

Segmentation of Visitors' Cross-Cultural Values in Forest Recreation

Chieh-Lu Li¹, Harry C. Zinn², Garry E. Chick², James D. Absher³
& Alan R. Graefe²

¹The University of Hong Kong, China
ccli@hku.hk

²The Pennsylvania State University, USA
hzinn@psu.edu
gchick@psu.edu
gyu@psu.edu

³USDA Forest Service, USA
jabsher@fs.fed.us

Keywords: Segmentation, cross-cultural values, ethnicity, Hofstede, Inglehart, Kahle, Postmodern values, forest recreation.

Introduction

Recreation visitors to national forests are not all alike. Marketing applications have used values as the criterion for segmenting the population into homogeneous groups of individuals (e.g. Madrigal & Kahle 1994). Values can provide potentially powerful explanations of visitor behavior because they are inner- and central-oriented within a person's cognitive system, remarkably stable over time and serve as the standards of conduct (Rokeach 1973). Because culturally diverse populations may have varying values, and values may influence other, more specific beliefs as well as behaviors, it is important to study these values among increasingly diverse populations in a variety of contexts. Therefore, in this paper, we examined the potential utility of Hofstede's measure of cultural values (1984) for group segmentation in an ethnically diverse population in a forest recreation context.

Methods

In 2002, the visitors to the Angeles National Forest (ANF) near metropolitan Los Angeles were surveyed. Because we intended to segment a population of diverse cultural values and beliefs among various ethnic groups in this study, a simple ran-

dom sample of all visitors would not efficiently yield adequate respondents of diverse ethnic groups. An on-site survey was administered at ANF sites frequented by ethnically diverse populations¹. Using purposive sampling, a total of 1,332 visitors were approached, 154 of whom declined or were unable to participate the on-site survey. Of the 1,178 informants who responded, four survey questionnaires were incomplete. This resulted in 1,174 usable surveys, with a net response rate of 88 percent. Overall, 38 percent were white (n = 444), 27 percent Hispanic (n = 312), 27 percent Asian (n = 319), and 8 percent "other" including African-American, American-Indian, "other", and missing values (n=97)².

Results

Confirmatory factor analysis was first applied to confirm the theoretical models of Hofstede's four cultural dimensions of values (Power distance, In-

¹ The use of verbal surveys to determine "values" and preferences is a very common practice. Researchers need to acknowledge the limitations of this paradigm.

² There were 14 sampling sites selected in the ANF. However, about 90 percent of the responses came from three developed sites close to Los Angeles metropolitan area. At sampling sites further from the urban edge, fewer visitors were encountered, especially on weekdays. Most of the survey respondents were hikers, backpackers as well as picnicking and scenic drive visitors, but also including small number of bikers, campers, resort guests, nature center visitors, and cabin owners.

Table 1: Indices statistics of Confirmatory Factor Analysis for Hofstede's 4-dimension model of cultural values.

Model	χ^2	χ^2/df	GFI ^a	NFI ^b	CFI ^c	RMR ^d
4 items per dimension	1367.16	13.95	0.80	0.70	0.71	0.13

^a GFI: Goodness of Fit Index.

^b NFI: Normed Fit Index.

^c CFI: Comparative Fit Index.

^d RMR: Root Mean Square Residual.

Acceptable fit rule of thumb: $\chi^2/df = 2$ to 5; $GFI \geq 0.90$; $NFI > 0.90$; $CFI > 0.90$; $RMR = 0.05$ to 0.10.

dividualism, Masculinity, and Uncertainty avoidance). Results showed a poor fit of the data to Hofstede's four-dimensional model (Table 1). Given the poor fit of the original four-dimensional cultural values model, we used exploratory factor analysis to reduce the cultural values variables and explore interpretable dimensions of cultural values in the context of forest recreation. We found three cultural values dimensions which we labeled Hierarchical Beliefs, Uncertainty Avoidance, and Femininity (Table 2).

We used cluster analysis to identify homogeneous groups of respondents based on similar responses to the cultural values dimensions and age, because research has demonstrated a relationship between values shift and age groups (e.g., Inglehart, 1977). We found differences in the emphasis placed on traditional gender roles versus on gender equality, on the importance of maximizing economic success versus maximizing subjective well-being, on the achievement versus individual autonomy, and on emphasizing versus de-emphasizing traditional legal and religious authority. These differences are consistent with shifts from Modernist toward Postmodernist values described by Inglehart and colleagues. Results allowed us to segment respondents into three homogeneous groups labeled Modernist, Mixed, and Postmodernist.

Among the three clusters, the Mixed group was most numerous (41 percent of the sample); in addition, this segment was most different from the other two in terms of the three dimensions of cultural values (Table 3). We are not surprised that the Mixed group was most numerous due to the diverse population in southern California in the U.S. Moreover, while conducting the on-site survey in the ANF, a few respondents asked how they could put themselves in one or another ethnic category in the questionnaire as they were actually from mixed

cultural backgrounds³. Other researchers have addressed similar situations with self-ascription to ethnic groups. On the other hand, we did find that the largest differences occurred between the Modernist and Mixed groups. Compared to the Modernists, the Mixed group was less likely to agree with those three dimensions of cultural values as well as tended to be younger.

Socio-demographic, service quality, satisfaction, and behavioral intention variables were used to validate the three values-based segments. Among socio-demographic variables, gender, formal education, ethnicity, years in the U.S., generations in the U.S., and country of birth were all related to the three segments, but household income was not (Table 4). Furthermore, compared to the Mixed clusters, the Modernists were more likely to perceive high levels of service quality, be satisfied with their forest recreation visits, and have positive behavioral intentions toward national forests (Table 5). These findings suggest that the shift from Modernist toward Postmodernist values is discernable in the forest recreation context, at least in southern California in the United States.

The findings provide evidence that supports measuring cross-cultural values to identify distinct market segments in forest recreation. The value profiles found in this study were meaningful enough to offer managers actionable portraits on which to base product development, communication strategies, and other marketing actions to match different visitor segments' cultural value orientations. For example, the Postmodernists tended to be females, to be white, to have resided longer in the U.S., to disagree with Hierarchical Beliefs values, and to perceive lower service quality in the National Forest. To help

³ In the sample, there were 97 respondents who indicated themselves as "other", accounted for eight percent of the total responses.

Table 2: Reanalysis of Hofstede's cultural values items with exploratory factor analysis.

Hofstede's original cultural value dimensions and items ^a	New factors		
	Factor 1 Hierarchical Beliefs ^b	Factor 2 Uncertainty Avoidance	Factor 3 Femininity
Power distance			
1. Inequalities among people are both expected and desired. ^c	.61	.20	.14
2. Less powerful people should be dependent on the more powerful.	.75	-.00	.12
3. Inequalities among people should be minimized.	.04	.17	.19
4. There should be, and there is to some extent, interdependencies between less and more powerful people. ^d	.37	.34	.22
Individualism			
5. Everyone grows up to look after him/herself and his/her immediate family only.	.71	.01	.07
6. People are identified independently of the groups they belong to. ^d	.51	-.00	.43
7. An extended family member should be protected by other member in exchange for loyalty.	.65	.07	.19
8. People are identified by their position in the social networks to which they belong. ^d	.49	.40	-.21
Masculinity			
9. Money and material things are important.	.67	.21	-.08
10. Men are supposed to be assertive, ambitious, and tough.	.75	.18	-.06
11. Dominant values in society are the caring for others and preservation.	.21	.20	.78
12. Both men and woman are allowed to be tender and to be concerned with relationships.	-.07	.44	.70
Uncertainty avoidance			
13. High stress and subjective feeling of anxiety are frequent among people.	.05	.81	.16
14. Fear of ambiguous situations and of unfamiliar risks is normal.	.09	.85	.11
15. Uncertainty is a normal feature of life and each day is accepted as it comes.	.06	.82	.21
16. Emotions should not be shown.	.69	-.10	.15

^a Item scores ranged from 1 (strongly disagree) to 5 (strongly agree).

^b Total variance explained is 52.33 %. Factor 1, **Hierarchical Beliefs**, explained 25.28 %; factor 2, **Uncertainty Avoidance**, explained 17.09 %, and factor 3, **Femininity**, explained 9.96 % of variance.

^c N = 788. Cases were excluded listwise. Principal components extraction and Varimax rotation methods were used.

^d Item deleted due to low and inconsistent factor loadings.

Table 3: Three-cluster solution of cultural values and age via cluster analysis.

	Modernist ³ (n = 287)	Mixed (n = 358)	Postmodernist (n = 230)	F for ANOVA
Hierarchical Beliefs ¹	3.6 ^a	2.9 ^b	2.2 ^c	485.0 ^{***}
Uncertainty Avoidance ¹	4.0 ^a	3.1 ^b	4.0 ^a	332.1 ^{***}
Femininity ¹	4.2 ^a	3.0 ^b	4.0 ^c	369.0 ^{***}
Age ²	37.7 ^a	34.0 ^b	33.5 ^b	9.8 ^{***}

¹ Hierarchical Beliefs, Uncertainty Avoidance, and Femininity scores ranged from 1 (strongly disagree) to 5 (strongly agree).

² Age in years used as a continuous variable.

³ Group means sharing different superscripts differ significantly at 0.05 level in a post-hoc Scheffe test.

*** Significant at the 0.001 level.

Table 4: Comparison of Socio-demographics of Modernist, Mixed, and Postmodernists in the Angeles National Forest.

Characteristics	Values segments			ANOVA & Chi-square tests ³	
	Modernist	Mixed	Postmodernist		
Gender ¹	Female	37	38	51	$\chi^2_{(2)} = 12.57^{**}$, Cramer's V= 0.12
	Male	63	62	49	
Household income ¹	Less than \$ 20,000	13	19	14	$\chi^2_{(10)} = 11.32$, Cramer's V= 0.087
	\$ 20,000 – \$ 34,999	17	16	18	
	\$ 35,000 – \$ 49,999	17	18	14	
	\$ 50,000 – \$ 64,999	16	14	11	
	\$ 65,000 – \$ 79,999	12	12	12	
	\$ 80,000 or more	26	21	31	
Formal education ¹	Not complete high school	3	4	2	$\chi^2_{(12)} = 21.39^*$, Cramer's V= 0.115
	High school diploma/GED	12	15	8	
	Technical or business school	5	6	2	
	Some college	15	18	20	
	College degree	35	35	35	
	Some graduate work	5	6	7	
	Graduate degree	25	17	27	
Ethnicity ¹	Whites	28	37	55	$\chi^2_{(4)} = 36.49^{***}$, Cramer's V= 0.150
	Hispanics	35	28	22	
	Asians	37	35	23	
Generation in the US ¹	1 st generation	35	37	21	$\chi^2_{(6)} = 22.71^{***}$, Cramer's V= 0.145
	2 nd generation	24	13	23	
	3 rd generation	18	14	20	
	4 th generation	24	36	36	
Country born ¹	USA	51	60	73	$\chi^2_{(2)} = 24.79^{***}$, Cramer's V= 0.176
	Outside USA	49	40	27	
Years stayed in the US ²	Number of years stayed in USA	15.8 _a	17.5 _{ab}	20.1 _b	$F_{(2, 386)} = 3.76^*$

* Significant at the 0.05 level, ** significant at the 0.01 level, *** significant at the 0.001 level.

¹ For Chi-square test, numbers reported in cells refer to cell percentages.

² Mean with different subscript letter significantly differed at the $p = 0.05$ level after Scheffe test adjustment.

³ The number showed in the brock indicated the degree of freedom.

Cramer's V was a measure of association, with values 0.10 or less considered weak, between 0.10 and 0.30 moderate, and 0.30 or higher considered strong.

the Postmodernist group enjoy the National Forest, managers could design recreation facilities and services to better meet the needs of the Postmodernists (e.g., increase safety information and other concerns for females, such as using signs, brochures, or emergency telephones, and the presence of Forest Service officers, rangers, and volunteers); encourage the

use of persuasive, courteous, non-coercive communication that guides visitors while minimizing hierarchical power distance between visitors and Forest Service personnel. Additionally, developing programs that allow visitors to have more friendly and non-enforcement-related interactions with Forest Service personnel may also help reduce cultural values

Table 5: Comparison of perceptions of service quality, satisfaction and behavioral intentions of Modernist, Mixed, and Postmodernists in the Angeles National Forest.

Dependent variable Index/dimension ¹	Modernist		Mixed		Postmodernist		F for ANOVA
	Mean ²	SD	Mean	SD	Mean	SD	
Service quality index ³	3.95 _a	.58	3.64 _b	.68	3.77 _c	.57	21.05 ^{***}
Facilities	3.94 _a	.59	3.64 _b	.72	3.80 _a	.60	17.43 ^{***}
Service	4.00 _a	.67	3.72 _b	.81	3.87 _{ab}	.74	11.02 ^{***}
Information	3.86 _a	.72	3.50 _b	.76	3.55 _b	.75	20.59 ^{***}
Management	4.02 _a	.62	3.69 _b	.74	3.87 _c	.65	19.12 ^{***}
Satisfaction index	6.94 _a	1.4	6.55 _b	1.5	6.84 _{ab}	1.6	5.72 ^{**}
Behavioral intentions index	4.20 _a	.54	3.78 _b	.72	4.01 _a	.63	34.73 ^{***}

Significant at $p \leq 0.01$; *Significant at $p \leq 0.001$.

¹ Service quality and behavioral intentions index/dimension coded on a 5-point scale from 1 = Strongly disagree to 5 = Strongly agree, while satisfaction index on a 9-point scale from 1 = not at all satisfied to 9 = extremely satisfied.

² Mean with different subscript letter significantly differed at the $p = 0.05$ level after Scheffe test adjustment.

³ Service quality dimension was created by taking the mean of the service quality items within the same dimension; service quality index, by four service quality dimensions; satisfaction index, by three satisfaction items, and behavioral intentions index, by five behavioral intentions items.

gaps between Postmodernists and officials, leading to enhanced perceptions of service quality and increased customer satisfaction.

Our results suggest several areas where additional research is needed. First, we found limited support for using Hofstede's cross-cultural measure of values in the forest recreation context. The use of Hofstede's measure in the park and recreation context has also been criticized by others. Our findings suggest that there are some degrees of validity to aspects of Hofstede's underlying conceptualization, but additional testing will be needed. Specifically, we suggest testing other measures of cross-cultural values (e.g., Kahle, Beatty, & Homer, 1986) against Hofstede's in this context. Second, in order to ensure obtaining a highly diverse sample, we employed purposive sampling procedures to collect data. This means, of course, our sample was not random, and it is inappropriate to estimate population characteristics from our results. Additional research employing probability sampling will be needed to develop a more complete understanding of patterns of values segmentation in park and recreation and to better understand relationships among cultural values, socio-demographic, and service quality related variables.

References

- Hofstede, G. (1984). *Culture's Consequences: International Differences in Work-Related Values*. Beverly Hills.
- Inglehart, R. (1977). *The silent revolution: Changing values and political styles among western publics*. Princeton.
- Kahle, L.R., Beatty, S.E. & Homer, P.M. (1986). Alternative measurement approaches to consumer values: The List of Values (LOV) and Values and Lifestyles (VALS). In: *Journal of Consumer Research* (13), p 405-409.
- Madrigal, R. & Kahle, L.R. (1994). Predicting vacation activity preferences on the basis of value-system segmentation. In: *Journal of Travel Research* (32/3), p 22-28.
- Rokeach, M. (1973). *The nature of human values*. New York.