all citizens within their respective state. This includes specific introspection of social access equity in order to assure the original intent of the park system is being met. For instance, Kentucky State Park System's mission is "to stimulate economic development in rural areas through tourism, to provide quality recreation opportunities for residents and visitors throughout the Commonwealth, and to preserve and interpret Kentucky's significant natural, cultural, and historic resources" (Tourism, Arts, and Heritage Cabinet, 2010, p.4).

According to the 2010 US Census, Kentucky's demographics consist of 86.3% Caucasians, 7.7% African Americans, and 3.1% Hispanics; and, approximately 17.8% of the

population lives in poverty (Cubit, 2013). Providing quality recreation opportunities for residents includes elimination of discrimination against those citizens of a different race, economic status, or social status. “However, a disparity in access to physical activity facilities and resources has been documented among low-income and racial/ethnic minorities” (Taylor, Floyd, Whitt-Glover, & Brooks, 2007, p. S51).

Public and private services are most likely to succeed when “agencies: (1) consciously explore the implications of each of the equity options available; (2) monitor and understand existing services distribution patterns; (3) negotiate equity model priorities for leisure services among decision-making groups; and (4) establish distributional objectives which reflect the negotiated preferred equity models” (Crompton & Wicks, 1988, p. 302). Not only is it imperative for the state parks in Kentucky, but across the nation, to continue to identify barriers and then modify them as needed in hopes to minimize inequality to that want to partake..

Methods

The researchers worked with Kentucky State Park administration to select five research sites that were nestled along the western side of the Appalachian foothills. After selecting the five sites, the researchers developed a survey and methodology to solicit input from state park visitors regarding demographic information and information related to barriers to access and visitation, place attachment, and environmental ethics. The instruments included in the survey were selected due to their previous use so that only valid and reliable instruments were used in the survey to collect information.

The researchers approached park visitors of all types at times when approaching them was least intrusive, typically when visitors were exiting an area or activity, or tin the afternoon and evening times during down time. The researchers visited each site three times, with at least

one visit being on Saturday and one visit being a weekday (Monday- Thursday).

Results

The percentage of respondents in this study choosing male (N=139, 52%) or female making up (N=128, 48%) are similar to the general Kentucky population. The average income of a household in Kentucky is $42,610 and was $56,209 with the study respondent pool.

A majority of the respondents had at least a high school diploma (N=80, 30%), some college (N=60, 23%), or a undergraduate degree (N=59, 22%). Only 6 respondents (2%) had less than a high school education, and 41 respondents (16%) obtained post-undergraduate degree or education. When compared to education levels of Kentucky residents, respondents were significantly more educated, as a majority of Kentucky's populace (61.4%) having a high school education and 21% having an education beyond high school.

A majority of the respondents were White/Caucasian (N=230, 87%), followed by Mixed Race (N=11, 4%), Other Race (N=10, 4%), American Indian/Alaska Native (N=6, 2%), Black/African American/Negro (N=4, 2%), Native Hawaiian/Pacific Islander (N=3, 1%), and Asian/Indian (N=2, 1%). Additionally, respondents of Hispanic or Latino ethnic origin only represented 4% (N=11) of the respondent pool. When compared to Kentucky demographics, most races were represented in similarly to the general population, however, respondents choosing Black/African American/Negro were significantly less, making up 8.1% of Kentucky's population but only 2% in the study.

Researchers asked participants how long ago (in years) they first visited the park where they were approached to participate in this study. Time elapsed since initial visit ranged from 0 (this was the first visit to the park) to 50+ years. The average time elapsed since first visit and this visit was 14.25 years (SD=15.7). In addition, respondents were asked how many times per

year they visit the park, with answer ranges from 0 (again, this was their first visit to the park) to 50+ visits per year. The average visits per year were 7.7 (SD=12.55). Table 1 outlines the barriers to park visitation as reported by survey participants.

Discussion

The respondents in this study did not see any significant barriers to park visitation, as measured by Searle and Jackson's (1985) Barriers to Visitation instrument. Results indicate that none of the respondents perceived any barriers to visitation that are typical for potential park users. Further, beyond lacking participation by persons identifying as African American and the education of park visitors, the sample demographics are similar to the general population of Kentucky. The researchers note that further research must be completed to identify other potential barriers to park visitation and fully understand equitable access issues related to Kentucky State Parks. The suggested bext course of action would be to conduct a survey of non-park visitors to understand their barriers to visitation.

References

Compton, J. & Wicks, B. (1988). Implementing a Preferred Equity Model for the Delivery of Leisure Service in the US Context. *Leisure Studies, 7*(3), 287-304.

Cubit. (2013). Get Kentucky Demographics. *Kentucky Demographics*. Retrieved Dec. 17, 2013, from http://www.kentucky-demographics.com.

Searle, M. S. & Jackson, E. L. (1985). Recreation non-participation and barriers to participation: Consideration for the management of recreation delivery systems. *Journal of Recreation and Park Administration, 3(2), 23-35.*

Taylor, W., Floyd, M., Whitt-Glover, M. & Brooks, J. (2007). Environmental Justice: A Framework for Collaboration Between the Public Health and Parks and Recreation Fields to Study Disparities in Physical Activity. *Journal of Physical Activity & Health*. *4*(1), 50-63.

Tourism, Arts, and Heritage Cabinet. (2010). Kentucky State Parks Financial and Operations Strategic Plan. *Kentucky Tourism, Arts, and Heritage Cabinet*. Retrieved Dec. 5, 2013, from http://parks.ky.gov/!userfiles/parks-media/KYSPSummaryReport60410.pdf.

Table 1. Barriers to Visitation for Survey Respondents Within Kentucky State Parks

Barriers to Park Visitation (N=268)	
Questions	**Mean***
I do not like nature.	1.47
I cannot participate in nature based activities.	1.68
Going to a state park involves too much risk.	1.81
There are no state parks near me to go visit.	1.90
I have no one to go with me to a state park.	1.93
Going to a state park is too costly.	1.94
Family commitments keep me from going to a state park.	1.94
I do not know what to expect from a state park.	1.95
My family and friends are not interested in going to a state park.	1.99
I have no time to go to a state park.	2.12
I have no information about the state parks and what they offer.	2.16
The expenses of traveling and staying at state parks are too great.	2.19

*Based on a 5-point likert-type scale. 1 = strongly disagree to 5 = strongly agree

SPATIAL TEMPORAL ANALYSIS OF SELECTED CYPRESS FORESTS IN GEORGIA

Authors:
Charles L. Jordan[1]
Dr. Gary T. Green[1]
Dr. Lawrence Morris[1]
Dr. Marguerite Madden[2]
Dr. C. Rhett Jackson[1]

Affiliation:
[1]Warnell School of Forestry & Natural Resources
[2]Department of Geography
University of Georgia, Athens, GA

Address:
Warnell School of Forestry and Natural Resources, RM 1-301C
University of Georgia
180 E. Green St.
Athens, GA 30602-2152

Department of Geography, RM 204
University of Georgia
210 Field St.
Athens, GA 30602-2152

Introduction

Throughout the southern United States cypress usage and regeneration is of some concern. A growing controversy around the perceived increase in use of cypress for mulch and a decline in cypress use for lumber has prompted the need for research. A review of research on Georgia's cypress resource, conducted from May 2013 to October 2013 at the Warnell School of Forestry and Natural Resources in the University of Georgia, found a certain lack of natural cypress regeneration without the aid of planting cypress seedlings after logging. Due to cypress typically growing in freshwater wetlands (Williston et al. 1980), it can be hard to measure and evaluate the current state of an isolated cypress forest accurately. Mapping from aerial photography and satellite images is a common way to inventory forests that are hard to reach via

conventional field survey (Welch et al. 1999). Using computer-based mapping technology it is possible to perform accurate measurements and data about wetland forests while also saving time and money on field mensuration.

This research evaluated if and how the cypress resource in Pierce and Brantley Counties, Georgia has changed in forest type or area over the past 25 years. Research involved the use of unsupervised classification methods to differentiate cypress from other land cover types on digital orthophotographs and satellite imagery covering three decades. Unfortunately, the variations in image quality resulting from scale, season and color differences resulted in moderate to poor accuracy, depending on the year of photography. Satellite imagery used in this study was Landsat TM multispectral imagery, which has been consistent in image quality since Landsat 4 was launched in 1985. Methods for image classification and temporal analysis of forest types are well established with Landsat imagery. This paper will report on these efforts and discuss the possibilities for conducting a regional scale survey of cypress resources using satellite images.

Purpose and Objectives

The purpose of this research is to examine how selected cypress forests in South Georgia have changed, if at all, over the past 25 years by utilizing free data and simple classification techniques. The objectives of this study are to: (1) Use geospatial techniques with historic and current aerial photography, as well as, Landsat imagery to classify and measure area of cypress stands within the study area; (2) Complete an accuracy assessment on classified aerial photographs and Landsat imagery.

Study Area

The study area for this research covers approximately 94.5 km^2 located near Hoboken,

GA, USA between Pierce and Brantley Counties (Figure 1). This area was selected for its variety of land cover types including developed, agriculture, on going timber harvests, swamp, and scattered cypress forests (Figures 2 and 3). The climate is fairly typical of southern Georgia. In the winter months average lows are in the high 30's F to low 40's F with highs in the mid 60's F to low 70's F. In the summer months, temperatures range from the low 70's F to mid 90's F. Average annual precipitation is 50.44 inches, with the wettest month being August. Elevation for this area is 15 to 43 m above sea level. Soils in this area are commonly mapped in coastal plains and range from thermic Fluvaquentic Endoaquepts to thermic Cumulic Humaquepts. These soils tend to be poorly to very poorly drained clay soils, with periods of flooding and slopes of 0 to 2 percent (NRCS Web Soil Survey, n.d.).

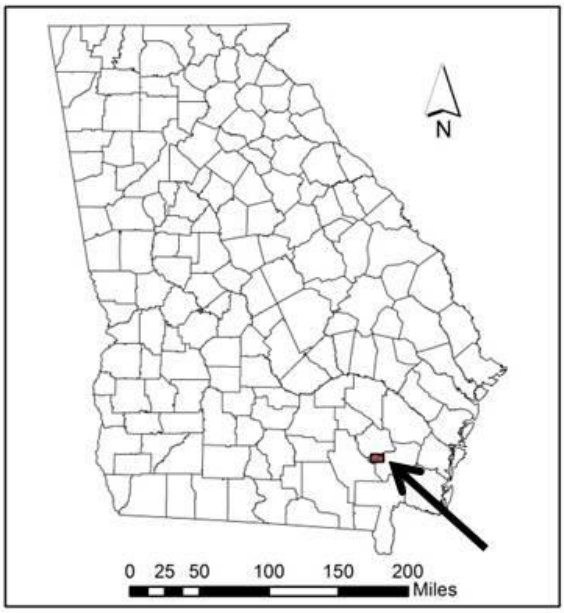


Figure 1.
Location of Study Area in S. Georgia.

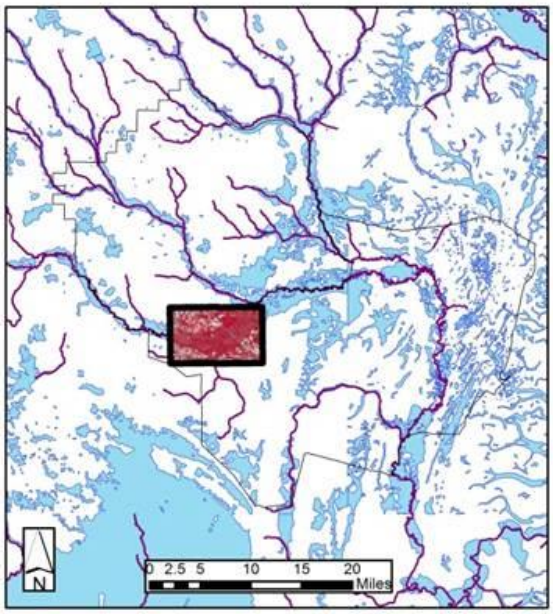


Figure 2. Inset of Study Area
with Rivers and Water Bodies.

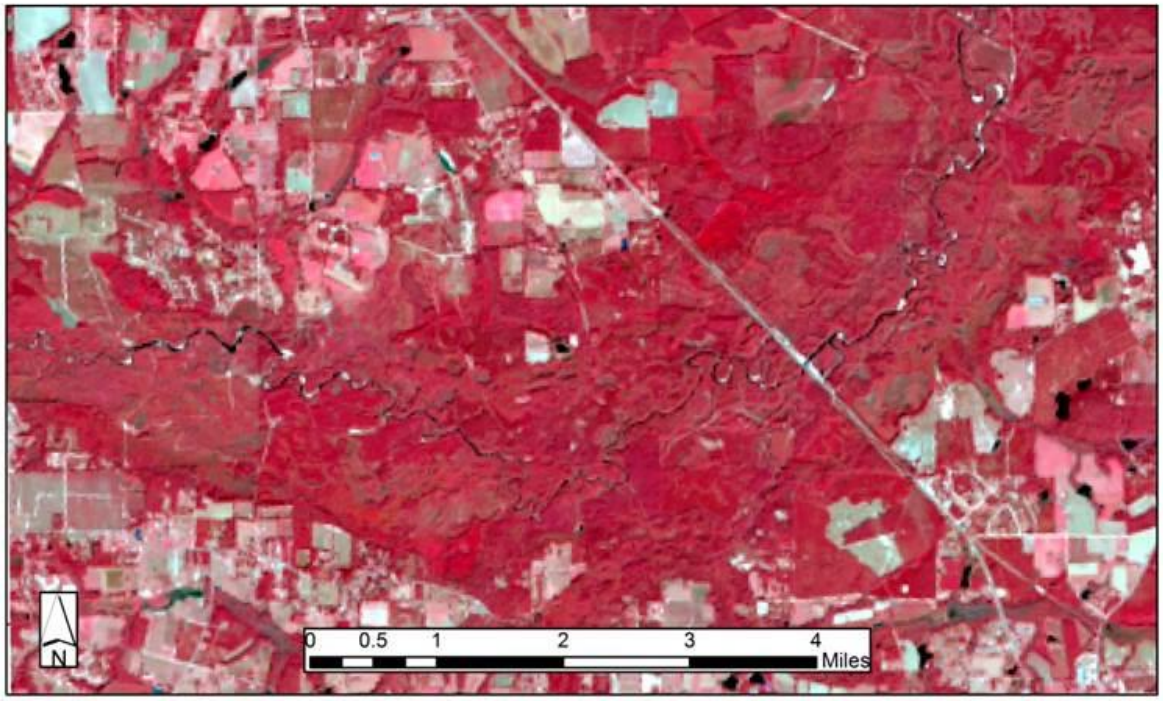


Figure 3. Color Infrared Landsat 8 Image of Study Area on March 17, 2013.

Methodology

Aerial Photography

Data for each year was classified into 20 unique classes using Iso Cluster Unsupervised classification within ArcMAP. Using this classification allows the user to quickly classify large areas of vegetation through an automated process. Unsupervised classification requires manual post-processing to determine the individual classes. Iso Cluster analyzes the individual pixel value of each pixel in the selected raster image and classifies the image based on pixel brightness values and the desired number of classes by the user. For all years 1988, 1999, and 2010, majority filtering was used to generalize or smooth all pixels within the classified image. Majority filtering replaces cells based on the majority value of neighboring cells. For example, if three of the four cells within a two by two window are classified as class four (cypress-tupelo), ArcMAP then converts the remaining cells to class four. This process is completed automatically for the entire classified image for each year.

Upon completion of classification and filtering, the 20 classes were re-classified and merged into 11 distinct classes to represent a more accurate class definition as well as to clean up some of the noise created by unsupervised classification. Due to color differences in each year of aerial photographs the computer had trouble distinguishing between certain classes. To correct for this, classes 9, 10, and 11 were merged into class 9. Classifications of land cover within the study area were loosely based on the USGS Anderson Classification system. This classification system was developed for classifying land cover from remotely sensed data. Benefits of this classification system are it is designed to be modified to use as much or as little detail as it needed for a particular project, by breaking down the classes into levels I, II, and III (Anderson et al. 1976).

Satellite Imagery

Years 1988 and 2013 were included in this study to analyze potential change in selected cypress forests over the past 25 years in Pierce and Brantley counties. All analysis was completed using ArcGIS 10.1 with historic Landsat Thematic Mapper (TM) imagery to identify and classify selected cypress stands in each county creating a spatial temporal geodatabase of cypress forests. After identifying and classifying the imagery, temporal analysis of classified cypress stands will be completed to determine if there has been a change in size or stand composition from 1988 to 2013.

Using Landsat imagery requires preprocessing of images in order to create the desired image bands and effects (Lillesand et al., 2004). In this research, color infrared imagery was needed to discern cypress from other types of vegetation. With color infrared imagery cypress appears white to gray in color with light tone, coarse texture, dense canopy in either extensive strands or domes (Madden et al. 1999).

Images were downloaded from the National Map, Earth Explorer interface managed by the U.S. Department of the Interior, U.S. Geological Survey. Satellite imagery from 1988 was obtained through the Landsat 5 satellite program equipped with both Multispectral Scanner (MSS) and Thematic Mapper (TM) sensors. Imagery from 2013 was obtained from the Landsat 8 program equipped with the Operational Land Imager (OLI) and Thermal Infrared Sensors (TIRS). Landsat satellites produce image products that area considered moderate resolution. Landsat 5 has a spatial resolution of 82-m for MSS bands one through four, and 30-m for TM bands one through seven (Lillesand et al., 2004). Landsat 8 has a spatial resolution of 30-m for OLI multispectral bands one through seven, 15-m for OLI panchromatic band eight, and 30-m for TIRS bands ten and eleven.

Landsat images are downloaded in a package of multiple separate bands and need to be combined to form the desired band combinations as well as reduce overall file size. The 'Composite Bands' tool in ArcGIS 10.1 was used to combine bands to create seven-band color infrared (CIR) satellite images of the study area. Following the creation new seven-band CIR images, data for each year was classified into 25 classes using the 'ISO Cluster Unsupervised Classification' tool within ArcGIS 10.1. This tool analyzes the individual pixel value of each pixel in the selected raster image and classifies the image based on those pixel values and the desired number of classes by the user. Using this classification method allows the user to quickly classify large areas of vegetation through an automated process. Unsupervised classification methods result in spectral classes based on natural groupings of individual pixel values within an image. Results of unsupervised classification require manual post-processing to determine the individual classes.

The 'Iso Cluster Unsupervised Classification' tool in ArcGIS 10.1 is a variant of the K-means unsupervised classification called Iterative Self-Organizing Data Analysis (ISODATA). The ISODATA algorithm analyzes clusters of pixels and allows the number of clusters to change with each iteration of the algorithm. After each iteration the statistics of each cluster is evaluated to see if the distance between two clusters is less than a predetermined distance, in this case, one. If the clusters are less than the set distance they are merged together. However, a cluster may be split in two if the standard deviation is greater than the set value. After the algorithm has evaluated all pixel-based clusters, all pixels are then reclassified into revised classes set by the user. The process continues until no significant statistical differences are found or the algorithm reaches a maximum number of iterations (Lillesand et al. 2004).

Due to large (30 × 30 m) pixel size for years 1988 and 2013, no filtering methods were

utilized to smooth classified pixels in the images. Upon completion of classification the 25 classes were re-classified and merged into six classes to represent more accurate class definitions, as well as to clean up some of the noise created in unsupervised classification. The resulting classes are water (1), evergreen (2), mixed cypress (3), mixed forest (4), agriculture (5), and human influence/disturbed (6). The human influence/disturbed class encompasses urban areas, roads, and harvested forest.

Results

Unsupervised classification of aerial photographs was completed using ArcGIS Iso Cluster Unsupervised Classification. Classification resulted in nine final classes, representing various types of land cover. The final set of classes included: (1) Water, (2) Moisture or Shadow, (3) Deciduous Forest, (4) Cypress-tupelo, (5) Mixed Cypress, (6) Evergreen Forest, (7) Mixed Forest, (8) Agriculture, and (9) Barren Land. Accuracy of the classes varied depending on the year and specific color of the individual images. Despite all images being color infrared, tone and brightness for each image varied. This variation in color among images resulted in differing amount of accuracy for each class. A temporal analysis of the study area near Hoboken, GA resulted in some overall variability during the 22 year time period. Table 1 depicts areas (ha^{-1}) and percentages of total area for each land cover class in years 1988, 1999, and 2010 based on aerial photographs. Differences in total area for each year can be attributed to pixels with no data. To correct for slight differences in total area for each year and imagery type, the totals were averaged. The average total area (ha^{-1}) was used for determining: % of total, % change, and area change.

Unsupervised classification of Landsat imagery for years 1988 and 2013 was completed using ArcGIS 10.1 Iso Cluster Unsupervised Classification tool (Figures 4 and 5). Classification

resulted in six final classes, representing various types of landcover. The six classes included water (1), evergreen forest (2), mixed cypress (3), mixed forest (4), agriculture (5), and human influence or disturbed (6). Over the past 25 years from 1988 to 2013, there has been some changes in land cover within the study area. Most noteably there has been a 2102.68 ha increase in mixed cypress forests, a 669.28 ha increase in agricultural areas, and a 1963.46 ha decrease in disturbed areas of human influence (Table 2). It is not within the scope of this paper to discuss why these changes occurred.

Table 1
Temporal Analyses of Land Cover in Study Area Based on Aerial Photography

		Area (ha)		Change (ha)
Class #	Class Name	1988	2010	1988 - 2010
1	Water	465.58	489.49	24.74
2	Moisture/Shadow	1659.77	1659.76	1.90
3	Deciduous Forest	349.39	1276.75	927.84
4	Cypress-Tupelo	818.00	537.62	-279.28
5	Cypress-Mixed	1700.73	1302.98	-396.83
6	Evergreen Forest	1238.53	1436.76	199.842
7	Mixed Forest	870.02	0.00	-870.02
8	Agriculture	500.15	1714.98	1216.18
9	Disturbed/Human Influence	1917.59	1092.73	-823.161
	Sum of Classes	9519.77	9511.07	
	Average Total	9516.31		

Table 2
Temporal Change Analysis within Study Area Based on Landsat Imagery

		Area (ha)		Change (ha)
Class #	Class Name	1988	2013	1988 - 2013
1	Water	469.89	313.47	-156.42
2	Evergreen	1719.13	1605.15	-113.98
3	Cypress Mixed	581.57	2684.25	2102.68
4	Mixed Forest	847.01	304.11	-542.90
5	Agriculture	3551.81	4221.09	669.28
6	Disturbed/Human Influence	2362.43	398.97	-1963.46
	Sum of Classes	9531.83	9527.04	
	Average Total	9529.44		

Overall accuracies for aerial photography years 1988 and 2010 were 82.50% and 65.00% respectively. Overall accuracy for satellite imagery year 1988 and 2013 were 37.50 % and 37.50 % respectively. Overall accuracy was determined by dividing the number of correctly classified random points in the accuracy assessment by the total number of random points used (120). For each individual land cover class producer and user accuracy was calculated for each year. Producer and user accuracy for each year of aerial photography can be found in Table 3. Producer and user accuracy for each year of satellite imagery can be found in Table 4.

Table 3
Producer & User Accuracy of Unsupervised Classification

	1988 CIR NAPP		2010 4-Band NAIP	
	Producer's Accuracy	User's Accuracy	Producer's Accuracy	User's Accuracy
Water (1)	100.00	66.67	100.00	66.67
Moisture/Shadow (2)	91.30	80.77	88.89	80.00
Deciduous Forest (3)	100.00	100.00	80.00	61.54
Cypress-Tupelo (4)	76.92	100.00	75.00	54.55
Cypress-Mixed (5)	79.17	73.08	52.38	68.75
Evergreen Forest (6)	92.86	100.00	73.68	60.87
Mixed Forest (7)	90.00	64.29	0.00	0.00
Agriculture (8)	25.00	50.00	68.75	57.89
Barren/Disturbed (9)	85.00	94.44	40.00	66.67
Overall Accuracy	82.50		65.00	

Table 4
Producer and User Accuracy for Satellite Imagery Years 1988 and 2013 in Percentages

	1988 Landsat 5 TM		2013 Landsat 8	
	Producer's Accuracy	User's Accuracy	Producer's Accuracy	User's Accuracy
Water (1)	0.00	0.00	40.00	40.00
Evergreen Forest (2)	55.56	43.48	25.93	63.64
Cypress-Mixed (3)	18.75	42.86	60.61	52.63
Mixed Forest (4)	16.67	16.67	0.00	0.00
Agriculture (5)	55.17	53.33	92.86	23.64
Barren/Disturbed (6)	41.67	31.25	12.00	60.00
Overall Accuracy	37.50		37.50	

Discussion

Using widely available free imagery and commonly used classification techniques resulted in moderate to poor accuracy for both aerial photography and Landsat satellite imagery. Accuracy and ease of use in classifying cypress could potentially be improved by the use of supervised classification methods such as maximum likelihood supervised classification or sub-pixel classification. Aerial photographs from 1988 seemed to have lost some of its clarity from either being scanned into a database at low dots per inch (DPI) or from being compressed. The

result was imagery with ideal coloration for determining different types of land cover, but challenging to discern small details. Surprisingly, the classified aerial photographs from 1988 had a higher overall accuracy than classified aerial photography for 2010. Using aerial photographs has the benefit of high resolution from a small pixel size (1-m), but differences in color from year to year affect the ability of a computer to complete unsupervised classification with acceptable accuracy. Differences in color may be attributed to the DPI original film images were scanned with, time of day the photographs were taken, camera angle, etc. Many of these factors cannot be corrected for without the original film, or re-scanning at a higher DPI.

Landsat imageries inherently large pixel size did not work well with regard to classifying small and scattered cypress stands. Using one of the aforementioned classification techniques, such as maximum likelihood or sub-pixel classification could improve accuracy for determining cypress within a bottomland hardwood forest.

References

Anderson, J.R., Hardy, E.E., Roach, J.T., and Witmer, R.E. 1976. A land use and land cover classification system for use with remote sensor data. USGS Professional Paper, 964.

Lillesand, T.M., Kiefer, R.W., Chipman, J.W. 2004. Remote Sensing and Image Interpretation, Fifth Edition. John Wiley & Sons, Hoboken, NJ.

Madden, M., Jones, D., and Vilchek, L. 1999. Photointerpretation Key for the Everglades Vegetation Classification System. *Photogrammetric Engineering & Remote Sensing, 65(2)*: 171-177.

Web Soil Survey. (n.d.). United States Department of Agriculture, Natural Resources Conservation Service. Retrieved April 23, 2013 from http://websoilsurvey.nrcs.usda.gov/app/

Welch, R., Madden, M. and Doren, R. F. 1999. Mapping the Everglades. *Photogrammetric Engineering & Remote Sensing 65(2)*: 163-170.

Williston, H. L., Shropshire, F.W., and Balmer, W.E.. 1980. Cypress management: a forgotten opportunity. Forestry Report SA-FR, U.S. Department of Agriculture Forest Service, Southeastern Area, State and Private Forestry, 8:1-7

SPATIAL ANALYSIS OF TOURISM MICRO-ENTREPRENEURSHIP, AMENITIES, AND POVERTY IN NORTH CAROLINA

Authors:
Yuchen Mao
Duarte Morais
Gene Brothers
Jordan Smith
Melissa McHale

Affiliation:
College of Natural Resources
North Carolina State University

Address:
College of Natural Resources
2829 Faucette Drive
Biltmore Hall, NC State
Raleigh, NC 27695

Problem Statement

Tourism is highly advocated as a tool for poverty reduction in both developed and developing countries. Increased tax revenues and employment, and improved infrastructure are often cited as benefits from the growth of tourism (Rogerson, 2006; Manyara and Jones, 2007). However, tourism is also often criticized for cultural commodification, leakage of economic benefits, displacement of people from their original habitats, limited participation of host communities, as well as the uneven distribution of benefits (Hill, Nel and Trotter, 2006; Dressler et al., 2010). Tourism micro-entrepreneurship is said to be a good solution to these problems, because micro-entrepreneurship creates income earning opportunities with low entry-barriers appropriate to under-resourced members of the host community (Oakes, 1997; Binnes and Nel, 2002; Kajanus, Kangas and Kurttila, 2004; Atelijevic, 2009; Korez-Vide, 2013). Moreover, with their involvement in tourism, these community segments gain a place in

community decision-making and exert pressure for tourism to develop in more equitable and sustainable ways (Oakes, 1997; Korez-Vide, 2013).

Micro-entrepreneurship is related to the definition of self-employment which is performing work for personal profit rather than for wages paid by others (Shane, 2003). Tourism micro-entrepreneurship refers to situations when there are fewer than 5 employees in a tourism business (Shane, 2003; Rogerson, 2006). The development of tourism micro-entrepreneurship depends on factors like the local entrepreneurial climate (Mandelman and Montes-Rojas, 2009; Franck, 2011) and natural and cultural amenities (Bryceson, 2002; Marcouiller, Kim and Deller, 2004).

Numerous US States are struggling to cope with a series of issues related to poverty, such as unemployment. North Carolina in Southeastern United States is unexceptional since many people across the state have been conducting tourism micro-businesses to cope with being unemployed (Johnson, 2003; McCallie, 2006). As a matter of fact, tourism has significantly contributed to North Carolina's economy. On the other hand, dozens of counties, especially those in the inner coastal plain, are still with higher level of poverty rate (Johnson, 2003; McCallie, 2006; McGehee, Meng and Tepanon, 2006).

Therefore, the purpose of this study is to explore some of the amenities as the potential factors contributing to tourism micro-entrepreneurship and investigate if tourism micro-entrepreneurship makes an impact in poverty reduction in North Carolina.

Data and Methods

The data used are at the county level. Tourism micro-entrepreneurship refers to number of establishments that provide arts, entertainment and recreational facilities per 100,000 people. The indicators of amenities include percentage of water area, and number of national and state parks per 100,000 people representing natural resources, and the number of nationally-registered

historic places representing cultural resources. The state parks, recreation areas, natural areas and forests are included when counting number of state Parks while natural attractions administered by the U.S. National Park Service plus national forests were included when counting number of national parks. Poverty-related variables include poverty rate, Gini index that indicates the degree of income inequality and human development score computed using principal component analysis that presenting the level of human development, a good indicator of the extent of poverty. Table 1 presents the definition of variables and data sources used.

Getis-Ord G_i^* statistic (Getis, 1984; Ord & Getis, 1995) compares local averages to global averages and thereby helps reveal areas where tourism micro-entrepreneurship and other variables of interest tend to have high or low values. It is calculate as:

$$G_i^*(d) = \frac{\sum_j w_{ij}x_j - \bar{x}\sum_j w_{i,j}}{s\sqrt{\frac{n\sum_j w_{i,j}^2 - (\sum_j w_{i,j})^2}{n-1}}}, for\ all\ j$$

$\{w_{ij}\}$ is a spatial weights matrix with w_{ij}=1 when i and j are within a distance d from each other and zero otherwise and:

$$\bar{x} = \frac{\sum_j x_j}{n};$$

$$S^2 = \frac{\sum_j x_j^2}{n} - (\bar{x})^2$$

In this study, d is the distance between the centroids of two counties. Selection of distance threshold would affect the value of G_i^* statistic and thus affect the determination of cluster boundaries. This study uses 30 miles as the distance threshold to identify tourism micro-entrepreneurial clusters and clusters of other variables of interest supposing micro tourism businesses might have impact (cooperation, knowledge transfer, etc.) on each other within a distance of 30 miles. The G_i^* statistic is a z-score, so a positive G_i^* statistic greater than 1.96

indicates significantly high values while a negative z-score less than -1.96 indicates significantly low values.

Moreover, multiple and bivariate OLS regression analysis is conducted to find the association of variables representing amenities with tourism micro-entrepreneurship and that of tourism micro-entrepreneurship with poverty related variables. R statistical software was used to conduct data analyses and ArcGIS was used for mapping high/low clustering of variables of interest.

Results

High/low clustering of each variable is shown in Figure 1 through Figure 8. Tourism micro-entrepreneurship tends to cluster in some areas in the Mountains and the Tidewater. National parks are located in the Mountains and the Tidewater. State parks concentrate in north of the Mountains, and some areas in the Inner Coastal Region and the Tidewater. Naturally, the Tidewater counties have the highest percentage of water areas. Historical places tend to concentrate in north of the Inner Coastal Region, and the Tidewater. High poverty rate tend to concentrate in the Inner Coastal Region, while some areas in the Piedmont and the Tidewater have concentration of low poverty rate. High human development tend to be located in the Piedmont while concentration of low human development is located in north of the Inner Coastal Region. Low Gini index tends to be located in the Tidewater, while some areas in the other regions register high Gini index, i.e. low equity. The multiple OLS regression suggested national parks and percentage of water area might be determinants of tourism micro-entrepreneurship (Table 2). The variable inflation factor (VIF) for all the predictor variables is less than 4, which suggests the nonexistence of multi-collinearity that might cause estimation problems (Freund and Littell, 2000). The bivariate regression between tourism micro-entrepreneurship and poverty-

related variables indicated there is negative association between tourism micro-entrepreneurship and poverty rate and positive association between tourism micro-entrepreneurship and human development, while no association between tourism micro-entrepreneurship and Gini index is identified (Table 3).

Discussion/Implications

From both observations of high clustering locations and OLS regression, national parks, and percent water area appear to be significantly related to tourism micro-entrepreneurship. Micro-entrepreneurs appear not to fully utilize historical places as a type of cultural amenity for developing their tourism businesses. The negative association of tourism micro-entrepreneurship with poverty rate and the positive association of it with human development score indicate it might be a factor that drives both economic and human development. High clustering of historic places appears to be accompanied by high poverty rate, and low human development, which might result from non-existence of clustering of tourism micro-entrepreneurship, or be the cause of this vicious cycle. Tourism micro-entrepreneurship appears not to be related to equity across North Carolina, while in some part such as Tidewater, high clustering seems to be associated with high equity, i.e. low Gini index.

References

Ateljevic, J. (2009). Tourism entrepreneurship and regional development: Example from New Zealand. *International Journal of Entrepreneurial Behavior & Research, 15*(3), 282-308.

Binns, T., and Nel, E. (2002). Tourism as a local development strategy in South Africa. The *Geographical Journal, 168*(3), 235-247.

Bryceson, D.F. (2002). Multiplex livelihoods in rural Africa: Recasting the terms and conditions of gainful employment. *The Journal of Modern African Studies, 40*(1), 1-28.

Dressler, W., Buscher, B., Schoon, M., Brockington, D., Hayes, T., Kull, C., McCarthy, J., and Shrestha, K. (2010). From hope to crisis and back again? A critical history of the global CBNRM narrative. *Environmental Conservation, 37*(1), 5-15.

Franck, A.K. (2011). Factors motivating women's informal micro-entrepreneurship: Experiences from Penang, Malaysia. *International Journal of Gender and Entrepreneurship, 4*(1), 65-78.

Freund, R.J., and Littell, R.C. SAS System for regression. 3.ed. Cary: SAS Institute, 2000. 235p.

Getis, A. (1984). Interaction modeling using second-order analysis. *Environment and Planning A, 16*(2), 173-183.

Hill, T., Nel, E., and Trotter, D. (2006). Small-scale, nature-based tourism as a pro-poor development intervention: Two examples in Kwazulu-Natal, South Africa. *Singapore Journal of Tropical Geography, 27*(2), 163-175.

Johnson, J.H. (2003). The changing face of poverty in North Carolina. *Popular Government, 68*(3), 14-24.

Kajanus, M., Kangas, J., and Kurttila, M. (2004). The use of value focused thinking and the A'WOT hybrid method in tourism management. *Tourism Management, 25*(4), 499-506.

Korez-Vide, R. (2013). Enforcing sustainability principles in tourism via creative tourism development. *Journal of Tourism Challenges and trends, 6*(1), 35.

Manyara, G., and Jones, E. (2007). Community-based tourism enterprises development in Kenya: An exploration of their potential as avenues of poverty reduction. *Journal of Sustainable Tourism, 15*(6), 628-644.

Mandelman, F.S. and Montes-Rojas, G.V. (2009). Is self-employment and micro-entrepreneurship a desired outcomes? *World Development, 37*(12), 1914-1925.

Marcouiller, D.W., Kim, K.K., and Deller, S.C. (2004). Natural amenities, tourism, and income distribution. *Annals of Tourism Research, 31*(4), 1031-1050.

McCallie, G. (2006). Poverty and the environment in North Carolina: An overview. Retrieved from http://www.ncconservationnetwork.org/documents/poverty_and_enviro/overview

McGehee, N.G., Meng, F., and Tepanon, Y. (2006). Understanding legislators and their perceptions of the tourism industry: The case of North Carolina, 1990 and 2003. *Tourism Management, 27*(4), 684-694.

Oakes, T.S. (1997). Ethnic tourism in rural Guizhou: Sense of place and the commerce of authenticity. Tourism, Ethnicity, and the State in Asian and Pacific Societies edited by Picard, M., and Wood, R.E., University of Hawaii Press.

Ord, J.K., and Getis, A. (1995). Local spatial autocorrelation statistics: Distributional issues and an application. *Geographical Analysis, 27*(4), 286-306.

Rogerson, C.M. (2006). Pro-poor local economic development in South Africa: The role of pro-poor tourism. *Local Environment, 11*(1), 37-60.

Shane, S. (2003). A general theory of entrepreneurship: The individual-opportunity nexus, Cheltenham: Edward Elgar, 2003.

Table 1

Variable definitions and sources

Variable	Definition	Data Source
Tourism micro-entrepreneurship	Number of establishments in arts, entertainment, and recreational facilities with 1-4 employees per 100,000 population in 2010	U.S. Census
National park	Number of national parks (including national recreation areas, natural landmarks and forests) per 100,000 people	U.S. National Park Service & USDA Forest Service
State park	Number of state parks (including state recreation areas, natural areas and forests) per 100,000 people	Forest Service and Division of Parks and Recreation of each state
Percentage of water area	Total water surface area divided by total area	U.S. Census
Historic places ratio	Number of historic places nationally registered per 100,000 people in 2010	U.S. National Park Service
Poverty rate	Percentage of all people whose income in the past 12 month is below the poverty level in 2010	U.S. Census
Gini coefficient	A measure of income inequality in 2010 based on the Lorenz curve that shows the relationships between the cumulative percentage of population and the cumulative percentage of income	U.S. Census
Human development index (computed)	A measure of people's long term well-being. The scale was constructed by combining three measures including per capita income, high school graduation rate for people of 25 years and over, and number of physicians per 100,000 population in 2010	U.S. Census and County Health Rankings released by the Robert Wood Johnson Foundation

Table 2

Findings from multiple OLS regression

Variable	Estimate	S.E.	t-value	p-value	VIF
Intercept	21.5611	1.3236	16.290	0.0000***	
National parks	4.3949	1.3864	3.170	0.0021**	1.086
State parks	-0.9781	1.3782	-0.710	0.4796	1.073
Percent water area	9.2114	1.3655	6.746	0.0000***	1,054
Historic places	0.3391	1.4117	0.240	0.8107	1.126

Notes: *** and ** denote statistically significant at the 0.1 percent and 1 percent level, respectively.

Table 3

Findings from bivariate OLS regression

Dependent Variable	Estimate	S.E.	t-value	p-value
Poverty rate	-1.1221	0.4658	-2.409	0.0179*
Gini index	0.0007	0.0029	0.233	0.8160
Human development score	0.2280	0.0911	2.504	0.0139*

Notes: * denotes statistically significant at the 5 percent level.

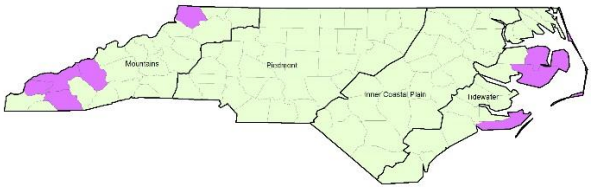


Figure 1. Clustering of tourism micro-entrepreneurship

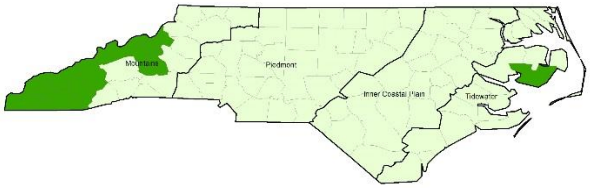


Figure 2. Clustering of national parks

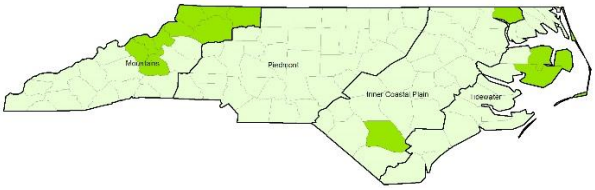


Figure 3. Clustering of state parks

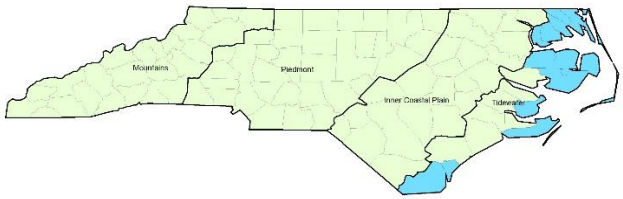


Figure 4. Clustering of percent water area

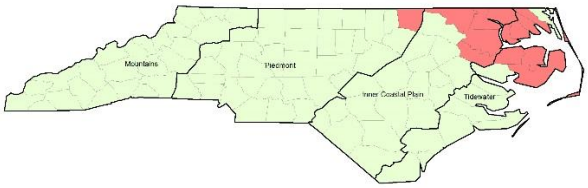


Figure 5. Clustering of historical places

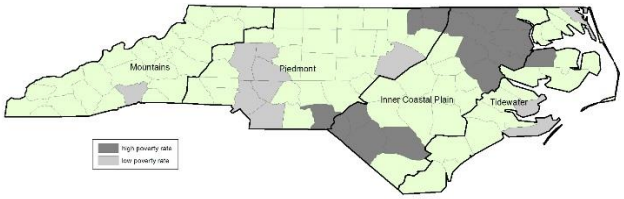


Figure 6. Clustering of poverty rate

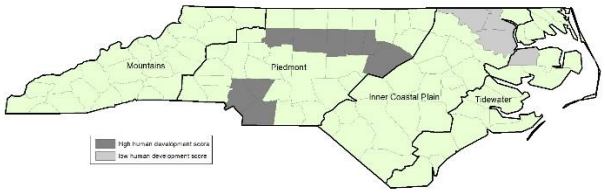


Figure 7. Clustering of human development

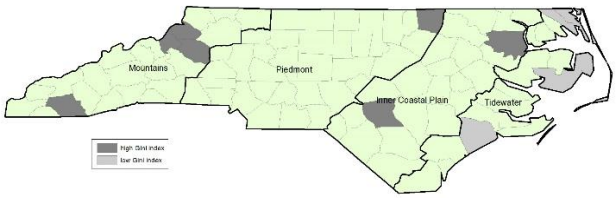


Figure 8. Clustering of Gini index

AN INVESTIGATION OF HIKER DIVERSITY AND INCLUSIVITY ON THE APPALACHIAN TRAIL

Author:
Greg Williams

Adventure Education, Wilderness Travel
Master of Arts Candidate
Prescott College
220 Grove Avenue, Prescott, AZ 86301

Problem Statement

While two-thirds of the nation's population lives within a day's drive of the A.T. (Goldenberg, Hill, & Freidt, 2008, p. 277; Osment, 2008, para. 4), over 70% of Trail visitors belong to the socially dominant power structure—educated, middle-class, heterosexual, Caucasian (to be used interchangeably with "White") males. In Manning's et al. (2001) and Ginn's et al. (2008) independent A.T. visitation studies, they illustrated stark differences in gender and race representation. For example, Manning's northeastern group produced results of 75% male and 96% White. Ginn's mid-Atlantic group showed 69% and 92%, respectively. According to documented research, therefore, the A.T. hiker population (as do other national park and forest visitors) fails to exhibit anything close to a representation of the United States (U.S.) populace. The study's two primary research questions follow—*What are some of the reasons that female and racial/ethnic groups on the A.T, relative to their U.S. population percentages, are less represented than are others?* and *How might the A.T. hiking community move toward more diversity, becoming more representative of our nation's population?*

Methodology

Describing the composite meaning of some specific aspect that several people share, this study takes a phenomenological approach to inquiry. This explains a phenomenon, such as grief,

anger, a particular annoyance, or a certain professional interest (Creswell, 2012). Rather than constraining the researcher to the traditional mode of data gathering, it inspires creativity in its immersion of subject matter. Instead of making assumptions, it challenges one to remain open-minded, allowing phenomena to reveal themselves (Rehorick & Bentz, 2008). The deepening of this awareness results in transformation with a goal of elucidating the true nature of something.

With a strong philosophical point of view, phenomenology describes lived experiences, what the people experienced, and how they experienced it (Moustakas, 1994). Its fundamental purpose is to reduce these individual experiences to the universal essence, the very nature of the phenomenon, or identifying an "object of human experience" (van Manen, 1990, p. 163), not the explanations or analyses themselves. The basis of phenomenology is on the philosophical "natural attitude," suspending judgments without presuppositions.

Whether coding by hand or using a computer, the process used for qualitative data analysis is the same: The inquirer identifies a text or image segment, assigns a code label, searches through the database for all pieces that have the same code label, and develops a printout of these text segments for the code (Creswell, 2012). I used ATLAS.ti, which is a variety of computer-aided qualitative data analysis software (CAQDAS) programs. It *assists* in the process of qualitatively analyzing collected data. Nonetheless, the researcher, not the program, does the coding, categorizing, and memoing.

The open-ended, interactive nature of the 26 interviews was conducive to having fewer participants provide deeper explanations (from 19 minutes to an hour and 11 minutes). Table 1 illustrates the demographic breakdown and interview locations. The participants' authenticity, candor, and consistency were important. A professional transcription service transcribed most of the digitally recorded interviews. By *member checking* (i.e., sharing transcripts with participants

and inviting feedback), I improved the study's accuracy, credibility, validity, and transferability. Along with vigilant record keeping, this also increased transparency of bias. With a research assistant, I considered crosschecking codes for accuracy. Because I created all the codes myself, however, this step seemed not as critical had at least one other person been coding. Instead of using a linear process for conducting research, I employed John Creswell's (2007) Data Analysis Spiral (Figure 1), which took the project through a series of loops and encouraged the performance of multiple steps simultaneously.

Discussion

"Racial and gender constraints to A.T. hiking" was the data category demonstrating the strongest connection to the aforementioned, first research question. This category explained the factor that discouraged people of color (POC) and females from hiking. These data produced 80 instances, in which someone cited a constraint to A.T. hiking. Within that category were 10 subcategories. The category of "constraints" explained the factors that discouraged, prevented, or excluded POC and female hiking. "Sociocultural" constraints (19 occurrences), "real or perceived racist or discriminatory attitudes" (16), "transportation access" (13), and "lack of awareness" (11) were the most prevalent.

The subsequent research question, responding to the problem that the former presented, underscored the importance of actions taken by authorities, which could have lasting public relations misfortunes. However, research participants also offered several suggestions for marketing the A.T. to their respective communities. I divided marketing across "racial/ethnic minority," "Caucasian female," and "Caucasian male" subcategories. Within each of those families, I divided further into (a) "live" (e.g., presentations, panel discussions, community workshops, excursions, etc.), (b) "retail", (c) "print", (d) "television/video/movies", and (e)

"Internet/social media." The most popular subcategory was "ethnic-live" (i.e., indicating ethnic minority suggestions of "live" marketing tactics). Quotes co-occurring with this subcategory and the second research question numbered 39 of 85 total occurrences (which include all "ethnic-marketing" subcategories) and 14 subcategories. Several participants believed that making the A.T. accessible to those who normally would not have access was paramount. The in-depth analysis of 26 interviews across four races of people, at least 11 ethnicities, one self-identified gay person, and five distinct demographic categories, carefully sought to illustrate the true essences of the participants.

Emerging from this research, the need to gain the interests of children was the most grounded theme. Another common thread that linked hikers to the Trail was either their early introductions to the A.T. or wilderness areas, or their friends who hiked. Adult, outdoor, recreation organizations also was a theme. Although interview questions included asking participants to share their views on lack of hiker diversity, the emergent details became thematic.

Implications and Recommendations

Having female and/or racially diverse rangers or Park Service employees to provide group demonstrations on backpacking and camping would be helpful. Further, leading these groups on overnight trips after "classroom" instruction and allowing them to experience it with the knowledge that a professional is accompanying them may assuage some of those fears. Providing transportation to groups of underrepresented, inexperienced hikers, gear loans (e.g., packs and water systems, tents and sleeping bags), and experienced backpack leaders, could be effective.

The study recommends a review of policy language. Although the A.T. may seem "primitive" (depending on the location), this is an unsuitable term for the hiking experience.

Some nationalities may take a dim view of such an idiom. Because this language is ingrained into the Wilderness Act of 1964, it may take a Congressional act to reflect a welcoming, inclusive 21st century mentality. Demonstrating the inclusivity of a new era, one fully intending to welcome all demographic groups could be an appropriate manner in which to celebrate the Act's 50th anniversary.

Among a cadre of diverse individuals, perhaps a good starting point for outreach would entail hiring practices. Engaging outdoor recreation organizations for adults and children seems to be profoundly popular. Because of the Trail maintenance clubs' involvements at local levels from one end of the A.T. to the other, perhaps geographically they are conveniently positioned. The participants involved in this research study potentially would serve as an exceptionally engaged, knowledgeable team of adults of varying ages, genders, and ethnicities that might serve as local liaisons or as role models and spokespersons (i.e., going to schools, community groups, churches, Scout troop meetings, and other organizations).

In marketing campaigns, outfitter retailers need to include POC. Not only are they not all capitalizing on tremendous profit potentials, but also it would be socially responsible. If outfitters were to sponsor transportation for these groups, rent or loan some gear, and perchance even hold raffles for gear prizes, the direct return on investments could be lucrative. Conceivably the land management resource agencies and retailers would find common ground in forming public-private partnerships. An additional idea conceived upon the amalgamated suggestions that hikers proposed, perhaps the aforementioned agencies and retailers would consider recruiting young people of underparticipating demographic groups to hike the A.T. and hiring a film crew to follow them. Subsequently, they could sponsor reality programs to broadcast on Black Entertainment Television, TV One, and Univision.

A potential dilemma that could arise from large numbers of new hikers is negative ecological impacts. Preservation of the wilderness character would be imperative. Another conflict that successful results of this study would cause is the losses that many backpackers would experience for the natural solitude. This is why educating new A.T. hikers to the importance of the "Leave No Trace" (LNT) ethical concept would be important. As part of the community outreach programs, therefore, LNT might be a significant part.

Since few empirical studies have been conducted on how the occurrence, awareness, and perception of criminal activities affect visitors to national forests, such a study of the A.T. could be useful. An additional element for future study might include a closer examination of social class, which many say is a very complex and influential factor determining who participates (Hartmann & Overdevest, 1989; Hutchison, 2000; Philipp, 1995). In each of these cases, of course, it would be imperative to include the input of people who represent the underrepresented groups. Still, further research relating to this thesis needs to include age extremes, people with disabilities or impairments, Native Americans (with a diversity of Tribal Nations), and an ethnic breakdown of the Asian race. Additional Hispanic ethnicities with hiking experience and other demographics of nonhikers should lead to robust insights.

References

Creswell, J. (2012). *Creative inquiry & research design: Choosing among five approaches*. (3rd ed.). Los Angeles: Sage.

Creswell, J. (2007). Qualitative inquiry and research design: Choosing among five approaches (2nd ed.). Thousand Oaks, CA: Sage.

Friese, S. (2012). *Qualitative data analysis with ATLAS.ti*. Thousand Oaks, CA: Sage.

Ginn, A., Zarnoch, S., Bowker, J., Cordell, H., Green, G., & Owens, T. (2008). *Conceptualization and implementation of the Appalachian Trail visitor use study*. In J. Schrader (comp.), 30th annual Southeastern Recreation Research (SERR) conference: Book of Abstracts. Gainesville: University of Florida, School of Forest Resources and Conservation, 12-14.

Goldenberg, M., Hill, E., & Freidt, B. (2008). Why individuals hike the Appalachian Trail: A qualitative approach to benefits. *Journal of Experiential Education, (30)*2, 277-281.

Hartmann, L. & Overdevest, C. (1989). *Race, ethnicity, and outdoor recreation participation: A state-of-the-knowledge review and theoretical perspective*. In K. Zera (Ed.), Southeastern Recreation Research Conference, 53-63, Athens, GA: Institute for Behavioral Research, U.S. Forest Service.

Hutchison, R. (2000). Race and ethnicity in leisure studies. In W. Gartner and D. Lime (Eds.), *Trends in Outdoor Recreation, Leisure and Tourism.* Cambridge, MA: CAB International.

Manning, R., Valliere, W., Bacon, J. Graefe, A., Kyle, G., Hennessy, R. (2001). Use and users of the Appalachian Trail: A geographic study. In G. Kyle. Proceedings of the 2000 Northeastern Recreation Research Symposium. Gen. Tech. Rep. NE-276. Newtown

Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station, 115-120.

Moustakas, C. (1994). *Phenomenological research methods*. Thousand Oaks, CA: Sage.

Osment, T. (2008). Appalachian Trail. Connecting Appalachian cultures with the world. Retrieved from http://digitalheritage.org/2010/10/appalachian-trail/

Philipp, S. (1995). Race and leisure constraints. *Leisure Sciences, 17*, 109-120.

Rehorick, D. & Bentz, V. (2008). *Transformative phenomenology: Changing ourselves, lifeworlds, and professional practices*. Lanham, MD: Rowan & Littlefield.

van Manen, M. (1990). *Researching lived experience: Human science for an action centered pedagogy*. London, Ontario, Canada: Althouse Press.

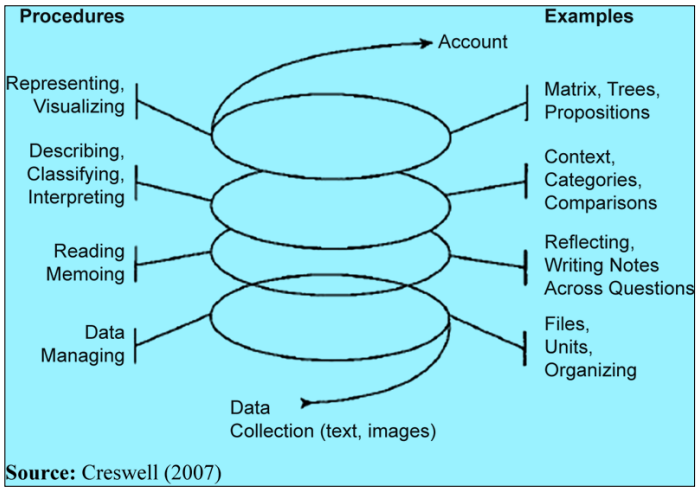


Figure 3. Creswell's Data Spiral.

Table 1. Demographic Breakdown and Interview Locations of Research Participants.

PSEUDONYM	RACE	GENDER	AGE	LOCATION/MEDIUM
Xiaohui	Asian	F	50	Shippensburg, PA/Appalachian Long Distance Hikers Association (ALDHA)
Jennifer	Asia Asian/White	F	23	Skype
Agbayani	Asian	M	29	Shippensburg, PA/ALDHA
Atasha	Black	F	22	Skype
Moesha	Black	F	55	Phone
Deondra	Black	F	51	Skype
Daryl	Black	M	20	Skype
Margarita	Hispanic	F	36	Cincinnati, OH office bldg.
Alejandra	Hispanic	F	45	Cincinnati, OH office bldg.
Honora	Hispanic	F	43	Cincinnati, OH office bldg.
Marisol	Hispanic	F	30	Cincinnati, OH office bldg.
Mira	Hispanic	F	54	Cincinnati, OH office bldg.
Cortez	Hispanic	M	41	Phone
Virginia	White	F	22	Skype
Susan	White	F	27	Shippensburg, PA/ALDHA
Joyce	White	F	68	Shippensburg, PA/ALDHA
Lisa	White	F	25	A.T.
Rita	White	F	53	East Tennessee State University
Callie	White	F	22	Skype
Stacy	White	F	26	ETSU
Artie	White	M	28	A.T.

Matthew	White/Cayenne	M	63	Shippensburg, PA/ALDHA
Robert	White	M	61	Skype
William	White	M	26	Skype
Pete	White	M	35	ETSU
Dalton	White	M	57	A.T.

FUTURE STEWARDSHIP: THE PERCEPTIONS AND ATTITUDES OF COLLEGE-AGED STUDENTS ABOUT THE NATURAL ENVIRONMENT

Authors:
Angela Colonna, University of Florida
Taylor V. Stein, University of Florida

Affiliation:

School of Forest Resources and Conservation
345 Newins-Ziegler Hall
PO Box 110410
University of Florida
Gainesville, FL 32611-0410

Introduction

The future consumption of the world's natural resources is expected to increase by 56 percent by 2040 (EIA, 2010). Younger generations will be the future stewards of the changing natural environment and their perception of the natural world will impact the ways in which natural resources and land will be managed. For this reason, to have a grasp on how nature and the natural environment are perceived by this generation holds importance. Numerous factors can impact the relationship between humans and the natural environment, but more specifically this can be shown by connecting past experiences with current perceptions and attitudes. This study sought to understand how college students viewed the natural world, how significant life experiences may impact this view, and to identify the ideal communication channels that can be used to reach this population.

Methods

The method used to assess these perceptions and attitudes was focus groups. Focus groups were used to focus on possible emergent themes that could evolve from an informal conversation (Bryman, 2004). These themes can emerge from "how people respond to each

other's views and build up a view out of the interaction that takes place within the group" (Bryman, p. 346, 2004). The sample consisted of undergraduate students in a variety of majors with and without a focus on natural resources (See Figure 1 and 2). The total of participants was 37 undergraduate students.

Each focus group consisted of 7-12 students and comprised of activities and questions presented to the group. The groups were asked about their past experiences outdoors and how their perception of recreation was impacted by these experiences. Questions specifically asked about participants' attitudes towards outdoor-based recreation, in terms of past significant life events. Students were also asked how, in terms of information seeking, they gather and sort through information available to them about participating in recreation. This media includes digital media in terms of websites, social media, and social networking sites and traditional media in terms of brochures, guidebooks, and maps.

Results and Discussion

Results showed that natural resource majors held more intrinsic values; whereas, non-natural resource majors held more extrinsic values about the natural world. Both majors showed interest in the outdoor recreation but the initiative to go outdoors was more apparent with the natural resource majors. This initiative helped for this group to stick out in comparison to others who may hold nature and outdoor-based recreation in a positive light but not place efforts into going outdoors. A majority of students used digital media to gather information about recreation options, but still gave purpose to the traditional channels available too. The ideal digital media channels included social media (i.e., Facebook), but websites, from private and public entities, were the main informational source.

> "I start with looking at websites for activities then go from there and play it by ear to gather more information." (Female, Non-Natural Resources)

"Websites are a good way to start planning a trip." (Female, Natural Resources)

Traditional channels like brochures, guidebooks, and maps were cited as very useful tools to be used while recreating. Since these channels did not need internet access or required a battery, they could always be useful regardless of the activity being done.

> "The thing with guidebooks or maps is that they don't have batteries that could die. And they don't need internet."(Male, Non-Natural Resource)

> "You have to hit multiple outlets. With written literature, it always there and you don't have to turn it on. You just pick it up and see the images." (Male, Natural Resource)

Participants of non-natural resource majors and natural resource majors both mentioned the importance of the word-of-mouth from friends and family when gathering information. The credibility and transparency of the information source is highly valued and is key when attracting recreationists.

> "I think it is always good to ask friends is a great place to start to learn the "ins and outs" of the activity. Then I would go online to further research." (Female, Non-Natural Resource)

> "I trust a person more because I know what their motives are; they aren't trying to sell anything to me." (Female, Natural Resource)

> "I like to look at blogs because they may have information from a person that is similar to me and what information I may need…I trust this source." (Female, Non- Natural Resource)

These results imply that management should allocate resources to producing and maintaining a digital media presence for users to best support their interests, but not neglect traditional, hard copy channels like guidebooks and maps. Interaction amongst users can be

supported through the use comments or reviews by other users of a website or blog to increase transparency and credibility to these sources.

Literature Cited

Bryman, A. (2004). *Social research methods*. 2nd ed. Oxford University.

EIA projects world energy consumption will increase 56% by 2040. U.S. Energy Information Administration. July 25, 2014. http://www.eia.gov/todayinenergy/detail.cfm?id=12251.

Figure 1. The distribution of non-natural resource major university undergraduate participant majors.

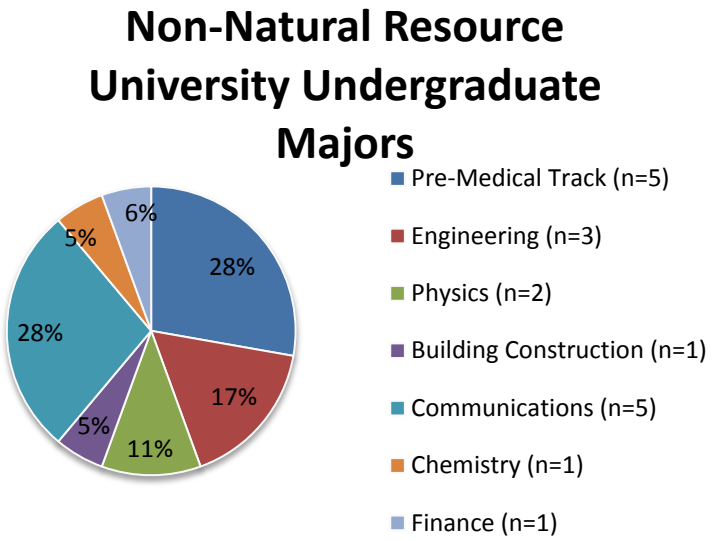
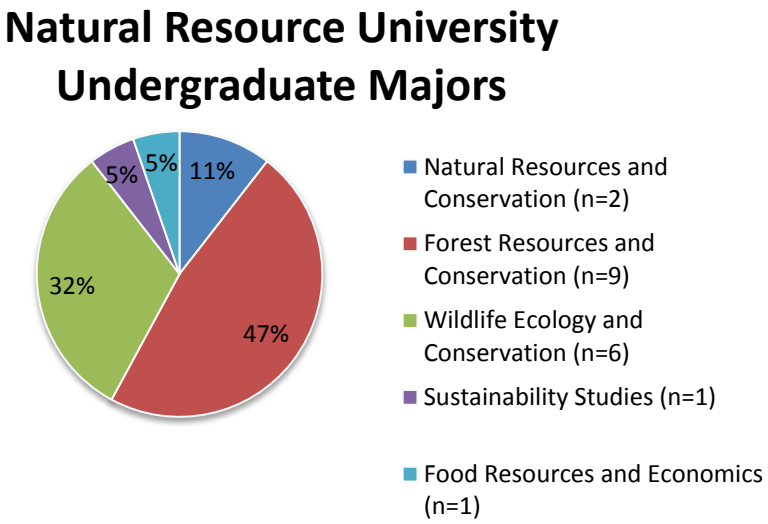


Figure 2. The distribution of natural resource major university undergraduate participant majors.



SERIOUS LEISURE AND LEISURE MOTIVATIONS AMONG SELF-IDENTIFIED CYCLISTS

Author:

Zachary Thomas Herman

Recreation Management Program
111 Rivers St., Box 32071
Appalachian State University
Boone, NC 28608

Introduction

The primary purpose of this study was to examine the motivations of mountain bikers, commuter cyclists, and other cyclists using the Serious Leisure Inventory and Measure (SLIM) created by James Gould and the Leisure Motivation Scale.

Motivations behind participation in recreation activities is a growing area of study, and the implications of the results of this research have far reaching consequences in a variety of fields both academic and non-academic. Understanding underlying motivations behind recreation can inform not just recreation studies, but also educational programs, city planning, design, fitness programs, tourism, exercise science, psychology, and childhood development (Xiangyou, 2010, pg. 3).

However not all forms of leisure and recreation are approached in the same manner. For some people what may start out as a simple form of recreation can slowly become an integral part of their lifestyle, self-image, and sense of self. For example, the motivations behind a day of snowboarding may be different for a person on a weekend family vacation and a person sponsored by Red Bull. The person sponsored by Red Bull to snowboard participates in what is now known as serious leisure. The recreation activity of snowboarding has shifted from a

weekend diversion to a lifestyle in which massive amounts of time, money, mental energy and physical stress have been committed. According to James Gould (2008) serious leisure is defined as: "The systematic pursuit of an amateur, hobbyist, or volunteer activity sufficiently substantial and interesting for the participant to find a career there in the acquisition and expression of a combination of its special skills, knowledge, and experience" (pg. 2). Serious leisure is an activity that morphs into something that is not just a fun or satisfying way to spend time that is not dedicated to work or self-care, but a mixture of work, leisure and self-care. Casual leisure, on the other hand, is short-lived, immediately pleasurable, and requires little skill (Gould, 2008, pg. 2).

Serious leisure is an activity that becomes a major part of a person's self-identification and lifestyle choices (Scott, 2012, pg. 1). Serious leisure participants are people who, within a given activity, persevere and overcome difficulties, have careers involving the activity, evince effort and utilize specialized knowledge and skills, pursue their avocations within leisure social worlds, and experience durable benefits (Scott, 2012, pg. 3). Serious leisure participants do not need to make money in their activity but they do need to have a similar level of commitment to the activity. What defines a serious leisure participant is a high level of physical, emotional, and financial investment.

Cycling as a form of leisure and its attached motivations has seen very little scholarship. Studies performed by LaChausse (2006) and Brown (2009) are the only two notable studies dealing directly with the leisure motivations of cyclists. Brown's study *Instrumentation and motivations for organized cycling: the development of the Cyclist Motivation Instrument (CMI*) looked to create a tool for measuring motivations among all cyclists and was designed specifically with serious leisure conceptual understandings in mind. Brown's study looked not

just at individual internal factors for motivation, but also cultural and ecological influences. Brown examined five main motivation subsets: social, embodiment, physical health outcomes, self-presentation, and environmental exploration. Brown's study focused mainly on competitive cyclists. Though his research is valuable it also overlooked non-competitive cyclists, a large part of the cycling population.

LaChausse's study was massive in both scope and scale. LaChausse study, *Motives of Competitive and Non-Competitive Cyclists,* examined the motivations of the cycling population looking at a more representative sample. Competitive cyclists easily fit into the mold of serious leisure participants, but non-competitive cyclists like commuters, messengers, long distance cyclers, BMX, and mountain bikers all fit the category of serious leisure without requiring that they be competitive.

LaChausse's model was based on the *Motivations of Marathoners Scale* (MOMS) model which was used to measure motivations of marathon runners. MOMS examined even more aspects of motivations than Brown. LaChausse's survey examined health orientation, weight concern, goal achievement, competition, recognition, affiliation, coping, life meaning, and self-esteem.

The intent of this research is to replicate LaChausse's study using a different model. LaChausse's model was built on scale meant for marathoners; though the subcultures of marathoners and cyclists share similarities, they have enough differences that a model designed specifically for cyclists will yield more accurate results. This research will use the Serious Leisure Inventory and Measure (SLIM) created by James Gould. SLIM measures 12 different aspects of serious leisure and was created to be adaptable to any leisure subculture or discipline. SLIM's 18 aspects include perseverance, leisure career, significant effort, durable outcomes,

individual outcomes, self-image, self-gratification, image re-creation, financial return, group outcomes, unique ethos, and identification with pursuit. The SLIM model is a dramatically more complex examination of serious leisure motivations, ideally improving on the results interpreted by LaChausse.

Brown (2009) failed to look at a complete population by excluding competitive cyclists. LaChausse failed to look at cycling from a serious leisure metric, ignoring the nature of cycling and long-term cyclists. This study will attempt to fill in the holes and gaps in both Brown's and LaChausse's studies.

Methods

This research project used an online survey. The survey consisted of three parts. The first part used a simplified version of the Serious Leisure Inventory and Measure (SLIM) created by James Gould. The second part used the Leisure Motivations Scale, and the third part collected researcher targeted demographics. The survey consisted of 63 questions: 18 Likert-type scale questions using the SLIM model which employs a seven point scale, 40 Questions from the Leisure Motivations Scale that makes use of a five point scale, and 5 demographic questions.

The survey was created on and hosted through Surveymoneky.com. Participants in the study were found through various cycling organizations including: Appalachian State Cycle team, Les McRea Cycle team, Boone Area Cyclists, AORE List Serve, a competitive women's cyclist list serve used by the Appalachian State Exercise Science Department, and multiple personal contacts. All participants were self-identified cyclists. The survey was sent out via email to the collected participants, from February 1st through the 16th of March. The sample size was 93 participants out of 400 contacted resulting in a 23% response rate. The survey was anonymous and totally voluntary. Data collected through the survey was analyzed using Excel

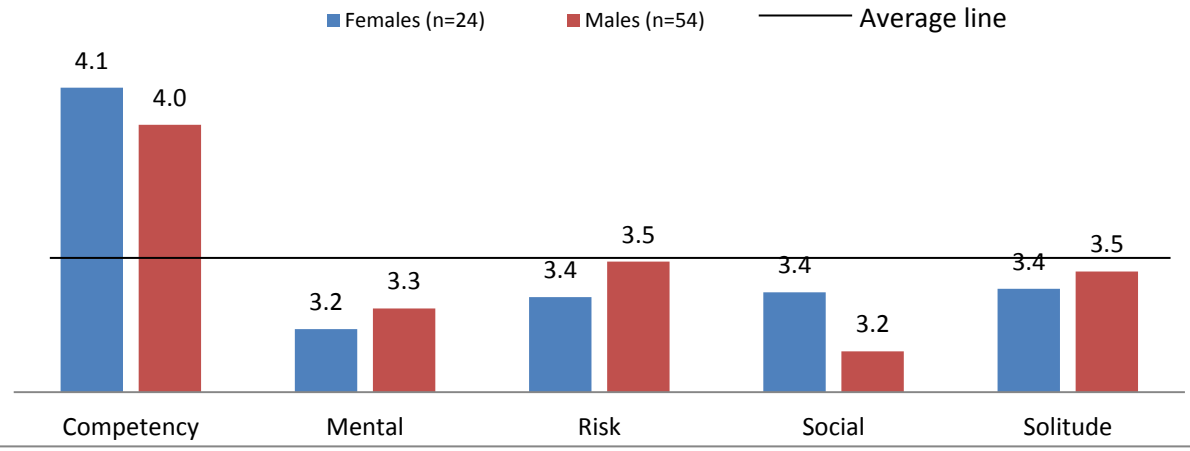
and SPSS. This project was approved by IRB of Appalachian State on 01/28/2014.

Results

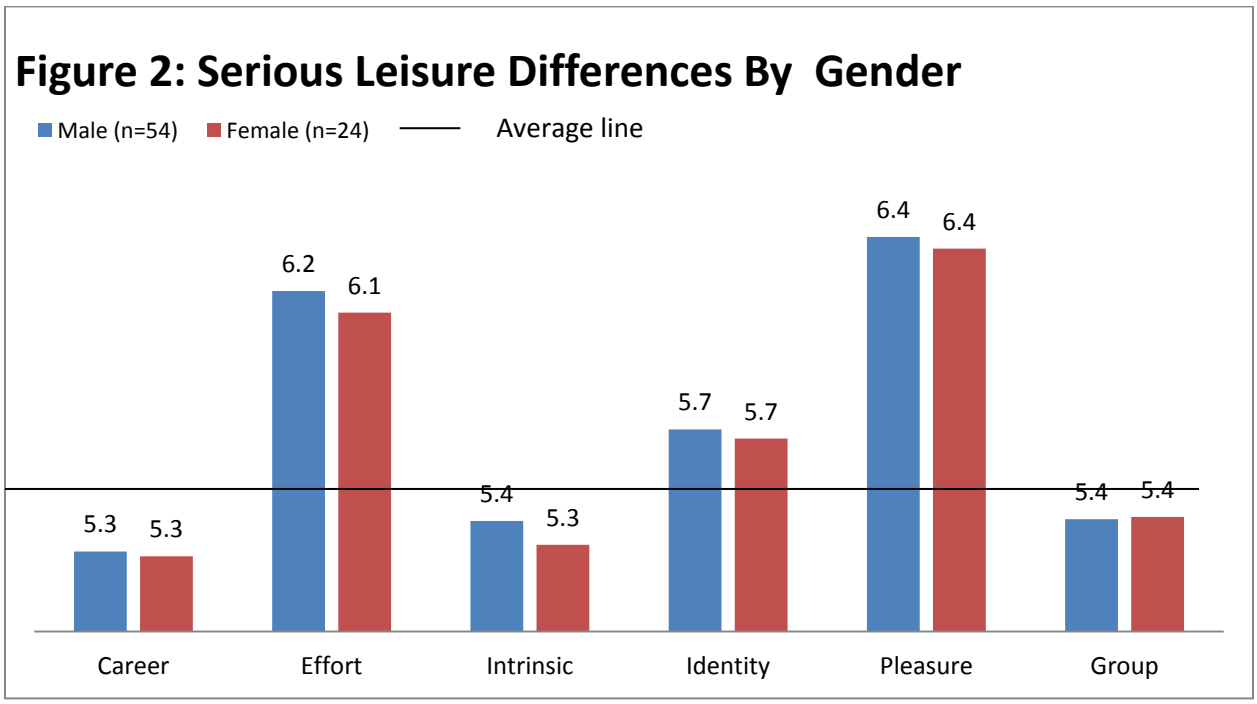
The data consisted of 93 respondents - 26 respondents were female, 53 were male and 14 chose not to specify gender. Individual cycle sports were sorted, according to those who practiced them. Participants, who participated in a given sport over 10 times a month, were identified as a practitioner. All sports that had an (n) size of less than five were removed from the data pool. The only sports with a size greater than five were commuters with n = 26 and mountain bikers with n = 12. Within Age groups 20-29 had an n of 25, 30-39 had an n of 15, 40-49 had an n of 13, 50-59 had an n of 13, and 60-69 had an n of 6. The mean age was 37, Median was 38 mode was 20, and a range of 53. For income the mean income was 52,173.00, the median was 44,000.00, the mode was 100,000.00, minimum was 0.00 and maximum was 100,000.00, with 67 respondents reporting income. The participants were also sorted according to their local geography, weather it was flat, mountains, or hills. Within the three classifications flat had an n of 6 hills had an n of 13 and mountains had an $n = 59$.

The motivations across gender, seen in Figure 1, were all within a tenth of a point from each other. The strongest motivator among the Leisure motivation scale was competency with a score of 4.1 out of five which was more than two standard deviations above the average motivation score of 3.5.

Figure 1: Motivations Differences Among Male and Female
(1= low to 5 high scale)

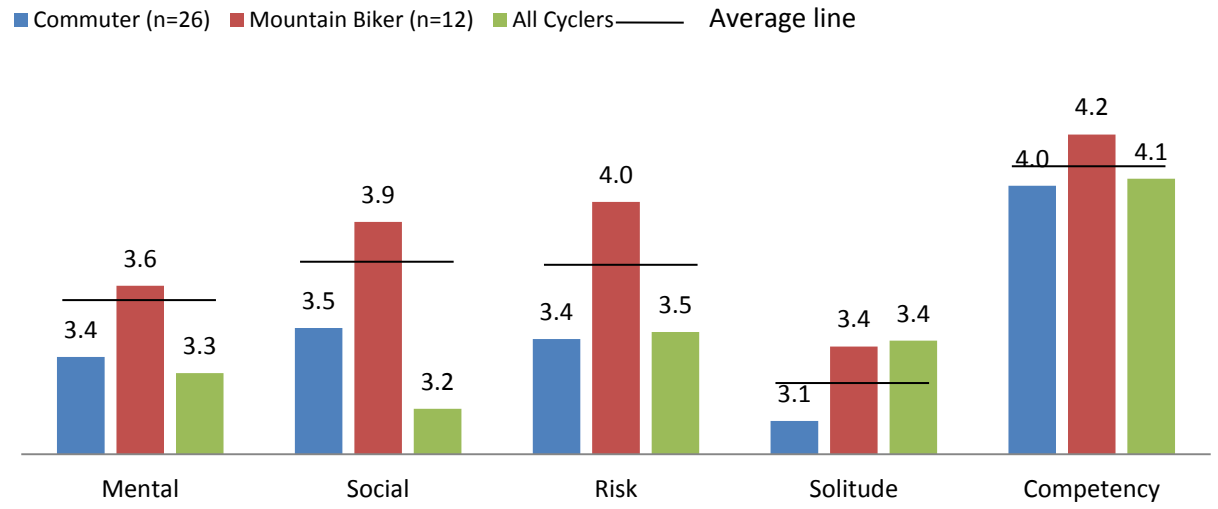


The strongest motivator among gender for serious leisure, seen in Figure 2, was "pleasure" with a score of 6.4 out of 7 and then "effort" with a score of 6.2 out of 7. Both scores in effort and pleasure were two standard deviations above the mean which was 5.5. The differences in serious leisure motivation scores between gender was also within a tenth of a point of each other.



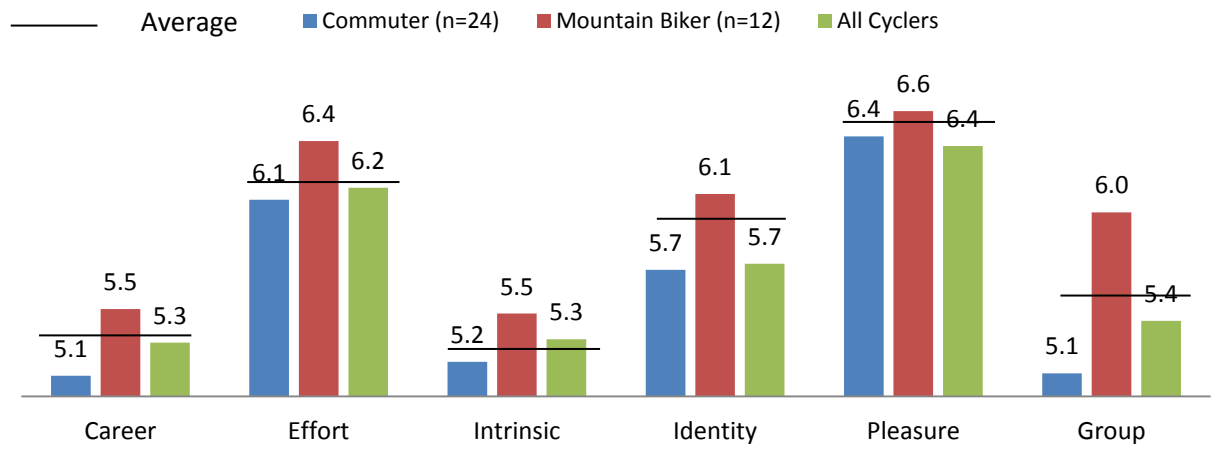
In Figure 3, measuring differences in leisure motivations, among mountain bikers and commuters, the strongest Leisure Motivator, with an average score of 4.1 was competency. This is true across for all bikers, participating in the survey. Competency was also two standard deviations above the mean of 3.7. Mountain bikers had the strongest leisure motivation score of all the participants. Mountain bikers also showed strong motivations n risk seeking, and social. The mountain bikers motivation in social and risk were well above the scores for commuter and all bikers in those same categories. For both commuters and all cyclists competency was the only leisure motivator that has high enough to be significant.

Figure 3: Motivation Differences Between Mountain Bikers and Commuters



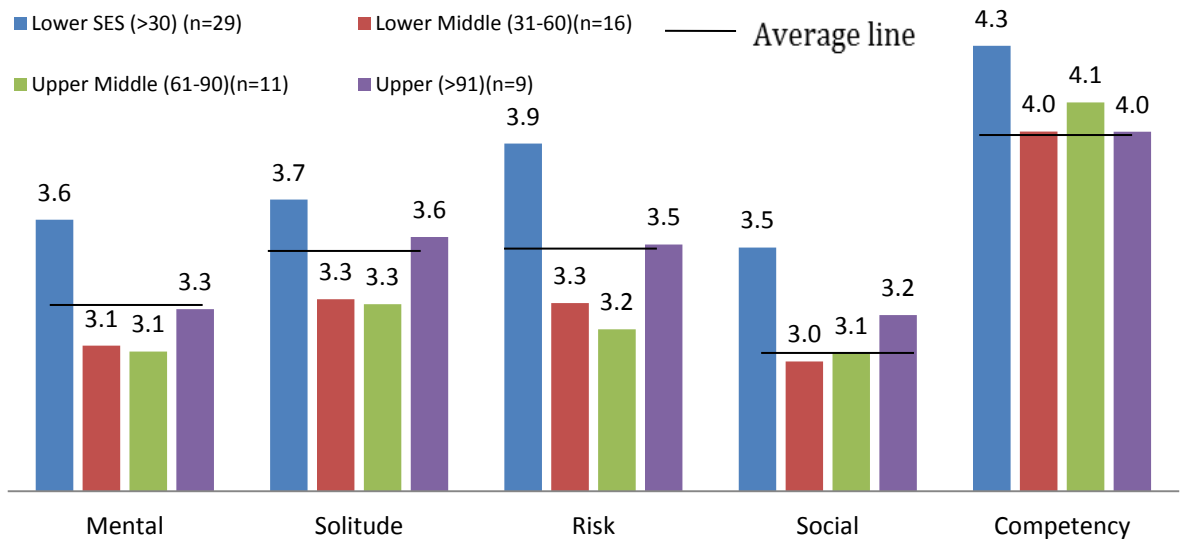
The strongest serious leisure motivators among commuters and mountain bikers, as seen in Figure 4, was pleasure first with a score of 6.4, and then effort with a score of 6.2. In serious leisure motivators, Mountain bikers showed a strong motivation toward group connection with a score of 6.0 out of 7, a solid .6 points above all cyclists and .9 points above commuters.

Figure 4: Serious Leisure Differences Between Commuters and Mountain Bikers



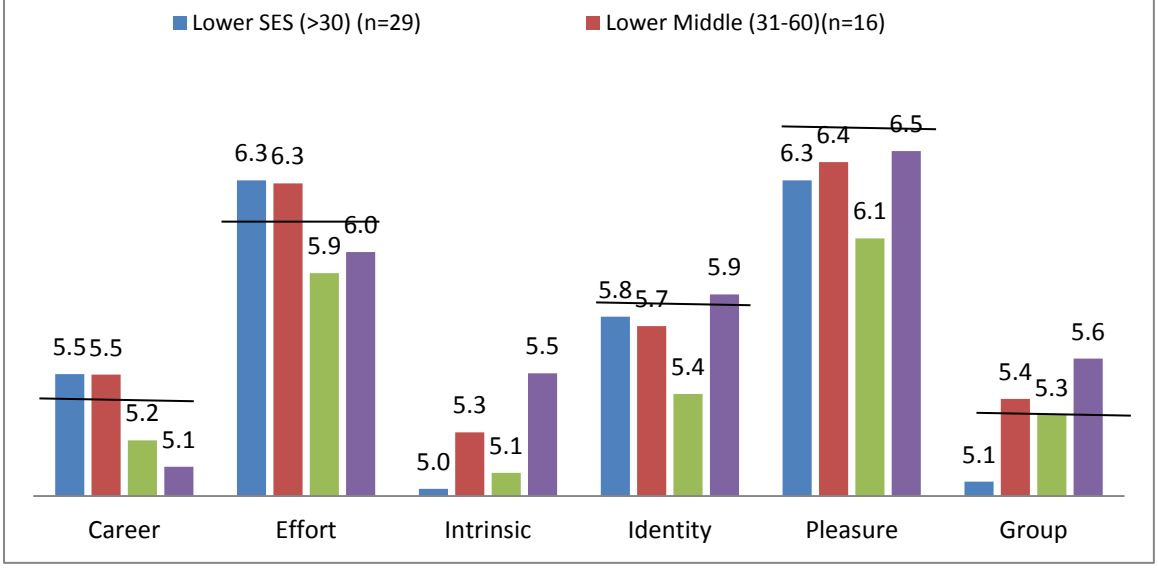
Across income, as seen in Figure 5, the strongest leisure motivator was Competency with a score of 4.0. while the people in the lowest income group making between 0 and 30,000 a year had the strongest motivations across groups scoring well above the mean in all categories. People in the lower SES, making between 0 and 30,000 a year were consistently more motivated in all categories of leisure motivation.

Figure 5: Motivations Differences Across Income

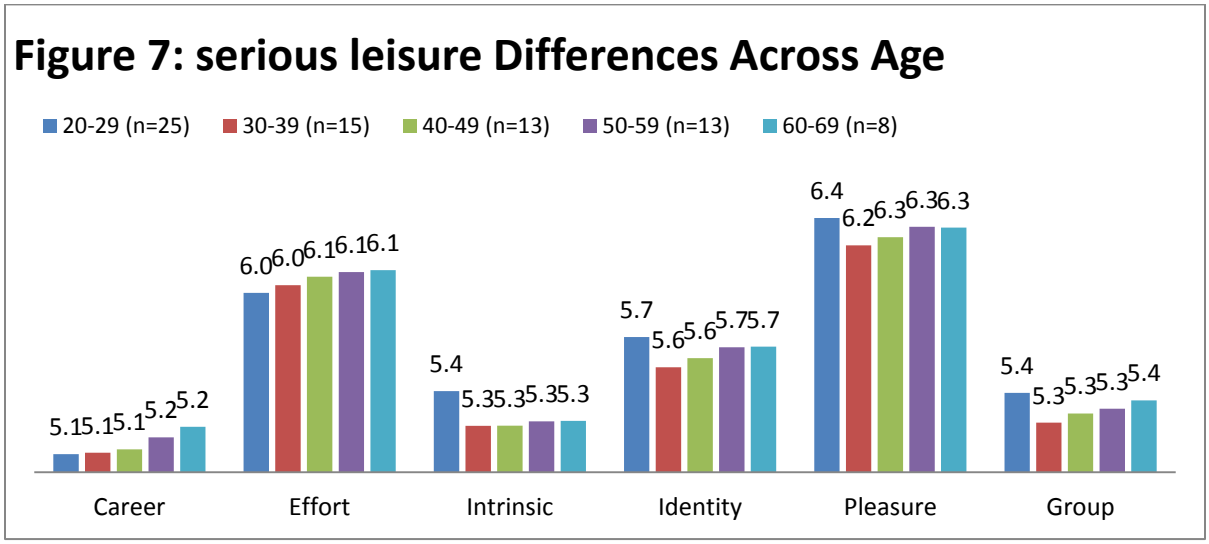


The strongest serious leisure motivators across income, seen in Figure 6, were pleasure with a score of 6.2 and then effort with a score of 6.0.

Figure 6: Serious Leisure Differences Across Income level



The serious leisure motivations across age groups, seen in Figure 7, were typical with pleasure and effort being the strongest motivators scoring 6.3 and 6.1 respectively. Figure 7 also shows a steady increase in serious leisure motivation as age increases. Participants aging between 60-69 were equal to or more motivated than participants aging between 20-29.



Conclusions

Cycling should be studied as a recreational activity with very strong serious leisure potential. When looking at serious leisure motivations across age, there was a steady increase in motivation as age increased. As cyclists get older their motivation to continue cycling will increase. Serious leisure activities are activities whose motivation increases in intensity with time. Across all age groups the biggest serious leisure motivator was pleasure followed by a sense of effort. The differences in motivations for men and women to participate in cycling were not very different. The scores for both leisure motivation and serious leisure were never more than a tenth of a point in difference. The major motivators for both men and women were a sense of competency, or skill development. The motivators that help turn cycling into serious leisure across both genders and sports were a sense of pleasure, and then accomplishment through effort expended; parallels a sense of competency and flow.

The motivations for commuters were below average, most likely due to commuting being both leisure and transportation. The strongest motivator for mountain bikers was also a sense of

competency, or mastery of skills. A sense of group connection or social connection was a very powerful serious leisure motivator for mountain bikers. Though not the highest motivator the score was .6 over the score for all sports and almost a whole point higher than commuters. Across income levels the motivators were the same. The strongest leisure motivator was a sense of competency and the strongest leisure motivators were pleasure followed by effort.

Social connections, on the whole, were not heavily important to cyclists. The motivation to cycle due to a sense of social or group connection had little influence on a cyclists desire to ride. Cyclists are also not ridding to give them a sense of solitude. Cyclists are fine ridding in a group or by themselves.

Almost totally across all demographic a sense of competency was the highest leisure motivator. Cyclists want a sense of skills development, a sense of competency. This sense of competency transfers over to the serious leisure motivators as well. Pleasure and effort were the highest serious leisure motivators across income, age, gender and discipline. Cycling provides a mix of pleasure and effort that provides a sense of flow and skill development.

Program Recommendations

The research suggests that the strongest way to motivate people to participate in cycling is to give them a sense of skill development, and encourage competency. Clinics on safe commuting techniques, and distance riding, as well as trail riding and mountain biking, are all likely ways to encourage skills.

Mountain bikers need a sense of group connection, this is most likely due to safety needs, if an accident happens on trial. Group Mountain biking rides with mixed skill levels would provide both a sense of group connection and an opportunity for a sense of competency.

Recommendations for Future Research

Future research will require a larger, more diverse, and more representative sample of cyclist, across region, cycling discipline, income, age, and gender. The Sample from this research has a relatively small sample size compared to similar studies, which often reach between 1,200 and 1,500 participants. The respondents were also dispersed almost exclusively in the southern Appalachian mountain region, creating an unrepresentative sample. This study also has a self-selection bias so creating a random sample, of cyclists is needed.

Use an expanded version of the SLIM for a more accurate view of serious leisure motivators. Also use Optimal Level of Arousal scale to look at possible connections to a sense of "flow" satisfaction among cyclists. Possibly examine if serious leisure as a form of leisure is connected to personality traits. Look for self identified cyclists. Examine cycling among older populations with possible increasing physical limitations.

References

Brown, T. D., O'Connor, J. P., & Barkatsas, A. N. (2009). Instrumentation and motivations for organised cycling: the development of the Cyclist Motivation Instrument (CMI). Journal Of Sports Science & Medicine, 8(2), 211-218.

Gould, J., Moore, D., McGuire, F., & Stebbins, R. (2008). Development of the Serious Leisure Inventory and Measure. Journal Of Leisure Research, 40(1), 47-68.

Gould, J., Moore, D., Karlin, N. J., Gaede, D. B., Walker, J., & Dotterweich, A. R. (2011). Measuring Serious Leisure in Chess: Model Confirmation and Method Bias. Leisure Sciences, 33(4), 332-340. doi:10.1080/01490400.2011.583165

LaChausse, R. G. (2006). Motives of Competitive and Non-Competitive Cyclists. Journal Of Sport Behavior, 29(4), 304-314.

Scott, D. (2012). Serious Leisure and Recreation Specialization: An Uneasy Marriage. Leisure Sciences, 34(4), 366-371. doi:10.1080/01490400.2012.687645

Xiangyou Sharon, S., & Yarnal, C. (2010). Blowing Open the Serious Leisure-Casual Leisure Dichotomy: What's In There? Leisure Sciences, 32(2), 162-179. doi:10.1080/01490400903547179

TOURISM PROMOTION FOR UNESCO WORLD HERITAGE SITES: AN EVALUATION OF GOVERNMENT WEBSITES FROM FOUR COUNTRIES

Authors:
Karly Bitsura-Meszaros[1]
Matt Whitlow[1]
Jing Li[1]
Andréanne Méley[2]
Eric Thompson[1]
Yu-Fai Leung[1]
Carla Barbieri[1]

Affiliation:
North Carolina State University
[1] Department of Parks, Recreation and Tourism Management
[2] Department of Forestry and Environmental Resources,
College of Natural Resources

Address:
North Carolina State University
5107 Jordan Hall
Box 7106
Raleigh, NC 27695-7106

Problem Statement

The UNESCO World Heritage Program was established to identify, protect and preserve unique sites recognized for their universal value to humanity. Because of their outstanding natural and cultural resources, many World Heritage sites in the world are also prime destinations for domestic and international tourism. While the U.S. was instrumental in developing the World Heritage Convention and Program, the U.S. has not actively utilized the World Heritage brand to promote these sites. Recent U.S. Federal Government interest in promoting inbound tourism prompted the discussion of American brands including 'World Heritage,' which may be valuable in tourism marketing. This pilot study was conducted to develop an understanding of tourism promotion strategies for World Heritage sites through an

evaluation of official government websites. The specific study objectives were: (1) To identify government or official websites that use UNESCO World Heritage brand in tourism promotion; (2) Develop and apply a tool for evaluating contents of World Heritage tourism promotion websites such as marketing themes and strategies, website quality, and World Heritage and sustainability education; and (3) to compare and contrast evaluation results among selected countries.

Methodology

Four countries (Australia, Brazil, China and Mexico) were selected for this analysis in consultation with staff at U.S. National Park Service Office of International Affairs. The countries were chosen based on their geographic distribution, perceived activeness in World Heritage tourism promotion, and their importance as source markets for international tourism in the Unites States. Keyword searches were used on Google.com (and Baidu.net for Chinese sites) to specifically identify Government sponsored World Heritage promotion websites for each country. In total 20 websites were found. These websites were evaluated through an adaptation of the Evaluation by Characteristics method (Chiou, Lin, & Perng, 2011), which allowed for flexibility in creating the first World Heritage website evaluation tool. Five dimensions were created, which include: (1) communication, (2) site attractiveness, (3) marketing effectiveness, (4) World Heritage specifics, and (5) technical characteristics. A total of 33 attribute questions were formed and grouped into these five dimensions.

Results

Results suggest some variation in web-based tourism promotion strategies among the

four countries. Evaluation results show significant variability in website quality across countries, but all countries seem to score relatively low in regards to World Heritage-specific attributes. These results may have significant implications on the future promotion strategies and the role of the UNESCO World Heritage program in such efforts. Evaluation results also revealed good practices of website design that can be applied by the United States in their World Heritage website marketing.

References

Chiou, W.-C., Lin, C.-C., & Perng, C. (2011). A strategic website evaluation of online travel agencies. *Tourism Management*, 1463-1473.

An Examination of Tourist's Reasons for Visiting and their Impacts on a Coastal Destination

Authors:
Eric Frauman
Harrison Smith
Josh Boone

Affiliation: Department of Recreation Management and Physical Education, Appalachian State University

Address: Holmes Convocation Center, ASU Box 32071, Boone North Carolina 28608

Introduction

Many economies surrounding a number of coastal communities are experiencing growth primarily due to nature and heritage based tourism, but how much visitation can be sustained before a coastal community loses its appeal (Butler, 1990)? While there is plenty of supply side research documenting how coastal communities are impacted by tourism, as well as research examining resident perceptions of tourism impacts (see Frauman & Banks, 2011), there is little research examining tourist's views linked to impacts (see Puczkó & Rátz, 2000), particularly as it is revealed via their motivations for visiting.

Do tourists believe they positively or negatively impact the destinations they visit, particularly those linked to the natural environment? Do their reasons for visiting offer additional insight into their impacts? As such, this paper primarily examines tourists' reasons for visiting and perceived impacts on a popular coastal destination.

Methods

A 2-page survey was developed and administered to 70 tourists visiting a popular coastal destination in South Carolina in May, 2013. Using a 5-point Likert scale (1=extremely negative;

5=extremely positive), the survey measured seven types of conditions linked to the natural environment. In addition, eight reasons (motives) for visiting was measured using a 5-point Likert scale (1=not at all important; 5=extremely important). Demographic and visit related questions were also asked. Many items for the survey were developed by assessing previous studies that had examined resident or tourist perceptions of impacts and travel motivation literature (Frauman & Banks, 2011; Puczkó & Rátz, 2000).

Results

Descriptive statistics for the natural environment condition items and motives for visiting are represented in Figures 1 and 2 respectively. In general, tourists perceive their potentially negative impacts on natural resource conditions with mean scores ranging from 2.26 (litter) to 2.84 (erosion), where 2 = "somewhat negative" and 3 = "neither negative or positive." Motive overall mean scores ranged from 2.54 (attending a special event) to 4.05 (vacation), with outdoor recreation, going to the beach, dining, and visiting family/friends each having mean scores between three (important) and four (very important).

Figure 1 - Tourist Perceptions of Impacts on Natural Resource Conditions

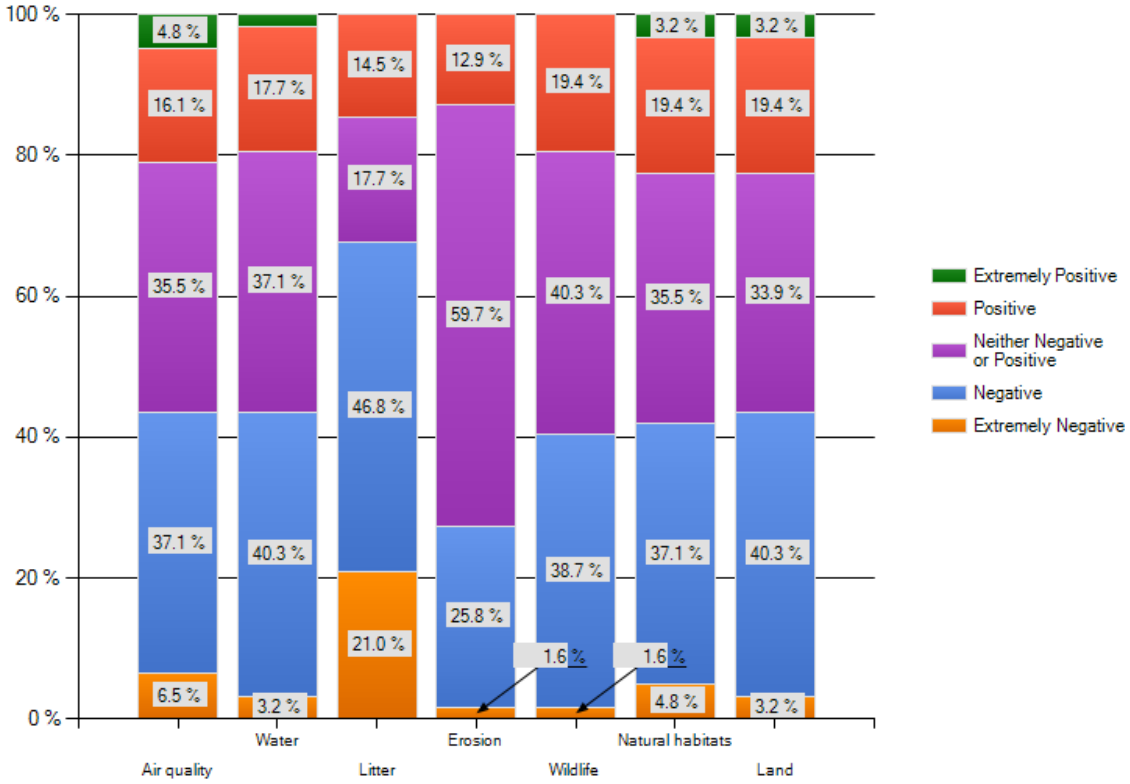
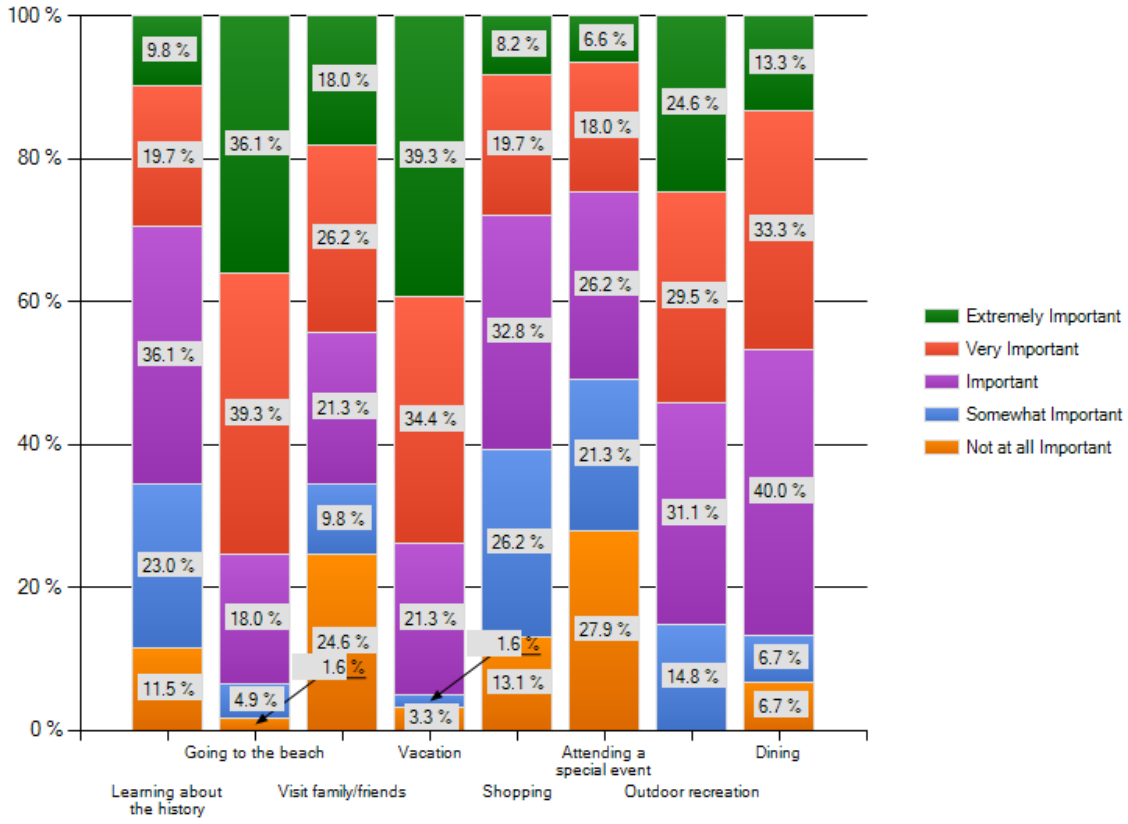


Figure 2 - Reasons for Visiting



To assess how motives for visiting might differentiate respondents across the natural resource conditions, motive items were recoded: respondents who evaluated an item as "not at all" or "somewhat" important were placed in Group 1; those who evaluated an item as "very" or "extremely" important placed in Group 2. Independent sample t-tests were then performed on the motives (Table 1).

For "learning about the history" one statistically significant difference ($p < .05$) was found concerning "water"; in addition, Group 1 perceived greater negative impacts (lower mean scores) on all seven natural resource conditions. For "visit family/friends" six significant differences were found with Group 1 having lower mean scores on all seven conditions. For

"attending a special event" one significant difference was found concerning "air quality"; Group 1 had lower mean scores for all seven conditions. For "shopping", "dining", "going to the beach" and "outdoor recreation" no significant differences were found although Group 1 had lower mean scores for all seven conditions. Lastly, for "vacation" no statistically significant differences were found.

Table 1 – Mean Differences Between Motive Groups across Natural Resource Conditions

Motive natural resource condition	Mean Group 1[1]	Mean Group 2[1]	*p*-value[2]
Learning about the history			
water	2.57	3.28	.014
Visit family/friends			
air quality	2.48	3.11	.024
water	2.43	3.11	.007
litter	1.95	2.63	.015
wildlife	2.48	3.15	.004
natural habitats	2.53	3.11	.031
land	2.33	3.30	.000
Shopping			
air quality	2.63	3.27	.039

[1] 5-point Likert scale (1=not at all important; 5=extremely important).
[2]Only statistically significant differences ($p < .05$) are shown in the Table.

Discussion

Overall, respondents perceive they have somewhat negative impacts on the natural conditions, although respondents with lesser developed reasons for visiting (Group 1) were in

general more concerned about their negative impacts versus those with more developed motives (Group 2). These findings are perplexing as it would seem visitors, particularly those who place greater importance on natural environment settings (e.g., outdoor recreation, going to the beach), would be more likely to perceive negative impacts to resource conditions versus those who place less importance on these types of conditions. More research with a larger sample size is needed to closer examine this concern. In addition, an examination of how previous experience with the destination relates to motives and perception of conditions should be performed, as should the inclusion of other data (e.g., education and income levels, number of travel party, age).

Although the findings from this study are limited, the groundwork for a larger study is in place that should ultimately aid resource managers and tourism officials in striking a balance between the needs of tourists and the natural environment. If replicated, it is expected that this study could aid other coastal tourism communities in better understanding the tourists they serve.

References

Butler, R. (1990). Alternative Tourism: Pious Hope or Trojan Horse? *Journal of Travel Research, 28,* 40–45.

Frauman, E., & Banks, S. (2011). Resident perceptions of tourism development in a gateway community: Incorporating importance-performance analysis into a limits of acceptable change framework. *Tourism Management, 32,* 128-140.

Puczkó, L., & Rátz, T. (2000). Tourist and resident perceptions of the physical impacts of tourism at Lake Balaton, Hungary: Issues for sustainable tourism management. *Journal of Sustainable Tourism, 8* (6), 458-478.

ANGLER AND NON-ANGLER DEMAND FOR VALUE-ADDED PRODUCTS AND SERVICES ASSOCIATED WITH FOR-HIRE SALTWATER BOAT TRIPS ON THE SOUTH CAROLINA COAST

Authors:
Jarrett R. Bachman[a]
Chi-Ok Oh[b]
Laurie Jodice[a]
Jenni Lee[b]
William Hammitt[a]

Affiliation:
[a]Clemson University
[b]Michigan State University

Address:
Department of Parks, Recreation and Tourism Management
Clemson University
263 Lehotsky Hall
Clemson, SC 29634

Introduction

Charter operators (COs) are trying to adapt to numerous challenges to business survival, such as high fuel costs, regulatory restrictions, depletion of fisheries stock, and competition with other coastal tourism businesses and amenities. Hence, COs need strategic information to develop new "tourism products" including traditional fishing and innovative non-fishing trip offerings that are possible to attract a broad range of coastal tourists from a regulatory standpoint. The goal of this study was to assess the demand for value-added charter fishing and non-fishing experiences and services among anglers and non-anglers visiting and/or recreating on the SC coast.

Methods

Researchers developed a consumer survey that applied a choice modeling method (CM) toward understanding preferences for different charter trip attributes. Traditional research

designs asking respondents to provide preferences using a series of single-item questions makes it difficult to determine the relative and interacting importance of one attribute to another (i.e., trade-offs). Consequently, decision-makers risk having little insight into the consumers' actual trade-off oriented preferences when developing new product offerings.

The CM is a joint evaluation approach that provides a more valid and reliable means for identifying consumers' trade-off relationships. The CM presented various hypothetical charter trip attributes such as onboard amenities, nearby or onshore tourism activities, quality of captain and crew, onboard marine nature-based tourism, interpretation and education services, and boat fee. The attributes and levels for the CM were identified and revised using information (what is already is, and could be possible) from charter captain interviews conducted during the first phase of the study in 2012.

Results

The consumer survey sample included 1500 anglers (750 resident and 750 non-resident fishing license holders randomly drawn) and 977 tourists intercepted at coastal venues in the three major tourist regions (i.e., Myrtle Beach, Charleston, and Beaufort/Hilton Head) on the SC coast. There were a total of 597 respondents, including 272 anglers with a SC saltwater fishing license (147 resident, 125 non-resident), and 325 coastal tourists. Forty-Nine percent (N=267) of respondents had gone saltwater fishing in the last 24 months and of these, 62% (N=165) had never gone on a charter vessel.

The CM results indicated different preference levels between anglers and non-anglers among different factors (e.g., onboard marine nature-based tourism) for charter trips. Anglers were interested in the quality of captain and crew but non-anglers placed high importance on onboard amenities, onboard marine nature-based tourism activities and interpretation and

education services. There were also significant differences in willingness-to-pay between anglers and non-anglers. In general, non-anglers were willing to pay for charter trip services more than anglers. However, both anglers and non-anglers were willing to pay quite a lot for higher quality of captain and crew. Non-anglers were also willing to pay more for additional onboard amenities and onboard nature-based tourism activities charter trip services.

Conclusion

These results as a whole assist in informing the charter industry of preferences and opportunities between angler and non-angler consumer groups.

COMPARING THE PERCEPTIONS OF TRAIL IMAPCTS USING 2-D AND 3-D IMAGERY

Authors:
Katharine Conlon
Jessica Mayer
Brendan Adams
Tian Guo
Chelsey Walden-Schreiner
Erin Crouse
Dr. Yu-Fai Leung
Jordan Smith
Erin Seekam

Affiliation:
Department of Parks, Recreation & Tourism Management
North Carolina State University

Address:
North Carolina State University
5107 Jordan Hall, Box 7106
Raleigh, NC 27695-7106

Introduction

Managing human-use of trails requires an understanding of the perceptions of trail users. However, managers are challenged by having little data to justify or prioritize their management actions, which typically range from education to restricting or prohibiting use. There is a large body of literature on human-caused ecological impacts, much of which has utilized 2-D images of varying resource conditions. It is unknown whether advances in technology (i.e. 3-D images) can more adequately reflect the trail environment the user experiences. The purpose of this project was to test individual perceptions of trail impacts (muddiness and erosion) depending on the medium through which the impacts were presented (digital 2-D photographs versus digital 3-D photographs). An additional objective was to test the influence of an education message on behavioral intentions when impacts are encountered.

Methods

The sample for the study included 118 undergraduate students in six NCSU Parks, Recreation, and Tourism Management Department classes who received extra credit for participation. Data collection took place within the Geovisualization Lab at North Carolina State University (NCSU) between October and November 2013. Six graduate students in the Human Dimensions of Natural Resources Research Group at NCSU administered the experiment. A series of 20 photographs of trails in a National Forest were shown. The photos portrayed two different types of trail impacts with two severity levels: minimal muddiness, minimal erosion, severe muddiness, and severe erosion. Half of the participants were shown an educational message. The education message informed participants of ecologically responsible hiking behavior. Participants were asked the extent of which management should be concerned for the trail based on a 10-point Likert scale (ranging from 1=not at all concerned to 10=extremely concerned). Participants were also asked about their behavior if they were to hike the trail (e.g. hike the center, hike on the edge, hike off the trail, or turn around).

Results

Overall, the type of impact along the trail had a more salient effect on the management concern and behavior of the respondent than the presence of an educational message or the medium that image was displayed. Preliminary results show impact types (muddiness and erosion) and levels (severe and minimal) have independent effects on management concern. Participants rated muddiness with higher management concern. Additionally, gender and hiking frequency were found to significantly influence management concern. Females tended to express higher management concern. The more hiking trips participants made within the past year, the lower management concern expressed. In general, the majority of respondents (54.5%) reported

they would hike down the center of the trail when encountering the impacts. Hiking frequency significantly influenced people's behavior on the trail.

Conclusions

The study results aim to inform more effective environmental education messages that can be delivered in informal science education venues. This exploratory study found that visualization differences might not have an effect on educating trail users and the use of accessible 2-D images for trail perception studies may be adequate. Further studies with larger sample sizes and actual visitors are needed to confirm these preliminary findings.

SPATIAL ANALYSIS OF INTERNATIONAL OF INTERNATIONAL TOURISM GROWTH IN CHINA

Authors:
Xisheng Hu[a,c]
Neelam C. Poudyal[b]
Gary T. Green[a]

Affiliation:
a. Warnell School of Forestry & Natural Resources
University of Georgia
b. Dept. of Forestry, Wildlife & Fisheries
University of Tennessee
c. Dept. of Forest Engineering
Fujian Agriculture and Forestry University

Address:
Warnell School of Forestry and Natural Resources, RM 1-301C
University of Georgia
180 E. Green St.
Athens, GA 30602-2152

Problem Statement

In china, 24 out of 31 Chinese province-level regions officially declared that tourism was the backbone of their industry (Wu *et al*., 2000), resulting in high priority being given to tourism in all regional master plans. However, disequilibrium in tourism development can be observed across different regions of mainland China (Yang & Wong, 2013). Moreover, such inequality exists not only in tourist arrivals but also tourism infrastructure (Shu & Dai, 2006) and tourism websites (Liu *et al*., 2008). In this context, there is a need to better understand tourism at the city level in order to answer several fundamental questions. Whether a spatial distribution disparity in tourism exists among these cities? Where are the hot-spot areas to secure a large amount of foreign exchange earnings from international tourism (FEEIT)? Why are some regions more successful destinations than others? To answer these questions, this study investigates the spatial

dependence and mechanism of FEEIT in 337 cities in mainland China, offer a comprehensive assessment of the factors that influence a city's ability to attract international tourism.

Methods

To detect the existence of spatial autocorrelation and spatial heterogeneity in FEEIT to China's cities, Geographical Information Systems (GIS)-based spatial statistical tools (GeoDa) is employed. Moran's I statistic is used as a measure of the overall clustering and is assessed by testing a null hypothesis (i.e., the spatial pattern is random). The local indicator of spatial autocorrelation (LISA) is therefore applied to indicate local spatial associations. Analyze was conducted using GeoDa software with one order of Queen contiguity spatial weighting matrices, the significance of LISA was then determined by generating a reference distribution using 999 random permutations.

Based on the literature, this study builds upon a comprehensive framework (Table 1) to determine the factors that influence the FEEIT and spatial pattern. Ordinary Least Squares (OLS) estimation is applied.

Results

The global Moran's I statistics for FEEIT revealed strong positive and significant spatial autocorrelation. Furthermore, the Local Indicators of Spatial Association (LISA) cluster maps indicated four significant inbound tourism hot-spot areas in 2003 and 2011 (the Circum Bohai Sea cluster, the Yangtze River Delta cluster, the Western Taiwan Straits cluster and the Pearl River Delta cluster) (Figure 1 & Figure 2), and the four same significant hot-spot areas in the increment of international tourism during the study period (Figure 3). These results are consistent with the other studies (Zhang *et al*.,2011; Yang *et al*., 2013).

Table 2 presents results from OLS estimate of determinants of FEEIT. Results suggest that development level, tourism facilities and tourism resources are all positively associated to a cities' FEEIT. However, we found considerable spatial heterogeneities by the response coefficients to vary across relatively homogeneous zones. Except for number of star-rated hotels, east coast cities rely more on large city and transport infrastructure, while central inland and remote western cities rely more on tourism resources.

Suggestions

The polarization of tourist distribution is believed to reflect the clustering of activities, and the formation of an effective link between the core and its periphery cities would further enhance regional competitiveness and facilitate the better use of existing tourism resources. Due to the spatial heterogeneity of FEEIT in China's cities, which are disclosed by the outcomes of OLS regression, policy makers are encouraged to take different measures in different regions.

References

Liu, J., Zhang, J., Wall, G. (2008) The geographical space of China's tourism websites. *Tourism Geographies*, 10(1), 66–80.

Shu, J., Dai, B. (2006) A comparative study of the spatial distribution of hotels in China. *China Tourism Research*, 2(1–2), 180–195.

Wu, B., Zhu, H., Xu, X. (2000) Trends in China's domestic tourism development at the turn of the century. *International Journal of Contemporary Hospitality Management*, 12(5), 296–299.

Yang, Y., Wong, K. K. (2013) Spatial distribution of tourist flows to China's cities. *Tourism Geographies*, 15(2), 338-363.

Zhang Y., Xu J. H., Zhuang P.J. (2011) The spatial relationship of tourist distribution in Chinese cities. *Tourism Geographies*, 13(1):75-90.

Table 1

Descriptive Statistics of City-level International Tourism and Determinants

	Variable (unit)	Periods	All cities		East coast		Central inland		Remote western	
			Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Dependant variable	Foreign exchange earnings from international tourism (USD 10000)	2003	4518.082	20173.667	10931.365	32461.607	773.195	2042.141	986.000	2576.985
		2011	18091.798	60954.721	40104.465	94713.915	5450.016	9841.876	7062.446	31059.109
Development level	Per capita net income of rural households (RMB Yuan)	2003	2864.230	1301.967	3875.391	1525.283	2458.440	491.957	2135.684	867.589
		2011	7604.249	2945.984	9684.000	3396.554	7330.479	1736.735	5559.120	1745.273
	per capita disposable income of urban households (RMB Yuan)	2003	7597.621	2439.291	9451.856	3239.567	6725.226	1056.046	6615.704	1138.418
		2011	19201.243	4872.563	22619.609	5811.415	18046.207	3172.319	16660.775	2666.349
Service and facility	Distance from large city (km)	2003	432.489	460.689	238.053	160.232	348.331	202.536	750.714	689.208
		2011	432.489	460.689	238.053	160.232	348.331	202.536	750.714	689.208
	Distance from airport (km)	2003	89.549	66.125	71.804	42.588	89.112	52.674	110.069	91.902
		2011	89.549	66.125	71.804	42.588	89.112	52.674	110.069	91.902
	Density of highway nets (km/km^2)	2003	0.413	0.386	0.500	0.205	0.447	0.551	0.276	0.258
		2011	1.008	1.160	1.254	1.306	1.058	1.162	0.672	0.879
	Number of star-rated Hotels (unit)	2003	33.731	50.069	54.746	74.700	24.504	20.147	20.647	26.859
		2011	41.631	49.893	60.444	70.487	29.908	21.603	33.869	38.062
Endowed resources	Forest coverage rate (%)	2003	27.854	16.197	33.341	18.156	29.247	13.007	20.084	14.150
		2011	31.342	16.705	37.273	18.267	31.918	12.985	23.977	16.056
	Proportion of wetland in total area of territory (%)	2003	5.470	4.562	8.736	5.817	5.251	1.806	2.037	1.554
		2011	5.461	4.536	8.736	5.816	5.232	1.781	2.037	1.554
	Per capita water resources(m^3/person)	2003	5870.654	25255.226	1439.642	1180.505	1797.887	839.842	15593.498	44401.648
		2011	4824.126	20659.559	1232.166	1032.620	1239.118	612.206	13091.541	36321.821
	Percentage of nature reserves in the region(%)	2003	9.261	6.790	6.037	2.838	6.800	3.173	15.759	8.379
		2011	9.136	6.723	5.667	3.139	7.470	3.622	15.006	8.484

Table 2

Parameter Estimates from OLS Regression (Earnings from International Tourism)

Variable	All cities		East Coast		Central Inland		Remote Western	
	2003	2011	2003	2011	2003	2011	2003	2011
Per capita net income of rural households	-0.021	0.485	1.692**	1.687**	0.823	0.446	-0.205	-1.255
Per capita disposable income of urban households	1.484**	2.393***	0.049	0.174	-0.522	1.389	1.963	5.507***
Distance from large city	0.244*	0.476***	-0.278	-0.334*	-0.184	0.463**	0.744**	0.002
Distance from airport	0.079	0.070	0.108	-0.013	-0.007	-0.405**	0.316	0.035
Density of highway nets	0.428***	0.042	0.691*	0.065*	0.515***	0.049	-0.331	-0.304
Number of star-rated hotels	1.556***	1.198***	1.671***	1.098***	1.380***	1.281***	1.757***	1.114***
Forest coverage rate	1.014***	1.178***	0.126	-0.746	-0.485	-0.923	3.014***	-0.389
Proportion of wetland in total area of territory	4.382***	6.010***	-1.072	-1.511	15.126***	8.746*	-27.451	-21.204**
Per capita water resources	-0.157	-0.110	0.382	0.614**	-0.263	0.166	-1.173	0.223
Percentage of nature reserves in the region	0.179	0.954*	4.725*	0.277	2.063	-0.164	1.746	9.078**
Constant	-3.292	-9.968***	-2.447	-0.930	4.523	-3.367	-5.173	-14.461
R-squared	0.610	0.560	0.739	0.638	0.397	0.528	0.667	0.544
Adjusted R-squared	0.594	0.545	0.704	0. 600	0.335	0.479	0.605	0.487
AIC	1.927	2.032	1.526	1.193	1.982	1.417	2.032	2.432
Log likelihood	-238.565	-296.881	-54.635	-51.648	-96.041	-64.127	-55.045	-100.860
Sig.	<0.01***	<0.01***	<0.01***	<0.01***	<0.01***	<0.01***	<0.01***	<0.01***
Included observations	259	303	86	105	108	106	65	92

Note:***, ** and * indicate the significance of parameter at 1%, 5% and 10% respectively.

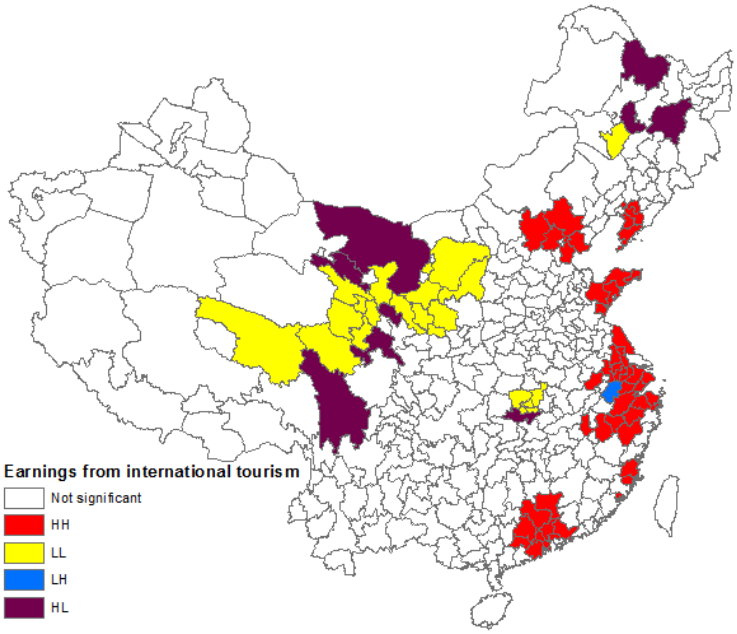


Figure 1. The LISA Cluster Maps of Local Spatial Autocorrelation for FEEIT in China in 2003

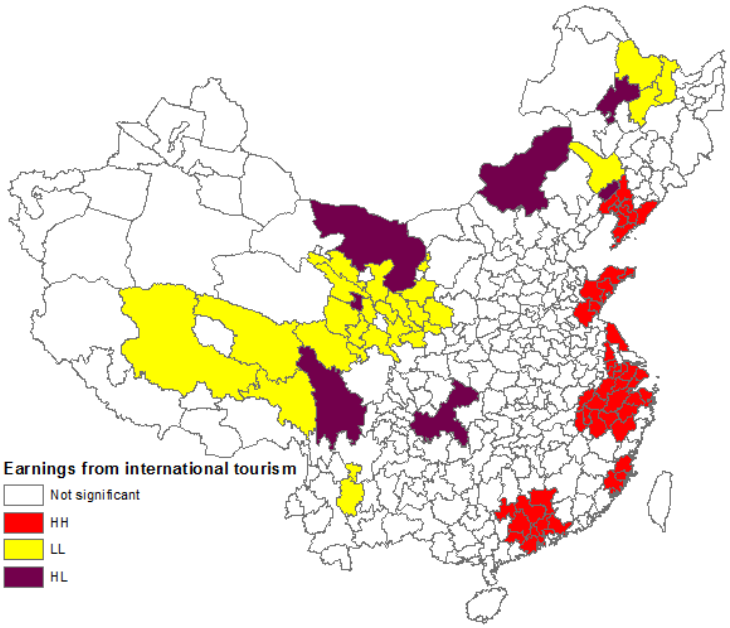


Figure 2. The LISA Cluster Maps of Local Spatial Autocorrelation for FEEIT in China in 2011

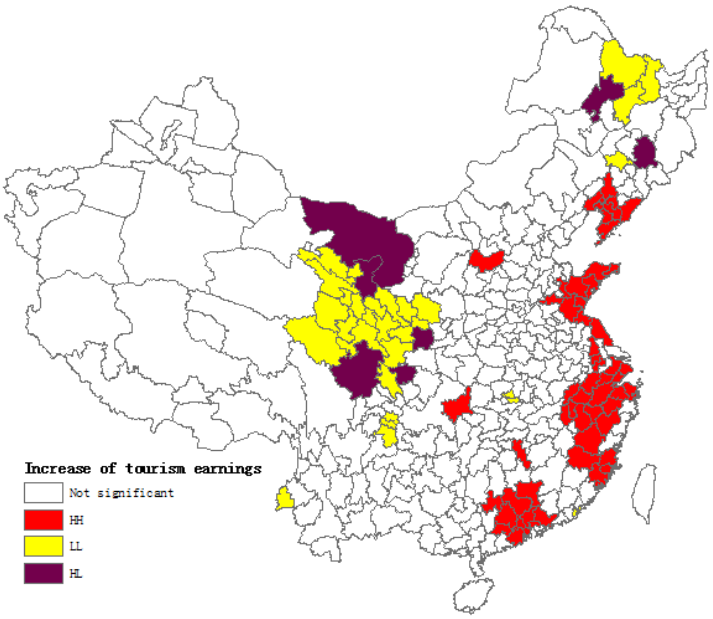


Figure 3. The LISA Cluster Map of Local Spatial Autocorrelation for Increment of FEEIT in China from 2003 to 2011

DIFFERENCES IN ETHNIC AND MINORITY RECREATION PATTERNS: AN EXAMINATION OF NATIONAL FOREST USAGE AND ACTIVITY PARTICIPATION ACROSS FOUR POPULATION SUBGROUPS IN NORTH GEORGIA

Authors:
Dr. Susan E. Parker
Dr. Gary T. Green

Affiliation:
Warnell School of Forestry & Natural Resources
University of Georgia

Address:
Warnell School of Forestry and Natural Resources
University of Georgia
180 E. Green Street
Athens, GA 30602-2152

Problem Statement

Research indicates ethnic and minority groups are substantially under-represented in terms of their visitation and use of national forests such as the Chattahoochee National Forest (Cordell, 2012). Additionally, limited research has explored the relationship between visitation and use of southeastern national forests by ethnic and minority groups, especially when comparing outdoor recreation patterns, preferences, and activity choices of users to that of non-users. Federal budget cuts resulting in limited available resources make it important for public land managers to understand the preferences of their visitors so they may target their efforts to meet recreation demands (Schelhas, 2002; Winter, Woo, & Godbey, 2004). Furthermore, a better understanding of the ethnic and minority population subgroups use and preferences for forest-based recreation will provide a basis for more effective management of public lands. Therefore, this study targeted the gap in knowledge of outdoor recreation patterns and preferences of residents for North Georgia who reside in close proximity to the Chattahoochee National Forest.

Methods

This study examined differences among four population subgroups (African American, Asian American, Hispanic/Latino and White) in North Georgia regarding outdoor recreation patterns, preferences, and activity choices of users (on-site) the Chattahoochee National Forest in North Georgia to that of non-users (off-site). Using a self-administered survey of adults (18 years or older), a sample of 1045 respondents on-site at three national forest recreational sites and 1005 respondents off-site at various recreational sites in metro Atlanta within 70 miles of the national forest boarder were obtained. Both T-tests and ANOVA analysis were applied to the data to examine outdoor recreation preferences with respect to age, gender, and race/ethnicity.

Results

Results highlighted several similarities and differences in the outdoor recreation patterns and preferences among four minority and ethnic subpopulations (i.e., Asians, Blacks, Hispanic/Latinos, and Whites). All respondents reported high incidences of family oriented activities (i.e., family time and picnicking). Results also suggest off-site respondents participated in outdoor activities that that could be undertaken on national forests in Georgia; however, lack of information about available activities was a concern for all respondents. Overall, results suggest the USDA Forest needs to re-examine how it is branding itself to the public, and more importantly how it may make itself more relevant to new or potential users.

Discussion/Implications

Visitation Frequency to National Forests in Georgia

Overall, the both the on-site and off-site frequency of visits, duration of stay, and preferred people with whom people recreate were similar. Specifically, across all race/ethnic groups the majority of visitors came with family or friends at least once a year. In addition, all population subgroups demonstrated preferences for staying the day or several days and nights.

These results are somewhat consistent with previous research (Sasidharan, Willits & Godbey, 2005; Yu & Berryman, 1996). For example, in a study examining urban park visitation of six ethnic groups (i.e., Hispanic, Chinese, Japanese, Korean, African American, and White) conducted by Sasidharan et al., (2005) results showed over half of respondents had visited a park or forest at least once in the last 12 months.

Outdoor Activity Preference

The results for both on-site and off-site respondents when examining outdoor activities participated in most often showed the top two outdoor activities (hiking/walking and family time) are similar among the four race/ethnic groups. Additionally, picnicking and relaxing were also popular activities for all groups both on and off-site. Results suggest that national forest managers' in the southeastern United States should provide more family oriented places to conduct outdoor activities. For example, large picnicking areas which are closer to shorter, looping hiking trails, open green spaces, and playgrounds.

Activity and Place Preference

On and off-site activity and place preferences showed that race/ethnic groups were similar in their selection of activities and places to recreate when evaluating the results independently. However, when comparing between on-site and off-site results, on-site respondents preferred state parks and off-site respondents preferred city/county parks as the place to participate in outdoor activities most often. Furthermore, both on and off-site respondents, ranked national forests last as a place to participate in outdoor recreation activities. Results suggest the need to advertise/market the available recreation opportunities in the North Georgia national forest or examine the activities, services, and programs that state and city/county parks provide to see how their services compare.

References

Cordell, K. H. (2012). *Outdoor Recreation Trends and Futures: A Technical Document Supporting the Forest Service 2010 RPA Assessment*. (Report No. SRS-150). Asheville, NC. United States Department of Agriculture Forest Service, Southern Research Station, Athens, GA.

Sasidharan, V., Willits, F., & Godbey. G. (2005). Cultural Differences in Urban Recreation Patterns: An Examination of Park Usage and Activity Participation Across Six Population Subgroups. *Managing Leisure, 10*, 19-38.

Schelhas, J. (2002). Race, Ethnicity, and Natural Resources in the United States: A Review. *Natural Resources Journal, 42*, 723-763.

Winter, P. L., Jeong, W. C., & Godbey, G. C. (2004). Outdoor Recreation Among Asian Americans: A Case Study of San Francisco Bay Area Residents. *Journal of Park and Recreation Administration, 22 (3)*, 114-136.

Table 1

Visitation Frequency of National Forests in Georgia Reported by On-site Respondents by Race/Ethnicity.

On-site	Asian (n=144)		Black (n=104)		Hispanic/ Latino (n=108)		White (n=641)	
Visits Per Year	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Never	41	28.9	48	47.5	25	24.0	113	17.9
One to two	79	55.6	48	47.5	55	52.9	366	58.0
Three to five	15	10.6	3	3.0	18	17.3	98	15.6
Six to ten	4	2.8	1	1.0	5	4.8	35	5.5
Eleven or more	3	2.1	1	1.0	1	1.0	19	3.0
Total	142		101		104		631	
Duration of Visit								
Half a day	36	25.2	22	21.4	14	13.2	102	16.0
The day	58	40.5	24	23.3	42	39.6	189	29.6
Overnight	32	22.4	41	39.8	22	20.8	116	18.2
Several days & nights	12	8.4	15	14.6	26	24.5	214	33.5
More than one answer	5	3.5	1	0.9	2	1.9	17	2.7
Total	143		103		106		638	
Group Type								
Alone	1	0.7	1	1.0	0	0.0	7	1.1
Friends or family	132	92.3	92	89.3	99	95.2	603	94.7
Organized group	3	2.1	1	1.0	1	1.0	5	0.8
Other	0	0.0	0	0.0	0	0.0	4	0.6
More than one answer	7	4.9	9	8.7	4	3.8	18	2.8
Total	143		103		104		637	

Totals may not add up to overall response numbers due to missing values.

Table 2
Visitation Frequency of National Forests in Georgia Reported by Off-site Respondents by Race/Ethnicity.

Off-site	Asian (n=53)		Black (n=277)		Hispanic/ Latino (n=219)		White (n=416)	
Visits Per Year	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Never	24	47.1	191	69.7	104	48.4	170	41.6
One to two	19	37.3	67	24.5	70	32.6	151	36.9
Three to five	4	7.8	15	5.5	24	11.2	59	14.4
Six to ten	3	5.8	0	0.0	11	5.1	18	4.4
More than one answer	0	2.0	0	0.3	0	2.7	3	2.7
Total	51		274		215		409	
Duration of Visit								
Half a day	16	32.0	56	20.4	37	17.4	54	13.2
The day	18	36.0	128	46.7	118	55.4	173	42.2
Overnight	11	22.0	47	17.2	29	13.6	92	22.4
Several days & nights	3	6.0	34	12.4	25	11.7	74	18.1
More than one answer	2	4.0	9	3.3	4	1.9	17	4.1
Total	50		274		213		410	
Group Type								
Alone	1	2.0	3	1.1	0	0.0	3	0.7
Friends or family	45	88.2	240	88.6	191	93.2	379	93.3
Organized group	3	5.9	9	3.3	9	4.4	6	1.6
Other	0	0.0	0	0.0	1	0.4	0	0.0
More than one answer	2	3.9	19	7.0	4	2.0	18	4.4
Total	51		271		205		406	

Totals may not add up to overall response numbers due to missing values.

Table 3

Outdoor Recreation Activities Done Most Often by On-site Respondents by Race/Ethnicity.

Activity	Asian	Black	Hispanic/ Latino	White	Totals	%
Hiking/walking	39	24	18	212	293	38.3
Family Time	17	18	12	78	125	16.3
Camping	7	7	6	74	94	12.3
Relaxing	8	9	4	35	56	7.3
Swimming	4	7	9	34	54	7.1
Picnicking	10	5	5	20	40	5.2
Fishing	0	0	3	26	29	3.8
Hunting	0	0	1	20	21	2.7
Observing nature	3	4	1	5	13	1.7
Canoeing/kayaking	2	1	0	7	10	1.3
Spiritual development	3	2	1	3	9	1.2
Alone Time	1	3	0	4	8	1.0
Driving off-road vehicles	1	0	0	4	5	0.7
Rock climbing	0	1	1	2	4	0.5
Horseback riding	0	0	0	3	3	0.4
Collecting berries/mushrooms	1	0	0	0	1	0.1

Table 4

Outdoor Recreation Activities Done Most Often by Off-site Respondents by Race/Ethnicity.

Activity	Asian	Black	Hispanic/ Latino	White	Totals	%
Family Time	9	61	26	82	178	23.3
Hiking/walking	14	30	17	93	154	20.1
Swimming	4	28	18	38	88	11.5
Picnicking	7	28	13	21	69	9.0
Camping	1	8	7	43	59	7.7
Fishing	2	20	4	22	48	6.3
Relaxing	4	12	5	14	35	4.6
Alone Time	1	5	0	4	10	1.3
Hunting	0	1	0	9	10	1.3
Driving off-road vehicles	0	1	0	7	8	1.0
Canoeing/kayaking	0	2	1	4	7	0.9
Spiritual development	0	2	2	3	7	0.9
Collecting berries/mushrooms	0	0	1	3	4	0.5
Horseback riding	0	0	2	2	4	0.5
Rock climbing	0	1	0	0	1	0.1%
Observing nature	0	0	0	0	0	0.0%

Table 5

Where Outdoor Recreation Activities are Done Most Often by On-site Respondents by Race/Ethnicity.

	Asian	Black	Hispanic/ Latino	White	Totals	%
State park	14	13	14	147	188	35.5%
City/county park	14	13	11	62	100	18.9%
Home/backyard	7	12	6	61	86	16.2%
Neighborhood park	17	12	7	35	71	13.4%
National forest	10	2	3	44	59	11.1%
Private land/Ocean	0	5	1	20	26	4.9%

Table 6

Where Outdoor Recreation Activities are Done Most Often by Off-site Respondents by Race/Ethnicity.

	Asian	Black	Hispanic/ Latino	White	Totals	%
City/county park	21	65	50	77	213	30.0%
Neighborhood park	9	63	29	53	154	21.7%
State park	8	26	26	71	131	18.4%
Home/backyard	2	39	14	68	123	17.3%
Private land/Ocean	0	9	6	40	55	7.7%
National forest	0	1	11	23	35	4.9%

EXPLORING THE RELATIONSHIP BETWEEN ENVIRONMENTAL CONDITIONS AND USE BEHAVIOR ON TRAILS

Authors:
Katharine E. Conlon
Dr. Yu-Fai Leung

Affiliation:
Department of Parks, Recreation & Tourism Management
North Carolina State University

Address:
North Carolina State University
Department of Parks, Recreation & Tourism Management
Box 8004
Raleigh, NC 27695-8004

Problem Statement

Trails are the fundamental outdoor recreation infrastructure in most protected areas that support different recreational uses (Benedict & McMahon, 2006). Trails serve two major functions in a natural area. First, trails provide access to particular recreational areas for the enjoyment of visitors. Second, trails concentrate the flow of recreationists to a defined track in the natural area in order to minimize widespread environmental impact (Leung & Marion, 1999). There are significant challenges in managing trail networks in natural areas. Efforts to rebuild and relocate formal trails due to degradation and trail proliferation are often costly. To sustain trail conditions and develop effective visitor management strategies, managers must understand the physical attributes of trails and the behavior of recreationists that may impact trail conditions negatively. Monitoring trails and users over time can reduce the need for costly remedial projects (Cole, 1983).

Monitoring trail conditions and visitor use are both important and managers need to link the datasets together to answer the questions about factors that influence trail impacts Managers

can benefit from the knowledge of how visitor behavior correlates with the conditions of formal trails in problem areas. In addition, monitoring trails associated with informal trail formation and proliferation is a common challenge in many natural areas (Pickering, Hill, Newsome, & Leung, 2010). When trail users stray from the defined track, informal trails are created. Informal trails, also known as "social trails," are identifiable in the recreational setting (Walden-Schreiner & Leung, 2013). The creation of informal trails degrades the natural environment. Specifically, informal trails can increase habitat fragmentation, decrease the aesthetic appeal of a park, lead to trampled vegetation in the area, and cause many other negative impacts to the environment (Marion, Leung, & Nepal, 2006). If managers are able to minimize the formation of informal trails, recreation pressure will be restricted to the formal trail network, which better protects the surrounding environment.

To minimize recreational disturbance in protected areas, managers must be able to determine the problem areas caused by informal trails. Problem areas consist of areas that conflict with the rules or requirements of the park (Coppes & Braunisch, 2013). The aim of this study was to improve the understanding of the relationship between environmental conditions and visitor behavior in a trail setting through an integrated analysis. The two specific objectives are: (1) to develop a method for extracting human use and behavior data, and (2) to illustrate the utility of integrated analysis by examining if and how visitor behavior varies in different trail resource and use conditions.

Methods

Data collection took place in the Uwharrie National Forest, which covers approximately 51,000 acres in Montgomery, Randolph, and Davidson counties of North Carolina. The National Forest allows primitive dispersed camping throughout most of the area. The North Carolina

Wildlife Resources Commission manages the land for public hunting, trapping, and fishing. In addition to these amenities, the Uwharrie attracts hikers, mountain bikers, horseback riders, and dog walkers. Motorized recreation can be found on some of the trails as off-highway vehicles are allowed in sections of the Forest (U.S. Department of Agriculture, 2013).

For this study, research was focused primarily on a network of trails in the Badin Lake Recreation Area, which can be seen in Figure 1. This area has set aside 17 miles of trails for off-highway vehicles. In addition, 40 miles have been set aside for non-motorized activities with trail difficulty ratings from easy to difficult. Many of the trails are adjacent to the Uwharrie River and its tributaries. Five trails in this section of National Forest will be on the focus of my study. The Todd Trail is 2.1 miles long and, according to the Forest Service, has a moderate rating for recreationists. The other four trails have easy intensity ratings and they are named the Indian Trail, Megan Trail, Home Trail, and Larry Trail. All five trails are between 1.0 miles and 2.5 miles long and they allow horseback riding, hiking and mountain biking.

The point sampling method was used in the study to highlight intervals along the trail in the vicinity of each camera. The measurements were taken at five main points along the trail: 2 meters in front of the camera, 50 meters from the camera along the trail, 100 meters from the camera along the trail, 50 meters behind the camera along the trail, and 100 meters behind the camera long the trail. Secondary trails (informal trails) were also recorded if they were found around the 5 main points along the formal trail. A measuring wheel was used to designate the five points along the trail. Pin flags were used to mark the specified points as each section was measured. The point 100 meters in front of the camera was measured first and then the next four points were measured afterwards in order.

Human use data of recreationists was collected using the camera trap method. The

camera trap method was applied as part of the eMammal Project. This project is part of a collaboration between the Smithsonian Institution and the North Carolina Museum of Natural Science. This project is a citizen-based science project in which citizen volunteers sign up to set up and maintain camera traps in natural resource areas in the mid-Atlantic region of the United States. The photos collected by the infrared activated cameras can help determine mammal distribution and abundance in recreational settings.

Each camera remained in the location for a period of three weeks before it was retrieved and the data are removed from the SD card. Each trip two sets of cameras were set up for a total of six cameras set up upon each visit. After the initial set up, retrieval of the cameras involved swapping the memory cards and replacing the batteries for the next location. For the purposes of this study, only the cameras on trail were used to collect human-use data and data was only collected from the pictures that contained human visitors.

Results

Environmental conditions across all eight locations were similar for the 200-meter segment and the 5-50 meter segment. Table 3 shows the tread width, muddiness class, erosion class, and maximum incision were all determined for the entire 200-meter segments and the 5-50 segments. The means for tread width, muddiness class, and erosion class were similar when comparing the 200-meter segment to the 5-50 meter segment. Only the maximum incision rate was slightly different with an average of 0.42 feet (SD = 0.45) for all of the 200-meter segment and 0.27 feet (SD = 0.25) for the 5-50 meter segment. The average grade of all eight trails was 4.10% (SD = 3.48), while the average landscape grade of all camera locations was 11.46% (SD = 7.48).

Data was lumped together for all the camera locations for the chi square test. The chi

square test was created to show the distribution of user behavior across different user characteristics. The proportion of adult and visitors youth staying on trail was almost the same and they constituted the majority (69.3% and 70% respectfully). There was a slightly larger proportion of youth (18.2%) that used the edge of the trail compared to adults (11.8%). Also, data showed a larger proportion of adults (18.9%) who went off trail compared to youth (11.8%). A chi square test shown in Table 1 reveals the relationship between the age group of the trail user and the behavior observed was significant ($p = 0.044$).

The relationship between muddiness class and user behavior was observed in Table 2. These results were not based on statistical tests. Overall, the results show that the greater the muddiness class the greater the off trail behavior. The amount of people within a muddiness class of 1.00 that were off trail was 1.2%, but with a muddiness class of 2.00 almost 40% of the people were off trail. There was a very small sample size ($n = 23$) on a trail with a muddiness class of 3, but all of the visitors for this muddiness class were on trail.

Table 3 shows the relationship between the erosion classes around the five camera sites without secondary trail options and the behavior of the users observed. Every visitor on a trail with an average erosion class of 1.50 was on trail. This contrasted with about 60% of visitors on a trail with an erosion class of 3.50 and 4.50 were actually on trail. There were about 32% of visitors within the 4.50 erosion class that walked along the edge of the trail, and about 40% of the visitors on a 3.50 class trail were off the trail completely. From the results it seems that as the erosion class increases the more users were seen going on the edge of the trail or off trail. No chi square test was run due to the fact that there were not enough people for each cell.

Discussion/Implications

There were two major purposes for this study. The first purpose was to develop a method

to collect trail use behavior data of humans. Another purpose of this study was to examine if and how human use of trails varies due to environmental conditions of the trails. This study met the objectives of testing a new method of unobtrusive data collection of human use data through the camera trap method. In addition, this study found some results pertaining to the differences of human behavior across the environmental conditions of trails.

Managers can apply this method to gain greater information and detail about a specific natural area. The camera provides a method for the manager to obtain information on type of activity, gender of visitors, and behavior of visitors, while electronic counters only provide counts of visits (Campbell, 2010). While this method does come with added cost, overall it could save managers man-hours from having to pass out surveys or observe in-person on the trail. The camera trap method delivers a wide array of data at a fraction of maintenance time and costs (Campbell, 2010).

Further studies with more diverse user groups and additional sample locations may be needed to complement these preliminary findings. By having additional camera locations, there could be a variety of physical measurements to run higher statistical tests. The eight locations provided thorough information but given the amount of visitors observed there were only eight different measurements for the trails. The study be replicated in an area with a diverse user group. The trails in Uwharrie National Forest are popular for horseback riders, but data with a greater number of hikers and mountain bikers could draw additional conclusions using theses monitoring methods. The study could also be performed over a long time frame than three of the summer months. Other seasons bring different temporal changes, which could possibly affect the condition on the tread surface.

References

Benedict, M. A., & McMahon, E. T. (2006). *Green infrastructure: Linking landscapes and communities.* Washington, D. C.: Island Press.

Campbell, J. M. (2010). Seeing is believing: Using digital cameras to monitor trail use in Riding Mountain National Park (pp. 21–26). Wolfville, Nova Scotia.

Cole, D. N. (1983). *Assessing and monitoring backcountry trail conditions*. Research Paper INT-303, USDA Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT.

Coppes, J., & Braunisch, V. (2013). Managing visitors in nature areas: where do they leave the trails? A spatial model. *Wildlife Biology, 19*(1), 1-11.

Leung, Y-F., & Marion, J. L. (1999). The influence of sampling interval on the accuracy of trail impact assessment. *Landscape and Urban Planning, 43,* 167-179.

Marion J. L., Leung Y-F., Nepal S.K. (2006). Monitoring trail conditions: New methodological considerations. *George Wright Forum, 23*, 36–49.

Pickering, C. M., Hill, W., Newsome, D., & Leung, Y-F. (2010). Comparing hiking, mountain biking and horse riding impacts on vegetation and soils in Australia and the United States of America. *Journal of Environmental Management, 91*(3), 551-562.

U.S. Department of Agriculture. (2013.). Uwharrie National Forest. Retrieved from http://www.fs.usda.gov/recarea/nfsnc/recreation/horseriding/camping/recarea/?recid=48934&actid=30

Walden-Schreiner, C., & Leung, Y-F. (2013). Spatially characterizing visitor use and its association with informal trails in Yosemite Valley meadows. *Environmental Management, 52*,

163-178.

Table 1

The results of the chi square test with gender and behavior of the trail user

			Behavior			Total
			Edge	Off-Trail	On	
Gender	Female	Count	74	127	458	659
		% within Gender	11.2%	19.3%	69.5%	100.0%
	Male	Count	104	142	547	793
		% within Gender	13.1%	17.9%	69.0%	100.0%
Total		Count	178	269	1005	1452
		% within Gender	12.3%	18.5%	69.2%	100.0%

a. Pearson chi square =1.420, df = 2, p = 0.492

Table 2

The crosstabulation table for muddiness class and user behavior association for cameras without a secondary trail option

			Behavior			Total
			Edge	Off-Trail	On	
Muddiness Class	1.00	Count	178	9	593	780
		% within Muddiness Class	22.8%	1.2%	76.0%	100.0%
	2.00	Count	1	260	404	665
		% within Muddiness Class	0.2%	39.1%	60.8%	100.0%
	3.00	Count	0	0	23	23
		% within Muddiness Class	0.0%	0.0%	100.0%	100.0%
Total		Count	179	269	1020	1468
		% within Muddiness Class	12.2%	18.3%	69.5%	100.0%

Table 3

The crosstabulation table for erosion class and user behavior association for cameras without a secondary trail option

			Behavior			Total
			Edge	Off-Trail	On	
Erosion Class	1.50	Count	0	0	40	40
		% within Erosion Class	0.0%	0.0%	100.0%	100.0%
	2.00	Count	1	1	213	215
		% within Erosion Class	0.5%	0.5%	99.1%	100.0%
	3.50	Count	1	260	404	665
		% within Erosion Class	0.2%	39.1%	60.8%	100.0%
	4.50	Count	177	8	363	548
		% within Erosion Class	32.3%	1.5%	66.2%	100.0%
Total		Count	179	269	1020	1468
		% within Erosion Class	12.2%	18.3%	69.5%	100.0%

SATISFACTION AMONG DEER HUNTERS BASED ON MOTIVATION AND SPECIALIZATION CLUSTERS

Authors:

Megan Lupek[1]
Dr. Wayde Morse[1]
Brent Williams[2]

Affiliation:
[1]Auburn University
3301 Forestry and Wildlife Sciences Bldg.
Auburn, Al 36849

[2]University of Illinois at Urbana-Champaign
Department of Natural Resources and Environmental Sciences
W-503 Turner Hall
1102 Goodwin Ave.
Urbana, IL 61801

Introduction

Stakeholders often differ in their motivations and perceptions of wildlife management issues. Wildlife professionals are often concerned about their stakeholders' values and motivations and take these into consideration when making management decisions. In addition, specialization types (consisting of a hunter's skill level, commitment to the activity, and frequency of engaging in the activity) also help to describe the types of hunters utilizing hunting areas. It is important to take this into consideration when analyzing hunters' experiences to achieve their desired outcome.

Methods

A survey of 2,971 licensed Alabama hunters was conducted in the Spring of 2013. The survey was administered in 2013 over seven weeks using a four contact method including: a pre-notice postcard, a survey packet with instructions and the questionnaire, a follow-up reminder

post-card, and a final reminder letter with instructions on how to fill out an on-line response to give those individuals who prefer completing a survey on-line that option.

Results

A total of 1,047 participants responded to the survey with 598 submitting the mail version and 449 using the on-line alternative. There were 318 non-deliverable (invalid) addresses and 1,606 non-respondents. Overall response rate was 40% (*n*=1,047 after invalid addresses were removed). The majority of respondents (55%) were lifetime license holders with another 30% who were yearly resident license holders and another 14% who were non-resident holders.

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS). All survey data was input through the on-line format (Qualtrics) to reduce the possibility of data entry errors. A factor analysis was conducted on items asking hunters why they hunt and four factors related to motivations were revealed: Nature, Management, Social, and Sporting. A cluster analysis was then conducted on the motivation factors to group hunters by the reasons they hunt in Alabama. The cluster analysis indicated three motivation categories: Recreational hunters, Highly Motivated hunters, and Non-management oriented hunters.

A confirmatory factor analysis was also conducted on specialization items and three factors were extracted: Commitment, Skill, and Behavior. A cluster analysis was then conducted on the specialization factors generating four specialization types: Die-hard hunters, Typical hunters, Busy hunters, and Infrequent hunters.

A factor analysis on satisfaction items revealed four scales representing the construct: Abundance, Available land, Success, and Season length. A cluster analysis on the motivation types and specialization types identified four types of hunters: Casual recreationist, Non-management, Time constrained, and Ultimate hunters. A one-way ANOVA was conducted to

identify differences in satisfaction levels among these hunter types. It was found that Casual Recreationists were less satisfied with abundance than Time constrained and Ultimate hunters. In addition, Casual Recreationists were also less satisfied with available land and success than the other three hunter types. Ultimate hunters were more satisfied with abundance than Non-management hunters and were more satisfied with available land than Time-constrained hunters. Groups did not differ in their satisfaction with season length; all indicated moderate satisfaction with this construct.

EXPLORING TOURISM LEADERSHIP THROUGH THE LENS OF COMMUNITY CAPITAL

Authors:
Whitney Knollenberg
Amy Komorowski
Nancy Gard McGehee, Ph.D.

Affiliation:
Department of Hospitality and Tourism Management
Virginia Tech

Address:
Department of Hospitality and Tourism Management
362 Wallace Hall
Blacksburg, VA 24061

Introduction

In recent years there has been an increased focus on the complexity of the tourism system particularly in regards to the process of assessing stakeholders' needs in the tourism planning and development process (Ritchie, 1999; Sautter and Leisen, 1999; Simpson, 2001), power structures and tourism planning (Jordan, Vogt, Kruger, and Grewe, 2013), and the effectiveness of various governance models in tourism development (Beaumont and Dredge, 2010). Such issues compound the challenges associated with the complex nature of the tourism system, in which members operate within formal and/or informal groups, public and private enterprises, and function at local, regional, state, and international levels (McDonald, 2009).

Such a highly complex system requires leadership to guide the planning efforts and facilitate the collective action needed to create and manage competitive tourism products. The leaders that take on these challenges must contend with the political nature of the system, resolve stakeholder disputes, and negotiate the existing power structures and governance models. While it may be readily observed that leaders are necessary to help the tourism industry address and

overcome challenges, there is a noticeable dearth of literature related to leadership in tourism development. This paper attempts to provide a more thorough understanding of tourism leadership.

Methods

First, a review of leadership literature outside of tourism was discussed to provide context and identify valuable leadership theories. A review of leadership work within the tourism literature was also conducted to assess the present state of tourism leadership knowledge as well as the knowledge gaps that need to be addressed. To build upon this baseline understanding the Community Capitals Framework (Flora, Flora, and Fey, 2004) will be used as a theoretical perspective to explore what resources within a community support tourism leadership or are utilized by leaders to advance tourism development.

The Community Capitals Framework (Flora, Flora, and Fey, 2004) provides a means of evaluating community assets. The framework outlines seven capitals including: Cultural, Built, Human, Political, Natural, Financial, and Social capital. Each community may possess a different combination of these capitals and may invest in them to gain future returns. This paper focused specifically on the value of social capital as a resource for tourism leaders. The Networks View provides a useful way to conceptualize social capital. This perspective differentiates between bonding, or the internal relationship, networks, and trust within a community (Putnam, 1993), and bridging social capital, the efforts made by bonded groups to reach resources external to their community.

Results

From observations and interviews with leaders in three communities where tourism development was encouraged we conclude that leaders utilize a mix of bridging and bonding social capital that is context-specific. In each community it was evident that both bridging and bonding social capital were necessary in order for tourism development to occur, however each community had their own needs in terms of external resources or internal relationships. Therefore, it was necessary for leaders to recognize how their bridging and bonding social capital could be utilized to serve the community and facilitate tourism development. While each leader had their own mix of bridging and bonding social capital it became evident that immersion in the community, educational opportunities, and previous career experiences helped them develop the social capital they utilized in the communities they served.

Conclusions

While the findings of this exploratory work may not be generalized, the application of the Community Capitals may allow for an advancement of our understanding of the systems in which tourism leaders operate and the resources they utilize to be successful. Combined with the review of existing literature the outcomes of this paper provide a useful direction for future tourism leadership research.

References

Beaumont, N. & Dredge, D. (2010). Local tourism governance: A comparison of three network approaches, *Journal of Sustainable Tourism*, *18*(1), 7-28.

Jordan, E. J., Vogt, C. A., Kruger, L. E., & Grewe, N. (2013). The interplay of governance, power and citizen participation in community tourism planning. *Journal of Policy Research in Tourism, Leisure and Events*, (ahead-of-print), 1-19.

Flora, C., Flora, J. and Fey, S. (2004). *Rural Communities: Legacy and Change*. 2nd ed. Boulder, CO: Westview Press.

McDonald, J.R. (2009). Complexity science: An alternative world view for understanding sustainable tourism development, *Journal of Sustainable Tourism*, *(17)*4, 455-471

Putnam, R. D. (1993). The prosperous community; Social capital and public life. *The American Prospect*, 13, 35-42.

Ritchie, J. R. B. (1999). Crafting a value-driven vision for a national tourism treasure. *Tourism Management*, *20*(3), 273-282.

Sautter, E. T., & Leisen, B. (1999). Managing stakeholders a tourism planning model. *Annals of tourism research*, *26*(2), 312-328.

Simpson, K. (2001). Strategic planning and community involvement as contributors to sustainable tourism development. *Current Issues in Tourism*, *4*(1), 3-41.

MEANS-END ANALYSIS OF HIKING EXPERIENCES ON NATIONAL SCENIC TRAILS

Authors:
Dr. Katherine E. Soule[1]
Dr. Marni Goldenberg[2]
Dr. Eddie Hill[3]
Dr. Ed Gomez[3]

Affiliations:
[1]Agriculture and Natural Resources Division
University of California

[2]Recreation, Parks, and Tourism Administration
California Polytechnic State University

[3]Park, Recreation and Tourism Studies
Old Dominion University

Address:
2156 Sierra Way, Suite C
San Luis Obispo, CA 93401

Problem Statement

There are ten National Scenic Trails in the United States. These trails provide important recreational space, particularly for long-distance hikers, consisting of 100 or more miles of continuous and (chiefly) non-motorized trail. While National Scenic Trails provide vital recreational space for long-distance hikers, conservation of these trails is uncertain. These trails were each established by an Act of Congress; however, the trails are preserved through successful partnerships between agencies, foundations, and individuals, who provide extensive funding and man-hours of intensive maintenance labor. Consequentially, the conservation of these trails is always uncertain and relies on the time and financial gifts of volunteers. Understanding which trail attributes are most meaningful to hikers can provide direction for maximizing limited funds, as well as increasing individual's support of the maintenance of trails.

Background

The Appalachian Trail (AT) and the Pacific Crest Trail (PCT) are the two most well known and longest scenic trails in the US. Both trails pass through varying landscapes and plant communities, many of which are imbued with culturally significant history. Traveling from Georgia to Maine, the AT encompasses 2,184 miles. An estimated 2-3 million visitors and 1,800-2,000 thru-hikers use the trail each year (Appalachian Trail Conservancy, 2013). The PCT traverses 2,650 miles from Mexico to Canada along the West Coast. According to the Pacific Crest Trail Association (2013), an "untold thousands" of visitors and 500-700 thru-hikers use the trail each year.

Methods

Two studies were conducted to gain an understanding of the outcomes that participants obtain from using national scenic trails, specifically the AT (Hill, Goldenberg, & Freidt, 2009) and the PCT (Goldenberg & Soule, 2014). In the AT study, a convenience sampling from a population of the Tidewater Appalachian Trail Club officers' meeting attendees resulted in 45 study participants ranging in ages from 21-75. In the PCT study, a convenience sampling occurring over four days of on-trail research resulted in 56 study participants ranging in ages from 20-66. Although these studies differed in year conducted, study population and researchers, both studies utilized means-end theory to examine which attributes were correlated with which consequences and values. Attributes refer to specific characteristics or features of hikers' experiences (e.g. hiking, people, or the trail). Consequences refer to outcomes associated with particular attributes (e.g. physical challenge, solitude, or environmental awareness). Values refer to hikers' desired end-states of being (e.g. self-fulfillment, transference, or appreciation).

The analysis for this research compared the difference and similarities in the means-end data collected from the two studies in order to increase understanding of various hiking experiences on national scenic trails. To conduct this comparison, researchers examined the hierarchical value maps (see figures below), which are graphical representations of the study findings, as well as demographic information about study participants.

Results

The AT study included five hiker types: day hikers, weekenders, multi-use hikers, section hikers, and thru-hikers; while the PCT included section hikers and thru-hikers. Both studies identified six meaningful attributes of hiking experiences. The most frequently mentioned attributes included: *trail experience, hiking, being outdoors*, and *interacting with others*. For the AT, *survival* and *scenic beauty* were other important attributes. *Trail magic* and *being away from society* were reported for the PCT. These consequences were reported across the studies: *Increased Environmental Awareness; Challenge; Camaraderie/Interacting with Others; Fitness/Health/Exercise; and Stress Relief/Relaxation.* Other meaningful consequences for the AT study included *Awareness*, *Peace*, and *Spirituality*. PCT study participants mentioned numerous other consequences ranging from *Hard Skill Development* to *Escape* to *Fear/Anxiety.* In both studies, the participants attained nine values. In both studies these included: *Fun and Enjoyment of Life, Warm Relationships with Others, Self-Fulfillment; Appreciation; Transference; Self-Awareness*; and *Self-Esteem*. For AT participants other values attained included *Self-Reliance* and *Satisfaction*. The PCT participants experienced a *Sense of Accomplishment* and *Sense of Belonging*.

Discussion and Implications

Clearly, these study examined two very different study populations. However there were

a number of similarities in the findings, which suggest that these are important aspects of hiking experiences on a National Scenic Trail. As to be expected, there were also differences, which indicate that hiking holds different meanings for different users. This research offers insights into the varied hiking experiences that can be used in arguments for funding trail conservation and preservation, determining how to best allocate funding, and in encouraging support for and maintenance of National Scenic Trails.

National Scenic Trails are important to hikers; practitioners need to be aware of people's interests so that they can tap into users' desires and motivations in order to target trail benefactors. Now that we know that these hiking experiences increases hikers' environmental appreciation, practitioners need to encourage hikers to think about the "now what," asking them how they are going to change because of this. Practitioners should make it easy for hikers to find out ways to get involved, perhaps having signs with website information and volunteer opportunities at trail exists. It is important to provide hikers with an outlet where they can put their desires and appreciation to use.

Since interacting with others on the trail is such an important part of the hiking experience, practitioners need to be teaching hikers to be respectful for others that they meet. Also, practitioners should be considering ways to help hikers create community and establish relationships with other people. Some suggestions include: creating trail-based organizations and clubs, hosting online listserves and forums, and emphasizing relationship building through trail service (e.g. portraying images of the camaraderie people develop while doing trail repair).

These findings reiterate the need to preserve the trail for future use. The participants reported attributes, consequences, and values that emphasized the need to care for and protect the trail. Hikers need education about environmental stewardship, as well as opportunities to

participate in trail preservation. Future research should more closely examine the relationships between trail use and trail service and preservation.

This research showed that different user types do have different interests, needs, and outcomes. There is a need to provide balance for different users' desires and interests. We cannot advocate for relationships in favor of opportunities for peace and spiritual awareness. Part of encouraging hikers to have respectful interactions, is advocating for an appreciation for hikers' differences. Some differences in findings may point to differences in how research is conducted and analyzed. The results from these studies were used to develop a Benefits of Hiking Scale (Freidt, Hill, Gómez, & Goldenberg, 2010). Using the newly developed Benefits of Hiking Scale can help provide consistent data across trails and hiker types. This will enable researchers to examine statistically significant differences between specific trails and hiker types. For example, using this scale researchers might be able to better determine if day and overnight hikers are more concerned about their survival than long-distance section and thru-hikers. At the same time, the differences in these findings also suggest that there is a need to leave room in research for participants to discuss what is important to them. For example, if researchers had simply studied the findings from the AT study with PCT hikers, than the importance of trail magic would not have been discussed.

Finally, a strong practitioner understanding of the well-being component—how people use the trails to improve their mental and physical health—may strengthen funding requests. Society, as a whole, needs to value and preserve trails because they provide opportunities for mental and physical well-being.

References

Appalachian Trail Conservancy. (2013). *About the trail.* Retrieved from http://www.appalachiantrail.org/about-the-trail

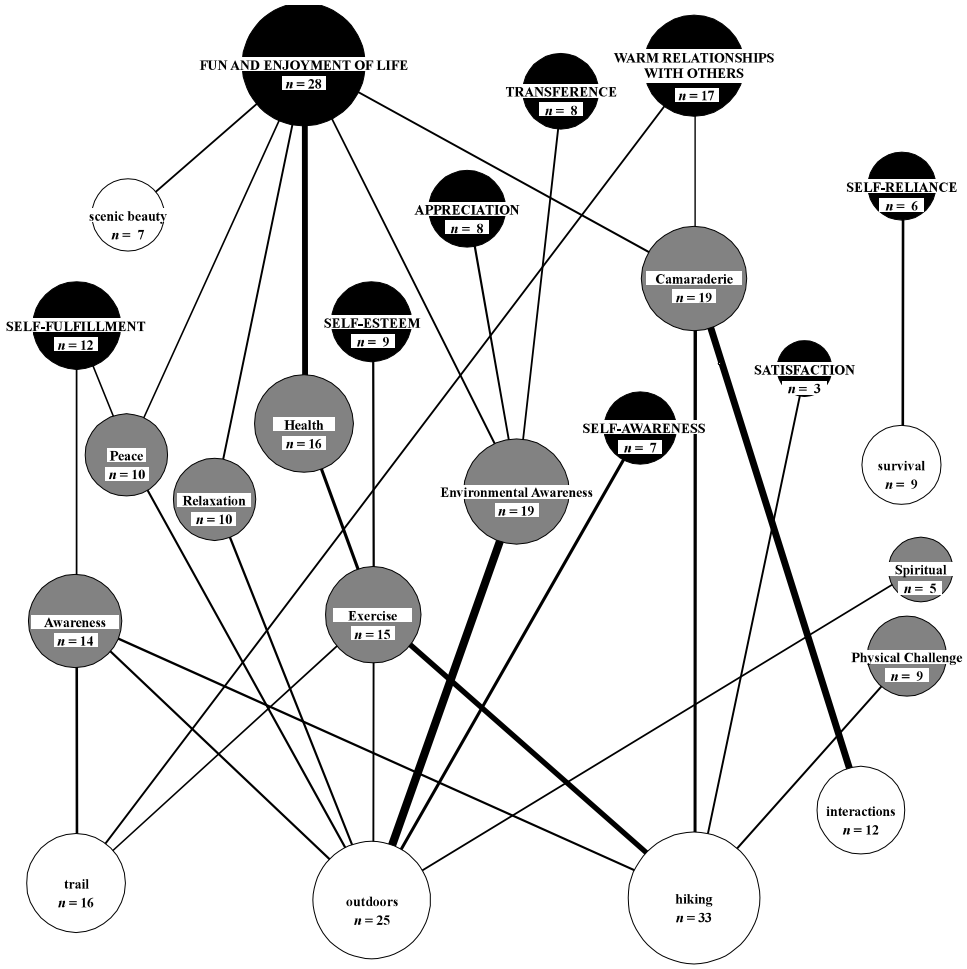
Goldenberg, M., & Soule, K. (2014). Outcomes of hiking the Pacific Crest Trail. *Journal of Outdoor Recreation, Education, and Leadership, 6*(1), 11-21.

Freidt, B., Hill, E., Gómez, E., & Goldenberg, M. (2010). A benefits-based study of Appalachian Trail users: Validation and application of the benefits of hiking scale. *PHENex, 2*(1), 1-22.

Hill, E., Goldenberg, M., & Freidt, B. (2009). Motivations for hiking the Appalachian Trail: Using a means-end approach. *Journal of Unconventional Parks, Tourism, & Recreation Research, 2*(1), 19-27.

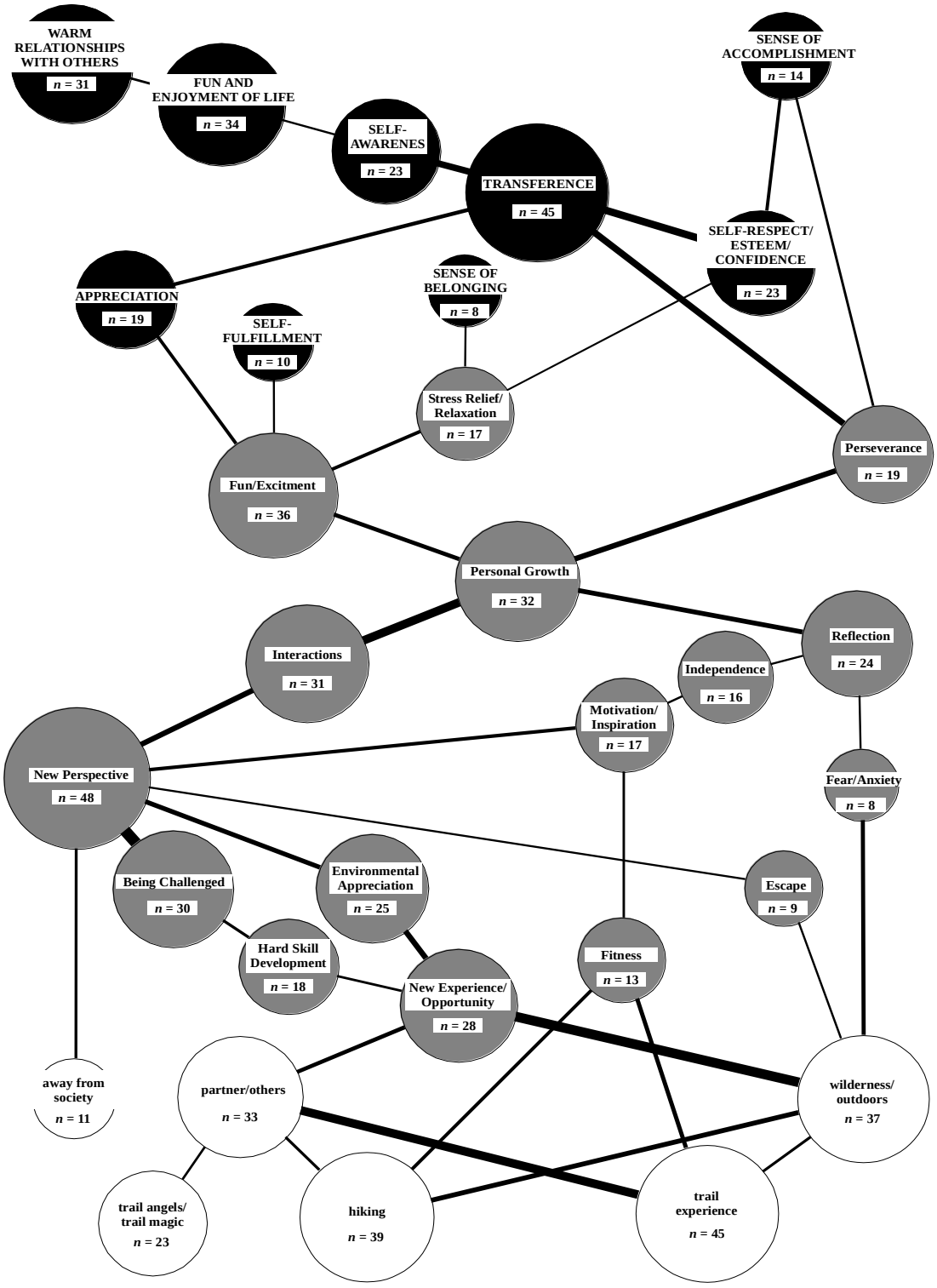
Pacific Crest Trail Association. (2013). *Discover the trail.* Retrieved from http://www.pcta.org/discover-the-trail/

Figure 1. Hierarchical Value Map for Appalachian Trail Hikers



Note: Figure from Hill, Goldenberg, & Freidt, 2009, p. 23

Figure 2. Hierarchical Value Map for Pacific Crest Trail Hikers



Note: Figure from Goldenberg & Soule, 2014, p. 17

LEISURE ACTIVITY AND COPING WITH THE STRESS OF UNIVERSITY LIFE

Authors:
Katherine Ann Jordan
Dr. Douglas A. Kleiber
Dr. Diane M. Samdahl

Affiliation:
College of Education
University of Georgia

Address:
College of Education
The University of Georgia
G-3 Aderhold Hall
Athens, Georgia 30602

Problem Statement

Emerging adults have the highest depression rate, the highest rate of substance abuse, and are more likely to be overweight or obese in comparison to other developmental stages.[i] Specifically, for undergraduate students transitioning into college, physical activity declines, eating habits change, alcohol consumption increases, and experimentation with drugs and sex increases.[ii] Unhealthy and risky habits, such as the aforementioned, are negative coping strategies that students may use to cope with their feelings of stress and anxiety. Hence, building a healthy coping lifestyle foundation is essential to students' immediate and long-term health.

Scholars agree that leisure provides opportunities to increase and maintain physical[iii], cognitive[iv], emotional[v], and social well-being.[vi] Utilizing leisure as a means to cope with stress may be particularly important to college students, while also building a foundation for future development and adjustment.

The following question guided the discussion: To what extent, and in what ways, is leisure used in coping with the stress experienced by university students?

1. How much stress do participants feel?
2. What do participants do to relax/cope with perceived stress?
3. Is leisure/relaxing activity associated with stress levels?

Methods

Questionnaires were administered at a large southeastern university through an on-line service called *Qualtrics*. Participants were recruited from research pools as well as previously contacted school organizations. Participants had to be between 18 and 28 years old and a full time student (enrolled for at least 12 credit hours). The age range was selected in order to encompass a slightly broader range of emerging adults than the age range of 18-25[vii], as many students are non-traditional and may be older than the typical college student. Credit hours were also important to use in narrowing down participants. Since one of the main research questions regards perceived stress, the researcher felt a full-time student may experience more stress than a part-time student. While the argument can be made that a part-time student may hold a full-time job and could experience more stress, full-time students remain the focus of this study.

The questionnaire was comprised of questions generated by the researcher and scales that were previously validated through quantitative research and had demonstrated reliability. They were also chosen due to their relevance to the concepts and research questions. All participants completed the questionnaire on-line between September 23 and October 14, 2013. There were 269 (229 undergraduates, 20 graduates, and 20 unknown) participants after 18 were removed for lack of usable data. Descriptive statistics and frequencies were examined to determine preliminary results.

Results

The perceived stress score was derived from the Perceived Stress Scale[viii]. Participants

were asked a series of ten questions that were developed to gauge perceived stress such as "In the last month, how often have you felt stressed?" Answers participants chose from were never, rarely, sometimes, often, and very often. The answers were given scores from one to five, which were then summed to calculate total perceived stress scores. Total perceived stress scores could range from ten to fifty with ten representing low stress and fifty representing high stress. The actual perceived stress scores ranged from 12 to 48. Out of 269 participants, 244 responses were usable to determine perceived stress levels. On a scale of 10-50, the mean stress score was 30.475 with 20.5% (n=50) of these students reporting stress scores equal to or higher than 36. This finding suggests that college life is moderately stressful, though not at extreme levels (at least at the time of this survey). For this analysis, participants were classified as low stress (scores $\leq$ 23, n=28), medium stress (scores 24-35, n=166), and high stress (scores $\geq$ 36, n=50). See Figure 1 for a summary of the data.

In order to determine what participants do to cope with stress, the participants were prompted with the following statement "The following questions are meant to gauge how you cope with your life stressors." After participants were asked if they intentionally did things to relax they were asked to "List the things you do in order to relax." As this was an open-ended response format participants could write as many activities as they deemed necessary. Participant responses were then categorized into the categories presented in Table 1. Once categories were created, responses were coded as a "1" per category if they listed an activity or a "2" if they did not list an activity. Only 228 responses were usable to determine what participants do to relax from stressors of university life.

Overall, rest and surfing the Internet or watching T.V. were the most commonly reported relaxing activities (48.7% and 43.5% respectively) with exercise and interacting with friends and

significant others (40.1% and 36.4% respectively) falling close behind.

In order to determine if there is an association between stress level and reported relaxation techniques a crosstabs analysis, presented in Table 2, was used. All relaxation activities were examined in the crosstabs analysis, however, only the top four most commonly mentioned relaxation activities and one other activity that may be of significance are presented. It is also essential to keep in mind that simply because a participant did not mention a specific relaxation activity does not mean that they do not participate in an activity for the purpose of relaxing.

Only 221 responses were usable to examine if there was an association between low, medium, and high stress levels and relaxing activities. A statistically significant association exists between watching T.V. and surfing the Internet and perceived stress levels. As seen in Table 2, most of those participants who watch T.V. and surf the Internet have medium stress levels. It is possible that watching TV and surfing the Internet does not necessarily help lower stress, but serves as a distraction or an escape from stress. It is also worth mentioning that there was a significant association between getting outside and stress level as well. However, due to the small number of responses for this category, it is difficult to determine if a statistically significant association truly exists.

Discussion

The participants of this study were moderately stressed and may need better outlets to cope with stress. Watching T.V. and surfing the Internet are not necessarily negative coping strategies, but may not be as useful as other strategies that promote health and well-being. Further research is needed to determine relationships between stress levels and activities and whether or not high stress participants are managing their stress with the activities they choose.

College Health Centers should also be aware that certain activities might be influential in managing stress.

Figure 1
Total Perceived Stress Scores

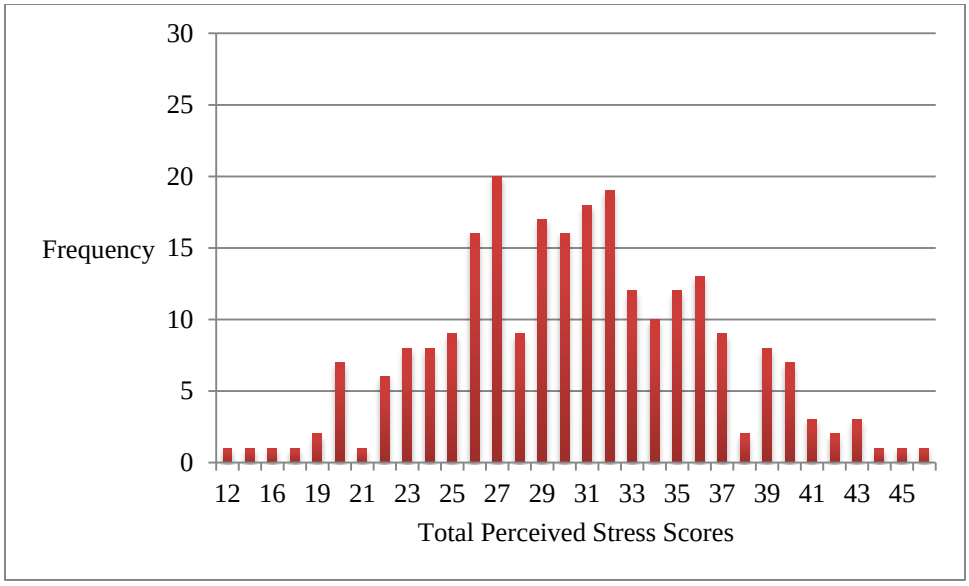


Table 1
Relaxation Activities Frequencies

Category	*n* out of 228	Percent*
Rest	131	48.7
Watch TV and surf the Internet	117	43.5
Exercise	108	40.1
Interact with friends and significant others	98	36.4
Play video games and play on cell phone	11	4.1
Connect with family	21	7.8
Meditate	36	13.4
Listen to music	54	20.1
Read	48	17.8
Eat	39	14.5
Pamper	24	8.9
Get outside	32	11.9
Pray or read Bible	12	4.5
Plan and organize	11	4.1
Look to help others	9	3.3
Work on school related things	7	2.6
Smoke or drink alcohol	9	3.3
Create	27	10.0

*Percentages were calculated out of 100% for each category

Table 2
Grouped Perceived Stress and Relaxing Activity

	Stress Level					
	Low Stress	Medium Stress	High Stress			
				N	χ^2	*ρ*
Rest	42.3% *n*=11	58.6% *n*=89	60.5% *n*=26	221	2.650	.266
Watch TV and surf the Internet	34.6% *n*=9	58.6% *n*=89	39.5% *n*=17	221	8.440	.015*
Exercise	65.4% *n*=17	43.4% *n*=66	46.5% *n*=20	221	4.304	.116
Connect with friends and significant others	30.8% *n*=8	45.4% *n*=69	39.5% *n*=17	221	2.139	.343
Get outside	30.8% *n*=8	11.8% *n*=18	13.0% *n*=6	221	6.435	.040*

References

[i] Kuwabara, S.A., Van Voorhees, B.W., Gollan, J.K., & Alexander, G.C. (2007). A qualitative exploration of depression in emerging adulthood: Disorder, development, and social context. *General Hospital Psychiatry, 29,* 317-324.

[ii] Newton, F.B., Kim, E., & Newton, D.W. (2006). A program to establish healthy lifestyle behaviors with freshmen students. *National Association of Student Personnel Administrators, 43*(3), 497-517.

[iii] LaMonte, M.J. & Chow, H. (2010). Leisure and physical health. In L. Payne, B. Ainsworth, & G. Godbey (Eds.), *Leisure, health, and wellness: Making connections* (51-60). State College, P.A.: Venture Publishing.

[iv] Castelli, D. (2010). Physical activity and cognitive health. In L. Payne, B. Ainsworth, & G. Godbey (Eds.), *Leisure, health, and wellness: Making connections* (85-97). State College, P.A.: Venture Publishing.

[v] Wiersma, E.C. & Parry, D.C. (2010). Leisure pathways to emotional health – Public health perspectives. In L. Payne, B. Ainsworth, & G. Godbey (Eds.), *Leisure, health, and wellness: Making connections* (61-69). State College, P.A.: Venture Publishing.

[vi] Keller, C., Fleury, J., & Rogers, C. (2010). Leisure and social health. In L. Payne, B. Ainsworth, & G. Godbey (Eds.), *Leisure, health, and wellness: Making connections* (100-107). State College, P.A.: Venture Publishing.

[vii] Arnett, J.J. (2000). Emerging Adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469-480.

[viii] Cohen, S., Kamarck, T., & Mermelstein,R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24,* 385-396.