

Structural Inequalities in Outdoor Recreation Participation: A Multiple Hierarchy Stratification Perspective

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The purpose of this study is to empirically test the multiple hierarchy stratification perspective on outdoor recreation participation. Data for this study are from a telephone survey conducted of 3,000 Texas residents in 1998. Logistic regression analyses provided strong support for the multiple hierarchy stratification perspective. The results show that elderly minority females who do not have a college degree, and who do not make more than \$20,000 per year occupy the lowest rank in the hierarchy of outdoor recreation participation probability. In contrast, young Anglo males who have a college degree, and who make more than \$20,000 per year occupy the highest rank in the hierarchy. The remaining groups fall somewhere in the middle. The results indicate that if equity is to be achieved, outdoor recreation managers and planners must make an effort to find ways to enhance outdoor recreation participation among multiple disadvantaged populations.

KEYWORDS: *Outdoor recreation participation, multiple hierarchy stratification perspective, logistic regression*

Introduction

Numerous studies in the field of leisure have focused on the effects of socio-economic status, race and ethnicity, age and gender on leisure involvement. Leisure researchers began investigating the relationship between socio-economic status (SES), such as the level of education, level of income and occupational status, and leisure participation in the 1950s (Stamps & Stamps, 1985). In the 1960s, as minorities became a powerful force in local and national politics, researchers began investigating the relationship between race/ethnicity and leisure involvement (Hutchison, 1988). In addition, researchers began to examine the relationship between life cycle and

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leisure participation in 1970s due to the increasing longevity and the sheer size of the older population (Cutler & Hendricks, 1990). Almost a decade later, starting in the early 1980s, awareness of the need to incorporate gender into leisure research began to emerge (Henderson, Bialeschki, Shaw, & Freysinger, 1996).

Prior to the 1980s, many of the studies reported singular effects of socio-economic status, race/ethnicity, age, and gender on leisure. In the 1990s, however, studies that examined the combined effects of these statuses on leisure started to appear in the literature (i.e., Cutler Riddick & Stewart, 1994; Scott & Munson, 1994; Shinew, Floyd, McGuire, & Noe, 1995; Philipp, 1997; Arnold & Shinew 1998). It is notable that many of these studies employed the idea of the multiple hierarchy stratification perspective. The framework originated in the field of social gerontology to provide insight into how access to housing, health coverage, life satisfaction, and leisure resources are compromised as a result of holding a multitude of disadvantaged statuses (Markides, Liang, & Jackson, 1990). The perspective basically suggests that our everyday life is influenced by multiple social statuses, including socio-economic status, ethnicity, age, and gender. It is implied that leisure life styles are influenced by a combination of these multiple statuses.

Indeed, the perspective provides a more realistic picture of leisure life styles than studies that focused solely on the impact of a single status. The perspective suggests that since elderly, minority women who have a lower socio-economic status have four disadvantageous statuses, they are likely to occupy the bottom of a multiple hierarchy stratification of outdoor recreation participation. In contrast, since middle-aged, Anglo men who have a high socio-economic status have four advantageous statuses, they might occupy the top of the hierarchy. It also suggests that the remaining groups are likely to fall somewhere in the middle because they possess both advantageous and disadvantageous statuses.

Most studies that have examined the combined effects of socio-economic status, ethnicity, age, and gender on leisure have focused on psychological aspects of leisure, including leisure preferences, leisure constraints, and leisure benefits (e.g., Shinew et al., 1995; Philipp, 1997; Arnold & Shinew 1998). Almost no research has explored the combined effects of these statuses on the behavioral aspects of leisure, such as the level of outdoor recreation participation and park visitation. In addition, those studies that have employed the multiple hierarchy stratification perspective have combined the effects of just two variables instead of the original four (i.e., socio-economic status, ethnicity, age, and gender).

The purpose of this study is to examine the combined effects of socio-economic status, race/ethnicity, age and gender on outdoor recreation participation employing the multiple hierarchy stratification perspective. We will begin by reviewing the literature related to socio-economic status, ethnicity, aging, and gender effects on leisure participation. Then, in order to examine the combined effects of these four factors on outdoor recreation behavior, the idea of the multiple hierarchy perspective will be explained in detail.

Finally, we will empirically test the multiple hierarchy stratification perspective on outdoor recreation participation using a stratified sample of 3,000 Texas residents. This study has implications for Texas given the dramatic changes in population characteristics that are projected for the decades ahead (Murdock, Hoque, Michael, White, & Pecotte, 1997).

Literature Review

Socio-Economic Status Effects

Socio-economic status variables have not been used extensively as predictors of leisure participation since the 1980s because of increased importance ascribed to cultural and ethnicity factors (Gramann & Allison, 1999). However, this does not necessarily mean that socio-economic status is unimportant in explaining peoples' leisure participation. Indeed, an individual's level of income, level of education, and occupational status has considerable influence on leisure participation. For example, Clarke (1956) and Burdge (1969) found a significant relationship between occupational status and leisure participation, especially with activities closely tied to social status and requiring financial or cultural resources. Kelly (1996) also pointed out that income and occupational status are related to opportunities and limitations to leisure participation. A low income, in particular, he added, keeps many people from being able to allocate the necessary financial resources that are required for participation in some kinds of outdoor recreation. In the same context, Scott and Munson (1994) also reported that income is the single best predictor of perceived constraint to park visitation.

The relationship between level of income and leisure involvement can be partly explained in terms of opportunity theory. Originally suggested by Hauser (1962), the perspective suggests that participation rates in outdoor recreation vary directly with both the cost and physical availability of outdoor recreation resources to the public (Lindsay & Ogle, 1972). The higher the cost and the further removed outdoor recreation resources are from low income persons, the less resources are available to them. Low income clearly filters out costly recreation participation and affects participation that requires travel costs. It should be noted, however, that opportunity theory tends to focus on locational distribution of recreation resources rather than on income itself as a factor affecting outdoor recreation participation (Lindsay & Ogle, 1972; Romsa & Hoffman, 1980; Lieber, Fesenmaier, & Bristow, 1989).

Kelly (1980; 1996) emphasized that education level is generally a better predictor than income or occupation of involvement in leisure activities. As noted, he reasoned that income and occupation impact the kinds of leisure opportunities in which people can avail themselves. Education, in contrast, is more related to leisure socialization and the inculcation of leisure interests and skills. People who have gone on to college, for example, have had the benefit of having access to a social and cultural milieu in which many kinds of learning, including the acquisitions of outdoor recreation skills, take place.

Several studies have supported the linkage between level of education and leisure participation. For example, White (1975) found that of the three socio-economic status variables (education, occupation and income), education was the most important predictor of outdoor recreation participation. In a study on visitors to national parks, Bultena and Field (1978) also found that education was the most powerful of the three socio-economic variables in explaining national park visitation. Lucas (1990) broadened this idea by noting that the most distinguishing characteristic of wilderness visitors is a high educational level. Lucas reported that, with few exceptions, 60% to 85% of wilderness visitors have attended college, and 20% to 40% have completed some graduate study. Using NORC data, Kelly (1983) reported that education was the most significant independent variable in explaining peoples' use of outdoor recreation areas. Evidence from these studies suggests that advanced education contributes to people developing an interest in the natural world and developing outdoor recreation skills.

The results summarized above indicate that people in a lower socio-economic status are less likely to participate in outdoor recreation than those of a higher socio-economic status due to a lack of financial resources that would give them access to outdoor recreation facilities and a lack of interest and skills that might be acquired through an advanced education.

Race and Ethnicity Effects

With regard to racial differences in recreation behavior, several theories have been applied in the field of leisure studies. However, two contrasting explanations, ethnicity and marginality hypotheses, have been the dominant frameworks for explaining differences between ethnic and racial groups in terms of their leisure involvement.

Originally developed by Washburne (1978), the marginality hypothesis suggests that ethnic and racial differences in leisure participation are a function of minority groups' subordinate socio-economic status stemming from historical discrimination (Floyd, 1999; Gramann & Allison, 1999). Low levels of park visitation, for example, are thought to be a function of a low income, the absence of transportation, and inaccessible facilities (Washburne, 1978). The marginality hypothesis, thus, explains apparent differences between Blacks and Whites, for example, in similar terms as those factors just summarized in the section on socio-economic effects. By implication, differences among African Americans in terms of leisure behavior are likely to stem from intra-race variation in socio-economic status.

Class polarization and class identification theories have also been used to explain ethnic and racial groups' leisure styles in terms of social class. Wilson's class polarization perspective (1978; 1980) has been used to explain differences in leisure lifestyles between lower socio-economic status African Americans and middle socio-economic status African American (Shinew, Floyd, McGuire & Noe, 1996). The perspective suggests that African American should not be regarded as homogeneous group, but examined as a

diversified group, which consists of different educational and income levels (Barr, Farrell, Barnes, & Welte 1993). In other words, it proposes that even though race might be an importance predictor of leisure lifestyle, socio-economic status remains another important predictor of leisure participation. For example, Shinew et al. (1996) found that the leisure preferences of black women of different income and educational levels were dissimilar.

Class identifications theory also provides additional insight into intra-race difference in regard to leisure involvement. Originally suggested by Centers (1949), the theory holds that when a person identifies him or herself as a member of a social class, he or she is likely to share attitudes, values and interests with other members of that class. Using this theory, Floyd, Shinew, McGuire, and Noe (1995) hypothesized that blacks and whites who defined themselves similarly in terms of social class would exhibit similar leisure preferences. The result of the analysis showed similarities in leisure preference between blacks and whites who defined themselves as middle class. However, there were differences in leisure preference between blacks and whites who defined themselves as poor working class.

The ethnicity hypothesis states that ethnic and racial differences in leisure participation stem from a culturally based value system, norms, and leisure socialization patterns, rather than socio-economic differences (Washburne, 1978, Washburne & Wall, 1980; Floyd, 1999; Gramann & Allison, 1999). For example, many writers have argued that Anglos view parks as places for refuge and escape from urban stressors, while African Americans and Native Americans tend to display little enthusiasm for natural parks and wilderness because these places are reminders of their subjugation and oppression (Meeker, 1973; Taylor, 1989; Harris, 1997; Johnson, 1998). According to Meeker (1973), one of the important consequences of slavery in America was that Black people learned to hate the land. The land in America was a place of punishment and imprisonment for slaves, not the source of liberation that Anglo settlers found.

Based on a comprehensive literature review on the issue of ethnicity and leisure, Floyd (1999) and Gramann & Allison (1999) suggested that many studies to date have found greater support for the ethnicity hypothesis rather than the marginality hypothesis, even though some researchers have argued that a consistent body of evidence in support of either has not emerged (West, 1989; O' Leary & Benjamin, 1981, Hutchison, 1988). For example, Stamps and Stamps (1985) found that race was more important than socio-economic status in determining leisure participation. Similarly, in his study of four different ethnic groups' (Anglos, African-American, Hispanic-American and Asian-American) leisure participation, Dwyer (1994) reported that, after controlling for socio-economic variables, significant differences in several outdoor recreation participations among the four groups remained. However, Johnson, Bowker, English and Worthen (1998) found that race appears to be less effective in predicting reasons for non-visitation and latent demand for wildland visitation. Moreover, these results did not provide strong support for either the ethnicity or marginality hypothesis as a sole

explicator of racial differences in wildland recreation. Rather, they suggested results indicate that the two probably work in combination to explain racial differences.

Recently, individual and institutional discrimination has also been analyzed as another factor that affects leisure participation of ethnic and racial minorities (Floyd, Gramann & Saenz, 1993; Floyd, 1999; Gramann & Allison, 1999). From this perspective, it is generally assumed that perceptions of discrimination, or actual experiences with discrimination, exert a negative effect on visitation among racial and ethnic minorities. For example, Gobster and Delgado (1993) showed that 10% of minority group users of an urban park stated that they had been victims of discrimination either by other users of the park or by the police. West (1993) also indicated that African Americans still fear the potential for discrimination and bigotry in travel through unknown areas. In an empirical study of park use in the Detroit (MI) area, West (1989) found that the threat of inter-racial conflict deterred African-American from using regional parks.

In sum, we can predict that minorities are less likely to participate in outdoor recreation than Anglos not only because many minority group members in the United States occupy lower socio-economic status but also because of various cultural values (in response to racism and discrimination), fear of harassment, and patterns of institutional discrimination.

Aging Effects

Employing the life cycle perspective, many leisure researchers have examined the effects of aging on leisure behavior. The life cycle perspective, based in part on Levinson's (1978) seminal work, is grounded in the idea that developmental changes, associated with different phases of people's lives, exert influence on the kinds of leisure activities people pursue and the meaning they impute to them. Gordon, Gaitz, and Scott (1976), for example, noted that the percentage of people reporting active leisure participation decreased from about 80% in the first stage of the adult life span to about 20% in the last stage of the life span. Kelly (1980) also showed a marked decrease with age for outdoor recreation and physically active categories, but a smaller age difference for social, home based and family activities. Examining starting, ceasing, and replacing leisure activities over the life span, Iso-Ahola, Jackson, and Dunn. (1994) also found that the number of people starting physically demanding outside the home activities decreased with each advancing adult life stage, but there was a significant increase in the number of people starting hobbies and home-based activities over the life cycle.

In addition, studies conducted over the last decade indicate that older adults are disproportionately non-users of local parks (Howard & Crompton, 1984, Scott & Munson, 1994, Scott & Jackson, 1996; Raymore & Scott, 1998). Researchers have examined the barriers that limit older adults' active participation in outdoor recreation and use of parks (Witt & Goodale, 1981;

McGuire, 1984; McGuire, Boyd, & Tedrick, 1996; Scott & Jackson, 1996; Raymore & Scott, 1998). Scott and Jackson (1996), for example, found that older women who did not visit public parks were most likely to be constrained by fear of crime and because they lacked companions.

Diminished participation in outdoor recreation with age may be partly explained in terms of developmental factors but *ageism* may also account for this decline. Gross, Gross, and Seldman (1978) defined ageism as "a form of institutional prejudice by which we convince ourselves, and many of the old themselves, that they are worth less in every respect simply because they are aged" (p. 2). Kelly and Freysinger (2000) noted that images of older adults may create something of a self-fulfilling prophecy in terms of service delivery. They noted,

If we believe that old age brings inevitable decline and that the process of decline is due to internal biological processes, then we may also believe that disengagement of the individual from society and society from the individual is not only natural but also healthy. That is, we are unlikely to believe exercise programs, travel opportunities, demanding volunteer roles, continuing education, and opportunities for athletic, artistic, and intellectual performance are worthwhile. (p. 119)

These images suggest that leisure service and natural resources agencies are likely to give primacy to the needs of younger patrons and will fail to modify programs, services, and resources to accommodate older adults' needs. This situation may be compounded by existing age-related norms. Many older adults tend to believe that participating in physical activities and visiting parks is more appropriate for younger rather than older adults (Ostrow & Dzewaltowski, 1986). Lawton (1985) suggested that the expectations of older persons might, in fact, limit their leisure involvement to more passive forms. In fact, over 35 years ago, Miller (1965) made the same point, maintaining that the "portent of embarrassment" may keep middle-aged and older people off the playing field.

These findings lead to the conclusion that older adults are less likely to visit parks and participate in outdoor recreation, in part, because of development factors, but also due a pervasive ageism that exists in society which gives primacy to the needs of youth and young adults, and the existence of age-related norms which dictate to older adults what are acceptable and unacceptable forms of leisure involvement.

Gender Effects

Many studies in the last few decades have incorporated gender as an important factor in explaining leisure patterns (Shaw, 1999). One approach to understanding the impact of gender on leisure behavior has been to study constraints on women's leisure. This approach helps explain why women are less likely than men to participate in many outdoor recreation activities and visit public parks. One set of constraints includes family concerns and an ethic of care, which is defined as the tendency to seek inclusion and foster

close personal relationships (Henderson & Allen, 1991; Harrington, Dawson, & Bolla, 1992; Shaw, 1999). Women have traditionally been socialized to put the needs of others, particularly their families, ahead of their own needs. One bi-product of this is that women are often more accommodating and open to influence than men (Henderson et al., 1996). With regard to selection of leisure activities, women are more likely than men to be influenced by their children's or spouses' preferences.

A related constraint is what some feminist scholars have called lack of entitlement (Green, Hebron, & Woodward, 1990; Henderson & Bialeschki, 1991; Shaw, 1999). This is the belief that women should not have equal right to recreation participation. A strong ethic of care may lead many women to feel that it is not their place to pursue leisure activities outside the context of home and the family. A lack of entitlement, however, is also manifest in the belief and practice that some leisure activities are simply not appropriate for females. Hunting and fishing, for example, have historically been pursuits reserved almost exclusively for males. The media often portray these and other activities as singularly masculine pursuits. Furthermore, women may be discouraged in their efforts to develop their leisure skills.

Other constraints on women that have been linked to broader power-based gender relations, as well as ideologies about femininity, are body image and safety. A group of feminist leisure scholars (Whyte & Shaw, 1994, Fredrick & Shaw, 1995, Shaw, 1999) have found that issues pertaining to safety and fear of crime are more salient for women than for men. Indeed, even though women's use of public space is relatively open in the United States, many women continue to experience barriers to public spaces. In this context, Bialeschki and Hicks (1999) noted that the threat of violence to women is commonplace and a fact of life to which most females are socialized at an early age.

In conclusion, most studies to date suggest that women are less likely to participate in outdoor recreation than men because of the ethic of care, a lack of entitlement, and a threat of violence which is pervasive not only at the site of outdoor recreation but also within the culture.

Multiple Hierarchy Stratification Perspective

We have reviewed a number of studies that show how socio-economic status, race/ethnicity, age, and gender help us understand why some groups face difficulty accessing leisure resources. However, many of the studies that we reviewed have examined the single effect of variables like race/ethnicity, gender, or education on leisure participation. In addition, even though some researchers considered multiple independent factors in explaining leisure participation, many have typically focused on which factor was most important in explaining leisure participation or in what way the independent variables explain total variance (e.g., Scott & Munson, 1994). This line of in-

quiry fails to demonstrate how multiple disadvantaged statuses compromise leisure involvement.

Over the past decade, the multiple hierarchy stratification perspective has been introduced to the field of leisure studies to examine the combined effects of sex, race/ethnicity, social class, and age on leisure (Cutler Riddick & Stewart, 1994; Shinew et al., 1995; Philipp, 1997; Arnold & Shinew, 1998). The perspective originated to provide insight into how multiple disadvantaged statuses compromised access to housing, health coverage, life satisfaction, and leisure resources (Markides et al., 1990). Theoretical development leading to the multiple hierarchy stratification perspective began first with attention to two variables, race/ethnicity and age, which led to the double-jeopardy hypothesis. The multiple hierarchy stratification perspective is an extension of the double-jeopardy hypothesis. Instead of two social status variables, it employs two additional statuses (i.e., socio-economic status and gender). The perspective suggests that since people who are poor, members of a minority group, elderly, and female possess four different disadvantaged social statuses, they represent the lowest end of the stratification continuum of outdoor recreation participation. In contrast the top level of the hierarchy is occupied by upper class, Anglo middle-aged men because they have four advantageous social positions. It also suggests that the remaining groups will fall somewhere in the middle because of the mixture of advantageous and disadvantaged statuses (Markides et al., 1990).

Most studies that have used this perspective in the field of leisure studies have investigated the combined influences of gender, race, and social class on the psychological aspects of leisure such as leisure preferences, leisure constraints, and leisure benefits. For example, Shinew et al. (1995) examined gender, race, subjective social class and their association with leisure preferences. Philipp (1997) also explored the interrelationship among race, gender and leisure benefits. In addition, Arnold and Shinew (1998) used the perspective to analyze the role of gender, race and income on park use constraints. There has been only one study that used the multiple hierarchy perspective to examine actual patterns of leisure participation (Cutler Riddick & Stewart, 1994).

From an analytical point of view, many of the studies have fallen short of actually using the multiple hierarchy stratification perspective as a tool for investigating inequality in regard to access to leisure opportunities. For instance, Cutler Riddick and Stewart (1994) only compared the leisure activity participation between Blacks and Whites, even though they employed the multiple hierarchy stratification perspective as their theoretical framework. Shinew et al. (1995) also failed to show inequality with regard to leisure preference among people who occupied different positions in the hierarchy, although they demonstrated that groups differed in terms of leisure preference. Furthermore, even though these researchers ascribed importance to age as a element within the multiple hierarchy stratification perspective, they did not actually include the variable in their respective investigations.

Purpose of the Study and Hypotheses

The purpose of this study is to empirically test the multiple hierarchy stratification perspective as it relates to people's involvement in outdoor recreation. Using logistic regression, we examined the extent to which socio-economic status, race, age, and gender compromise three indicators of outdoor recreation behaviors: participation in outdoor recreation away from home, participation in outdoor recreation close to home, and use of state parks.

We first contrasted the level of outdoor recreation participation between college graduate and non-college graduate, low income (less than \$20,000 per year) and others, Anglo and minority, older adult (older than 65) and others, males and females. We hypothesized that elderly minority females who do not have a college degree, do not make more than \$20,000 per year occupy the lowest rank in the hierarchy of outdoor recreation participation away from home, close to home, and state park visitation while young Anglo males who have a college degree, and who make more than \$20,000 per year occupy the top rank in outdoor recreation participation away from home, close to home, and state park visitation with the remaining groups falling somewhere in the middle.

Methods

Data for this study are from a telephone survey conducted by the Department of Recreation, Park and Tourism Sciences at Texas A&M University during the period of March 1 to April 30, 1998. The survey included responses from 3,000 Texas residents about their use of state parks, outdoor recreation participation, barriers and constraints to outdoor recreation, and demographic background. The sample was randomly selected and stratified by the ten State Comptroller's economic regions. Regional sample stratification was employed to make data from this study comparable to other regional data used in planning state recreation and conservation programs. Response rates across the 10 regions ranged from 57 percent (Upper Rio Grande) to 67 percent (West Texas).

One measure of outdoor recreation participation was, "How often have you personally participated in outdoor recreation *away from home* in the past 12 months?" Away from home was defined as "outside your city or community" and six response categories were provided. Another measure of outdoor participation was, "How often have you personally participated in outdoor recreation *close to home*?" Close to home was defined as "within your city or community." This variable also included six response categories. The distributions of the original values of the two variables were very skewed. For the away from variable, 50% said they did not participate at all, 32% said once or twice a year, 7% said less than once a month, 9% said about once a month, 2% said about once a week, and only 0.4% said almost daily. Similarly, 36% of respondents said they did not participate in outdoor recreation close to home, 22% said once or twice a year, 8% said less than once a

month, 16% said about once a month, 12% said once a week, and 0.6% said almost daily.

These patterns of distribution led us to the conclusion that we needed to use logistic regression, because this statistical technique does not assume a normal distribution for dependent variables (Agresti, 1996; Agresti & Finlay, 1997). Because logistic regression can be used only when research questions involve two category (dichotomous) dependent variables, we dichotomized original values of the away from home variable to identify two groups of respondents: those who did not participate in outdoor recreation away from home in the past 12 months (50%) and those who participated in outdoor recreation away from home in the past 12 months (50%). We also dichotomized original values of the close to home variable to identify participants (64%) and non-participants (36%). The other measure of outdoor recreation participation was measured by the question, "Did you visit a Texas state park in the last 12 months?" 48% said yes and 52% said no.

Table 1 provides some of the descriptive characteristics of the sample. Among the variables, we included four independent variables in this study (i.e., education, income, race, age, and gender) to test the multiple hierarchy stratification perspective. In order to emphasize the disadvantaged status of lower social class, minority elderly women in outdoor recreation participation, we recoded education into two groups: those who did not graduate from a college (70%) and those who had (30%); income into less than \$20,000 per year (35%) and more than \$20,000 per year (65%); and race into minorities (35%) and Anglos (65%). For the same purpose, we also recorded age into two groups: those older than 65 years of age (16%) and younger than 65 (84%).

The rationale for using college graduates and non-college graduates as the cutoff for education is that college is the very place in which many kinds of learning, including exposure to outdoor recreation, takes place. We also used \$20,000 as a cut-off for income because, according to U.S. Federal Poverty Measure, this amount approximates the poverty line for a four-person family. We chose to group Hispanics, African-Americans, and other people of color into a single group because these groups have historically occupied a subordinate position of prestige, privilege, and power to that of Anglos (Yetman, 1985). We used the 65 years of age cutoff because of the long-held association between that age and retirement.

As noted above, we employed the logistic regression model for data analysis. Logistic regression has been widely used, especially in social and medical sciences, when research questions seek to determine the probability that something will happen (Hamilton, 1992). From a theoretical point of view, it is an appropriate statistical method in exploring how multiple disadvantaged statuses compromise leisure involvement, because it enables us to compare the probability of outdoor recreation participation among different strata within a stratification hierarchy. The multiple logistic regression model has the form (Agresti, 1996; Agresti & Finlay, 1997; Hamilton, 1992):

TABLE 1
Demographic Characteristics of the Sample

Variables	Value	Valid Percent
Education	Grade school	11.7
	High school	46.6
	Associate Degree (Jr. College or Vocational school)	12.1
	College Graduate	21.6
	Advanced Degree (M.S., Ph.D.)	6.9
	Professional (Law, Medicine, Veterinarian)	1.2
Income	Under \$10,000	18.2
	\$10,000-\$19,999	16.7
	\$20,000-\$29,999	19.0
	\$30,000-\$39,999	14.7
	\$40,000-\$49,999	10.0
	\$50,000-\$69,999	11.9
	More than \$ 70,000%	9.4
Race/Ethnicity	White	64.5
	Hispanic	24.0
	African-American	8.1
	Other	3.3
Gender	Male	46.6
	Female	53.4
Age	16-24	15.3
	25-34	18.6
	35-44	20.3
	45-54	16.6
	55-64	12.9
	65 and order	16.3
Place of Residence	Population of less than 2,500	11.1
	Population between 2,500 and 9,999	12.5
	Population between 10,000 and 49,999	18.2
	Population between 50,000 and 249,999	22.2
	Population between 250,000 and 499,999	10.7
	Population of 500,00 or more	25.3

$$\text{Logit}(\pi) = \alpha + \beta_1 X_1 + \dots + \beta_k X_k \quad (1)$$

In Function 1, the exponentiation of a beta parameter provides the multiplicative effect of that predictor on the odds, controlling for the other variables (Agresti & Finlay, 1997). The formula for the probability of multiple logistic regression is (Agresti, 1996; Agresti & Finlay, 1997; Hamilton, 1992):

$$\pi = \frac{e^{\alpha + \beta_1 X_1 + \dots + \beta_k X_k}}{1 + e^{\alpha + \beta_1 X_1 + \dots + \beta_k X_k}} \quad (2)$$

In Function 2, e raised to a power represents the antilog of that number, using natural logs. Most calculators have an e^x key that provides antilog. How-

ever, using SPSS, one can calculate estimated probabilities of an occurrence, when a subject has certain characteristics of independent variables. One can also include qualitative independent variables in the model using dummy variables, as we did in our study (Agresti, 1996).

Results

Table 2 presents a series of multiple logistic regression models, estimating the effects of social class, race, age, and gender on log odds of participating in outdoor recreation. For example, Model 1 can be expressed as follows:

$$\text{Logit}(\pi_1) = -1.696 + .403 \text{ education} + .452 \text{ income} + .685 \text{ race} + .954 \text{ age} + .223 \text{ gender} \quad (3)$$

Table 2 shows that all of the independent variables show a significant relationship to outdoor recreation participation away from home. Specifically, it suggests that the odds of outdoor recreation away from home are approximately 1.5 times more ($\exp [.403] = 1.496$) for individuals who have

TABLE 2

Logistic Regression Estimates of the Combined Effects of Socio-Economic status, Race, Age, and Gender on Outdoor Recreation Participation (Binary Dependent Variable, 1 = Participation and Visit)

	Model 1 Outdoor Recreation Participation Away from Home (N = 2338)	Model 2 Outdoor Recreation Participation Close to Home (N = 2335)	Model 3 State Park Visitation (N = 2331)
Intercept	-1.696*** (.183)	-1.195*** (.303)	-1.201*** (.301)
Education (1 = college graduate)	.403*** (1.496)	.303** (1.353)	.285** (1.330)
Income (1 = more than \$20,000 per year)	.452*** (1.572)	.270** (1.311)	.422*** (1.526)
Race (1 = white)	.685*** (1.985)	.367*** (1.443)	.303*** (1.354)
Age (1 = younger than 65)	.954*** (2.595)	1.457*** (4.291)	.623*** (1.864)
Gender (1 = male)	.223*** (1.250)	.347*** (1.415)	.035*** (1.036)
Model G ² /df	206/5***	209/5***	93/5**
Percent of Correct Prediction	63.9	70.2	58.1

Logistic regression coefficient *** $p < .001$; ** $p < .05$
(Odds ratio in parentheses)

a college degree than for individuals who did not graduate from a college. It also indicates that the odds of participating in outdoor recreation away from home are roughly two times as high among Anglos ($\exp [.685] = 1.985$) than among non-Anglos. Furthermore, it shows that the odds of participating in outdoor recreation away from home among males are 1.3 times ($\exp [.223] = 1.250$) more than among females. According to the model, age is the best predictor ($b = .954$) in explaining respondents' participation in outdoor recreation away from home. The odds of outdoor participation away from home is roughly 2.6 times higher among individuals who are younger than 65 years of age ($\exp [.954] = 2.595$) than individuals older than 65.

The logistic regression analysis also indicates that all the independent variables have a significant relationship with outdoor recreation participation close to home. For example, the odds of outdoor recreation participation close to home is approximately 1.4 times higher ($\exp [.303] = 1.353$) among individuals who have a college degree than among individuals who did not graduate from a college. In addition, the odds of outdoor recreation participation among individuals who are younger than 65 years old is 4.3 times ($\exp [1.457] = 4.291$) more than among individuals older than 65.

Finally, Table 2 shows that all the independent variables are significantly related to state park visitation. Specifically, in terms of odds, individuals who graduate from a college are 1.3 ($\exp [.285] = 1.33$) times more likely to visit a state park than individuals who do not have a college degree; people who make more than \$20,000 per year are 1.5 times ($\exp [.422] = 1.526$) more likely to visit a state park than people who make less than \$20,000 per year; Anglos are 1.4 times ($\exp [.303] = 1.354$) more likely to visit a state park than non-Anglos. Consistent with Models 1 and 2, age is the most significant independent variable in explaining peoples' visitation of state park. The odds of state park visitation are approximately 1.9 times ($\exp [.623] = 1.864$) among individuals who are younger than 65 than among those older than 65.

So far we have investigated the single effects of socio-economic status, race, age and gender on outdoor recreation participation. All of the results are consistent with previous findings that show that people who have a lower socio-economic status, are a member of a minority group, older, and female are disenfranchised in regard to outdoor recreation involvement (Lucas, 1990; Scott & Munson, 1994; Floyd, 1999; Shaw, 1999; Scott & Munson, 1995; Scott & Jackson, 1996; Raymore & Scott, 1998). It also should be noted that, as can be seen at the bottom of Table 2, each model correctly classified the sample: Model 1 = 63.9%, Model 2 = 70.2%, and Model 3 = 58.1%. It means that, overall, each model significantly explained outdoor recreation participation.

Next we explored the combined effects of socio-economic status, race, age and gender on outdoor recreation participation to test the hypothesis. Table 3 displays the probability of participating in outdoor recreation away from home, close to home, and visiting a state park of sixteen status groups

TABLE 3
Probability of Participation in Outdoor Recreation within the Multiple Stratification Hierarchy (N = 2335)*

	Variables				Probability to Participation			
	Education	Income	Race	Age	Gender	Away	Close	State Park
Stratum 1	College	Over \$20,000	White	Below 65	Male	.74	.82	.61
Stratum 2	College	Over \$20,000	White	Below 65	Female	.69	.77	.61
Stratum 3	College	Over \$20,000	Minority	Below 65	Male	.58	.77	.54
Stratum 4	Non-College	Below \$20,000	White	Below 65	Male	.54	.73	.44
Stratum 5	College	Over 20,000	Minority	Below 65	Female	.53	.70	.53
Stratum 6	College	Over \$20,000	White	Over 65	Male	.52	.52	.46
Stratum 7	Non-College	Below \$20,000	White	Below 65	Female	.49	.65	.43
Stratum 8	Non-College	Below \$20,000	Minority	Below 65	Male	.37	.65	.37
Stratum 9	College	Over \$20,000	White	Over 65	Female	.35	.37	.35
Stratum 10	College	Over \$20,000	Minority	Over 65	Male	.35	.43	.38
Stratum 11	Non-College	Below \$20,000	Minority	Below 65	Female	.32	.57	.36
Stratum 12	Non-College	Below \$20,000	White	Over 65	Male	.31	.38	.30
Stratum 13	College	Over \$20,000	Minority	Over 65	Female	.30	.35	.38
Stratum 14	Non-College	Below \$20,000	White	Over 65	Female	.27	.30	.29
Stratum 15	Non-College	Below \$20,000	Minority	Over 65	Male	.19	.30	.24
Stratum 16	Non-College	Below \$20,000	Minority	Over 65	Female	.16	.23	.23

*Only 16 of the 32 stratum are reported here.

among thirty-two total status groups implied in the multiple stratification perspective. We deliberately left out another sixteen groups which fall somewhere in the middle, primarily because the theory does not tell much about groups in the middle. In addition, we could not find any general trend among the middle groups. Instead, we focused on the top and bottom of the hierarchy, as the multiple hierarchy stratification perspective suggests. For example, the probability of outdoor recreation participation away from home when an individual is a young, Anglo male, who has a college degree, and who makes more than \$20,000 per year (stratum 1) equals

$$\hat{\pi} = \frac{e^{-1.696+.403+.452+.685+.954+.223}}{1 + e^{-1.696+.403+.452+.685+.954+.223}} = .74 \tag{4}$$

In contrast, the probability of outdoor recreation participation away from home when an individual is a minority, older female, who does not have a college degree, and who makes less then \$20,000 per year (stratum 16) equals

$$\hat{\pi} = \frac{e^{-1.696}}{1 + e^{-1.696}} = .16 \tag{5}$$

This suggests that young Anglo males who have a college degree, and who make more than \$20,000 per year, participate in outdoor recreation

away from home almost five times (0.74/0.16) more often than elderly minority females who are not college graduates, and who earn less than \$20,000 dollars per year. In addition, Table 3 also indicates that young Anglo males who are college graduates, and who earn more than \$20,000 per year participate in outdoor recreation close to home approximately three and a half times (0.82/0.23) more often than elderly minority females who are not college graduates, and who earn lesser than \$20,000 per year. Furthermore, it also shows that young Anglo males who are college graduates, and who earn more than \$20,000 per year visit state parks approximately three times (0.61/0.23) more often than elderly minority females who are not college graduates, and earn less than \$20,000 per year.

All of these results support our hypothesis that elderly minority females who do not have a college degree, and who do not make more than \$20,000 per year occupy the lowest rank in outdoor recreation participation away from home (probability = .16) and close to home ($p = .23$); while young Anglo males who have a college degree, and who make more than \$20,000 per year occupy the top rank in terms of outdoor recreation participation away from home ($p = .74$) and close to home ($p = .82$) with the remaining groups falling somewhere in the middle. It also supports our expectation that elderly minority females who do not have a college degree, and who do not make more than \$20,000 per year occupy the lowest rank in state park visitation ($p = .23$), while young Anglo males who have a college degree, and who make more than \$20,000 per year occupy the top rank in state park visitation ($p = .61$) with the remaining groups falling somewhere in the middle. It also should be noted here that although separate effects of social class, race, age, and gender were not great, when combined, their effects on outdoor recreation were multiplied. This shows how socio-economic status, race, age and gender compromise participation in outdoor recreation.

Figure 1 graphically show the probability of outdoor recreation participation away from home, close to home, and state park visitation among sixteen groups representing various statues within the multiple hierarchy stratification. Again young Anglo males who are college graduates and earn more than \$20,000 per year occupy the top level of the hierarchy, while elderly minority females who are not college graduate and earn lesser than \$20,000 dollars per year occupy the bottom level of the hierarchy.

Discussion

Previous studies that employed the multiple hierarchical stratification perspective in leisure studies (i.e., Shinew et al., 1995; Philipp, 1997; Arnold & Shinew 1998) have primarily examined differences in psychological aspects of leisure (e.g., leisure preference, and leisure constraints). In this study, we sought to use the multiple hierarchical stratification perspective to assess potential inequality in regard to leisure behavior. Specifically, we sought to examine the combined effects of socio-economic status, race, age, and gender on outdoor recreation participation among 3,000 Texas residents. Par-

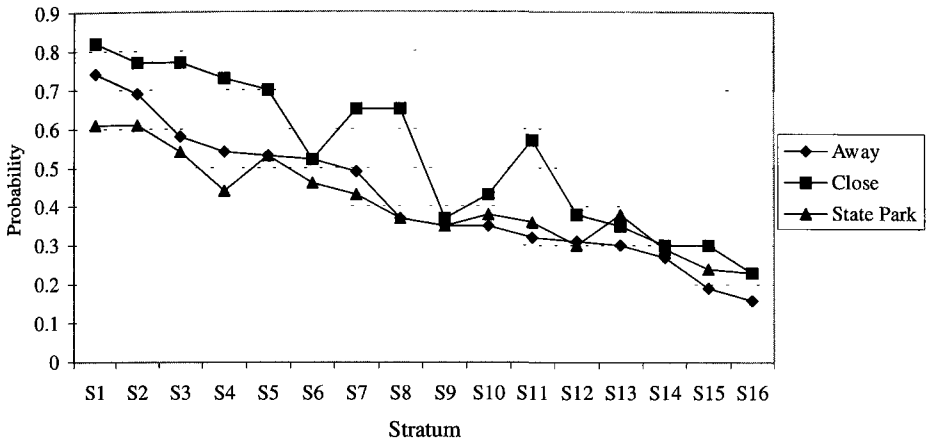


Figure 1 Probability of Participation in Outdoor Recreation within the Multiple Stratification Hierarchy ($n = 2335$)

enthetically, as far as we know, this study is the first of its kind to incorporate the effect of age within the multiple hierarchy stratification perspective in leisure studies. In addition, this study also demonstrated the statistical utility of logistic regression in analyzing the combined effect of social class, race, age, and gender on outdoor recreation participation.

Results from our preliminary analyses are quite consistent with those studies that have examined the separate effect of race, gender, socio-economic status, and age on leisure. We verified that Anglos, males, younger adults, and people with higher levels of education and income are more likely to participate in outdoor recreation than their respective counterparts. We also found that level of income was equal, if not a better, predictor of outdoor recreation behavior than level of education. This particular result runs somewhat counter to findings reported elsewhere (Kelly, 1980; 1996, White, 1975; Bultena & Field, 1978, Lucas, 1990).

A more compelling finding from this study is the general utility of the multiple hierarchy stratification perspective as a means of explaining people's outdoor recreation behavior. Indeed, although the separate effects of sex, race, socio-economic status, and age on outdoor recreation participation were not great, when combined, their effects were multiplied considerably. The results provided strong support for our hypothesis that elderly, non-Anglo females, who do not have a college degree, and who do not make more than \$20,000 per year occupy the lowest rank in outdoor recreation participation away from home, close to home, and state park visitation, while young Anglo males, who have a college degree, and who make more than \$20,000 per year occupy the top rank in outdoor recreation participation away from home, close to home and state park visitation, with the remaining groups falling somewhere in the middle. This result is also consistent with

findings reported by Shinew et al. (1995) that Black women who classified themselves as poor or working class had distinct leisure preferences from White and middle-class Black men. In sum, our results demonstrate that elderly women who are members of a minority group and who occupy the lower rungs of the socio-economic scale have the most difficulty accessing outdoor recreation opportunities. One limitation of our study is that we employed only three indices to measure outdoor recreation. Future research should employ a broader range of outdoor recreation behavior measures. A behavior measurement strategy that parallels an urban-rural or urban-wildland continuum or other measurement strategies which reflect variation in accessibility are recommended.

We also recognize that stratification hierarchies can vary by region. Due to the legacy of historical racism and discrimination targeting both African-American and Chicanos, racial inequality in the non-metropolitan south may be more rigid than in northern metropolitan areas. For example, Fossett and Seibert (1997) show that while at the national level socio-economic inequality between African-Americans and Whites declined each decade since 1940, inequality in southern non-metropolitan areas remained stable or increased, only declining significantly beyond 1970. Regional stratification structures unique to the political economy of Texas are likely to be reflected in our data and, therefore, our model may produce different results than samples from other states or regions. Regardless of regional differences, prevailing patterns of structural hierarchies present in other states or regions are likely to exert influence on leisure choices.

It is important to note that age was the most significant factor in explaining people's outdoor recreation participation away from home, close to home, and state park visitation. On the one hand, it can be argued that this finding is hardly surprising. Nearly a decade ago, for example, Murdock, Backman, Hoque, & Ellis (1991) reported that changes in the age composition of the U.S. population are likely to have greater impact on future demand of outdoor recreation activities than changes in the racial composition. On the other hand, this finding is noteworthy because age has not been incorporated systematically into those studies purportedly using the multiple hierarchy stratification perspective to explain leisure behavior. These studies have assumed that race and gender are the major factors that constrain and shape people's leisure (e.g., Shinew et al., 1995). Results from our study suggest that age must be considered among the major factors that shape people's leisure. One recommendation for future research would be to examine the multiple effects of race, socio-economic status, and gender on leisure and outdoor recreation behavior at different stages of the life span. This would allow us to examine whether race, gender, and socio-economic status have similar or different impacts at different ages and time periods.

The results of our study have enormous policy implications for natural resource and park and recreation managers in Texas, the state where the

data were collected. However, because Texas is a bellwether state in terms of how the racial and ethnic composition of the U.S. is shifting, researchers and policy makers would do well to consider what these findings might mean elsewhere. First, results from the study draw our attention to equity issues as they relate to Texans' use of outdoor recreation areas. Given the public nature of outdoor recreation resources, and given the fact that in a democracy all citizens have an equal stake in the public trust, multiple disenfranchised groups' under-participation in outdoor recreation must be regarded as problematic (Dustin & Knopf, 1989). Second, Texas' minority population and older adult population are expected to grow enormously in the decades ahead (Murdock et al., 1997). Racial and ethnic minorities comprised approximately 40% of the state's population in 1990; by 2030 they are projected to consist of over 60% of the state's population. Likewise, the number of adults who are 65 years of age and older is projected to increase from 18% of Texas' population in 1990 to 29% of the state's population in 2030. Socioeconomic differentials by age and minority status are noteworthy in this context. As Murdock et al. (1991) indicated, as the proportion of the population with lower socioeconomic resources increases, the population as a whole becomes less well off socioeconomically. These and other demographic changes may actually result in *decreased* demand and support for outdoor recreation services among Texas residents in the future.

Should natural resource managers truly embrace ideas about promoting equity, and hope to avoid an ebbing of public support for outdoor recreation services and facilities, they must find ways to enhance multiple disenfranchised groups' outdoor recreation participation. The challenge facing Texas' natural resource managers is to create outreach and educational efforts that facilitate awareness and interest in outdoor recreation among disenfranchised groups, and to provide safe, accessible outdoor recreation amenities that are close to home. Natural resource managers must also begin to look more critically at their services vis-à-vis the needs of multiple disadvantaged groups.

This is a formidable task in light of the fact that most natural resource managers are highly occupied with what Crompton (1991) described as "providing the facilities, services, and program which they consider to be the most appropriate, as efficiently as they are able, within the resources they have available" (p. 214). Moreover, policies within natural resource agencies currently favor those groups who already are users of outdoor recreation areas. According to Scott (2000), these include an entrepreneurial approach to service delivery, a commitment to maintaining a loyal customer base, a failure to develop a workforce that resembles the population and a simultaneous inability to relate to diverse constituents, and maintaining a narrow conception of recreation need. Unless natural resource managers change how they do "business as usual," the needs of multiple disadvantaged groups will continue to be "marginalized" in favor of those already in power (Allison, 2000).

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