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# How Green is My Valley? Tracking Rural and Urban Environmentalism in the Southern Appalachian Ecoregion[1]

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ABSTRACT Research on the social bases of environmentalism in the United States has generally found that urban residents are more concerned about the environment than rural residents. Recent research suggests this may no longer be the case, particularly in specific settings or under certain conditions. This paper examines the issue by reviewing recent survey research on rural and urban environmentalism. Tests for significant differences between urban and rural inhabitants of the Southern Ap palachian Ecoregion on cognitive and behavioral dimensions of environmentalism are also conducted using data obtained from 1,239 telephone interviews. Findings are consistent with previous research showing that younger people, those with higher levels of education, and political liberals generally express higher levels of environmentalism. However, no significant rural-urban differences were found on several indicators of environmentalism. A range of conditions that are rapidly changing the character and composition of the region may help to explain why the findings do not conform to the general pattern of rural-urban differences. Overall, it appears that environmentalism has broadened its appeal in rural areas, especially in communities located near national and state parks, wildlife refuges, and other outdoor recreation sites.

## *Introduction*

**Research focusing on the social bases of environmentalism in the United States has generally found that urban residents are more concerned about the environment than rural residents. However, recent studies suggest that this may not be the case in specific settings or under certain conditions. The major objectives of this**

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study are to review survey research on rural and urban environmentalism and to determine whether rural and urban residents of the Southern Appalachian Ecoregion differ on several cognitive and behavioral indicators of environmentalism. The study also examines other demographic variables to control for any spurious relationships between rural/urban residence and measures of environmentalism.

*Rural and urban environmentalism*

Much of the political rhetoric framing the public lands/environmental debate in the American West has helped to fuel the notion that rural residents have an anti-environmental orientation (Bennett and McBeth 1998; Rudzitis 1996). A variety of theoretical approaches have also been used in the past to explain why levels of environmentalism should be lower among rural residents than among their urban counterparts (for reviews, see Chickering 1983; Fortmann and Kusel 1990; Greenbaum 1995; Kowalewski, 1994; Lowe and Pinhey 1982; Van Liere and Dunlap 1981), but none have been consistently or strongly supported by research data (Chickering 1983; Fortmann and Kusel 1998; Lowe and Pinhey 1982; Nord et al. 1998). Conceptual and methodological problems are also evident in studies examining rural-urban differences, and few, or no, differences have been found when these problems are resolved (for reviews, see Chickering 1983; Freudenburg 1991; Kowalewski 1994; Nord et al. 1998; Rudzitis 1996).[2] There is also evidence to suggest that public support for environmental values has generally increased in rural areas relative to urban areas, especially over the last decade or so. While early studies generally found that urban residents were more concerned about environmental problems and supportive of environmental protection than rural residents (Trem-

[2] **Even though Van Liere and Dunlap (1980) warned researchers that environmentalism is best conceptualized as a multidimensional construct composed of cognitive (e.g., knowledge, beliefs, and attitudes) and behavioral (personal behaviors and social and political activism) aspects, a number of studies defined environmentalism narrowly with only cognitive indicators. Other studies failed to conceptualize measures of environmentalism fairly across all groups under investigation. Studies such as Kronus and Van Es (1976) characterized farmers and rural residents as lacking environmental concern because more of them burn crop debris, leaves, and rubbish than urbanites, who are more likely to have their wastes and recyclables conveniently picked up for them. Such behavioral indicators of environmentalism are unfair to rural residents because they do not take into consideration structural and situational factors that differentially affect their waste-disposal activities. Cognitive measures of environmentalism can also be biased to favor urbanites when the choice of environmental concerns is more salient in urban than in rural settings (e.g., noise, litter, solid waste, industrial pollution). These types of "conceptual biases" tend to underestimate rural support for environmental values. Finally, few studies have controlled for the effects of demographic variables or used sampling procedures that would permit a high level of confidence in the findings.**

blay and Dunlap 1978), a number of more recent inquiries have found few, or no, rural-urban differences.[3]

"Differential exposure" has been the most popular theory used to explain why urban residents are more environmentally concerned than residents of rural areas (Bennett and McBeth 1998). It assumes that urban residents are more concerned because they are more apt to be exposed to environmental degradation than are rural residents. Although some early support was found for this idea with regard to air pollution, differences between rural and urban residents were often quite small, and other studies found no differences between the two groups on other indicators of environmentalism (for reviews, see Bennett and McBeth 1998; Chickering 1983; Tremblay and Dunlap 1978; Van Lier and Dunlap 1981). Other studies have suggested that differences between rural and urban residents are more pronounced when concern for environmental degradation is framed within a local, rather than a national, context, presumably because concern about local issues is linked more closely to levels of exposure (Tremblay and Dunlap 1978). However, no differences were found when the environmental concern indicators were balanced between rural and urban environmental problems (Chickering 1983).

The "extractive-commodity" theory assumes that utilitarian values are held more strongly by rural residents because they are more dependent on the direct extraction of natural resources. From this perspective, rural residents, especially rural residents employed or affiliated with resource-extractive industries and agriculture, should be significantly less concerned about environmental protection than urban residents (Bennett and McBeth 1998; Hendee 1969; Tremblay and Dunlap 1978). Thus, rural-urban differences in support for environmental protection have been found especially in the West, where extractive-based employment is high. But these differences are not pronounced and they should grow even smaller as dependency on the extractive-base sector of the economy declines in the "New West" and in the nation (Bennett and McBeth 1998; Hays 1991; Rudzitis 1996). Several recent studies even suggest that a pro-environmental shift is occurring among people employed in resource-extractive industries and related occupations such as the U.S. Forest Service (Apple 1996; Brown and Harris 1992; Fortmann and Kusel 1990; Xu and Bengston 1997). Such a trend is complemented by a growing migration of urban residents who express

[3] See Amir 1995; Arcury and Christianson 1993; Baker and Ewert 1998; Carter 1987; Chambers and McBeth 1992; Chickering 1983; Cluck and Brown 1998; Connerly 1986; Dunlap and Beus 1992; Fortmann and Kusel 1990; Jones and Dunlap 1992; Kowalewski 1994; Kowalewski and Porter 1993; Leftridge and James 1980; McBeth and Foster 1994; Mohai and Twight 1986; Nord et al. 1998; Rudzitis 1996; Rudzitis and Johansen 1991; Steel et al. 1994; Tranter 1996; Willits et al. 1990.

"new voices" on behalf of the environment and other quality of life issues and exacerbated by a general decline in the dominance of resource-dependent jobs in rural areas (Blahna 1990; Fly 1986; Fortmann and Kusel 1990; Krannich and Albrecht 1995; McBeth and Foster 1994). All of these trends suggest that the notion that residents of rural areas are less likely than their urban counterparts to be concerned about environmental quality will be increasingly inaccurate.

### *Description of the study area*

The Southern Appalachian Ecoregion (SAE) consists of the Appalachian Mountains and Shenendoah Valley extending southward from the Potomac River on the northern boundaries of Virginia and West Virginia to northern Georgia and the northeastern corner of Alabama. This area includes 135 counties and 37 million acres. It is the source of much of the drinking water for the southeastern region of the United States and contains the headwaters of nine major rivers. Southern Appalachia is also home to eight national forests, the Great Smoky Mountains and Shenendoah National Parks, the Blue Ridge Parkway, and the Appalachian Trail. Together these areas form the largest contiguous block of public lands east of the Mississippi River (Cordell et al. 1996).

The history, culture, sense of community, and record of social activism among the inhabitants of the SAE are strongly rooted in the land and the environment. The famed naturalist and early founder of the modern environmental movement, John Muir, passed through Southern Appalachia in his search for the "wildest, leafiest and least trodden way" (quoted in Clement 1998:2). The Blue Ridge, Cumberland, and Appalachian mountains and valleys have also been home to people of mostly Scotch-Irish, English, and German descent, who "loved the land . . . the majestic mountains, the beauty of the forests, the good and plentiful water, the rich soil of the valleys and coves, and the cool summers and mild winters" (Helton and Allen 1996:10). Many residents still seem to embrace some aspects of Aldo Leopold's land ethic. This is evidenced in a strong social and cultural connection with the land and its preservation. Rural residents especially seem to have a strong emotional and symbolic attachment to the region's forests and wilderness areas (Cordell et al. 1996; Williams et al. 1992). About four out of ten resident rural landowners within the SAE view their land not as a commodity to be bought or sold but as a part of their cultural landscape to be revered and shared (Cordell et al. 1996). This close relationship with the land, coupled with a strong sense of community and kinship, has helped sustain traditional Appalachian culture in the face of severe hardships, which are, in part, a result of eco-

nomic and natural resource exploitation (Cordell et al. 1996; Gaventa 1980).

The region has been going through a fairly rapid transformation over the last few decades as its people try to preserve the region's unique cultural and environmental heritage in the face of strong socioeconomic, demographic, and technological changes. More than two million people left the region between 1950 and 1970. Many left because of hard times caused by the loss of jobs to the mechanization of the coal mining industry, sharp declines in agriculture and manufacturing, and a shift from rail to highway transportation. The majority of outmigrants were young, white males with above average education who left to seek job opportunities in Ohio, Michigan, and Illinois.

The region has few metropolitan areas and remains relatively rural in nature, but conditions have significantly improved since the 1970s. Job growth in the SAE is faster than in several other regions and the nation as a whole. Unemployment and poverty rates are lower than in many other regions. Rural unemployment rates are lower than in every other region of the country except the Midwest and the Plains. The population is growing fairly rapidly, largely due to inmigrants attracted by the region's rural mystique, rich history, expanding and diverse economy, and range of environmental amenities and outdoor recreation opportunities. Many inmigrants have sought refuge in the small towns, gateway communities, and rural areas surrounding the region's national parks, lakes, and forests. Although only 10 percent of the people living in the SAE today make their livelihoods directly from the land, about one-half still live in rural areas and many maintain active outdoor lifestyles (for reviews, see Cordell et al. 1996; Helton and Allen 1996; Isserman 1997; USDA 1986).

## *Methods*

### *Survey procedures and sampling*

The survey was designed to determine if rural and urban residents in the SAE differed on several cognitive and behavioral measures of environmentalism. Telephone interviews were conducted by the Human Dimensions Research Lab in the Department of Forestry, Wildlife and Fisheries at the University of Tennessee during the period August 11 to September 21, 1995. Households were selected through random-digit dialing using telephone numbers purchased from Survey Sampling Inc. of Fairfield, Connecticut. Interviews were requested with the household member 18 years of age or older who had the most recent birthday. Using a stratified sample design, 135 counties were selected from seven states (Virginia, West Virginia, North Carolina, South Carolina, Tennessee, Georgia, and

Alabama). These 135 counties conform to the boundaries of the Southern Appalachian International Biosphere Reserve and have unique characteristics based on biogeographic and ecological conditions. The counties were divided into four geographic subregions (Northern Ridge and Valley, Blue Ridge, Southern Ridge and Valley, Southern Mountain-Piedmont) that run primarily north and south along the Appalachian Mountains (Cordell et al. 1996). Each subregion was then divided using rural-urban codes for metropolitan and nonmetropolitan counties developed by Butler and Beale (1994), resulting in eight strata (four rural and four urban). A sample quota of 150 participants per strata (a total of 1,200) was used to ensure an equal sample size for rural and urban residents and to represent the geographic distribution of residents across the ecoregion. A total of 2,829 households were contacted with a raw response rate (including 1,239 completes and 50 partial completes) of 46 percent and a final response rate (completes only) of 44 percent. Final sample size was 1,239 with a margin of error of +/- 3 percent. Sub-samples for urban (50.4 percent) and rural residents (49.6 percent) were about equal, with each having a margin of error of +/- 4 percent. Both sub-samples had slightly more females and were better educated than the general population.[4]

*Questionnaire content and variable measures*

The questionnaire was part of a comprehensive assessment of the SAE. It included questions designed to gauge cognitive and behavioral indicators of environmentalism and to identify the socio-demographic characteristics of the households and survey respondents. A summary description of the five variables used to tap cognitive and behavioral dimensions of environmentalism is presented in Table 1.

[4] **The sample of telephone numbers obtained from Survey Sampling Inc. was split equally among the eight strata. Telephone numbers within each strata were drawn proportionally to the population of the counties included in the strata. Household residents agreeing to participate were asked their county and state of residence to determine in which quota cell to count the interview. A Computer-Aided Telephone Interviewing system (CATI) identified when the 150 interviews were completed in each of the eight strata, and any subsequent calls into a strata were coded as "over quota" and the person was not interviewed. Interviews in process when the quota was reached were completed, resulting in an additional 39 interviews beyond the targeted quota of 1,200. Most of the refusals were immediate hang-ups and no refusal conversion was attempted for these people. When an appropriate individual was contacted within the household, the response rate was 70.1 percent. The final response rate may also have been higher had the study not been conducted on a daily basis (including Saturday and Sunday) during the late summer (August-September). However, the rate is not significantly lower than most telephone surveys conducted in the region-a region that has become a major target of telemarketers over the past five years or so.**

*Rural and urban residence.* Rural residence has been conceptualized and measured in a variety of ways among rural sociologists (see Butler and Beale 1994; Cleland 1995; Flora et al. 1992; Willits et al. 1990). Consequently, there is no standard way to conceptualize and test for rural-urban differences on environmentalism. Nevertheless, a dichotomous rural/urban residence variable was chosen over a continuous measure because it allowed for direct testing of the general assumption that urban residents as a group embrace environmentalism more strongly than rural residents.

The variable for rural and urban residence is based on a single question in which respondents were asked to describe the place where they live. The response categories included (1) "a farm," (2) "a rural area, but not a farm," (3) "a town with under 10,000 people," (4) "a city of 10,000 to under 50,000," (5) "a city of 50,000 to under 100,000," and (6) "a city of 100,000 or more." Respondents who lived on either a farm or in a rural area were grouped as "rural" residents and assigned a value of 0. All other respondents were grouped as "urban" residents and assigned a value of 1.5

*Other demographic variables.* Nine other demographic variables were included, both as controls and to make comparisons with other research findings on the social bases of environmentalism. Most were standard demographic variables found to be (or suspected of being) related to environmentalism (Jones and Dunlap 1992). These variables included the following: age (number of years); gender (male/female); race/ethnicity (other/non-Hispanic white); education (less than high school graduate, high school graduate, some college or vocational/technical training, college graduate, some post graduate work, graduate degree); political ideology (conservative, independent, liberal); household income (under $15,000, $15,000–$24,999, $25,000–$34,999, $35,000-$44,999, $45,000–$54,999, $55,000–$74,999, $75,000 or more); affiliation with natural resource industry, farming, or ranching (no/yes); rural land ownership (owns less than 10 acres of rural

[5] **These rural/urban distinctions basically conform to the way rural and urban populations are distinguished by the U.S. Bureau of Census (King 1996:4). The proportion of rural-to-urban residents found in the regional population and targeted in the sampling (50/50) also matched the proportion (50.4 percent urban, 49.6 percent rural) obtained by using this method of rural/urban identification. The authors are currently conducting research on other assumptions pertaining to place of residence and environmentalism. Although preliminary, these findings may shed light on the general patterns found within the region pertaining to rural and urban environmentalism. They suggests that little or no relationship exists between place of residence and environmentalism. These findings apply to comparisons made between residents living in nonmetro and metro counties, farmers and rural nonfarmers, urban residents in general, and between residents living in less and more populated areas of the region. Detailed findings on these and other results pertaining to place of socialization, residence in counties dependent on different sectors of the economy, and length and type of rural land ownership will be presented in the future.**

land/owns 10 or more acres of rural land); lifetime resident of Southern Appalachia (no/yes).

*Cognitive and behavioral measures of environmentalism.* A review of the literature suggests a multiplicity of ways in which environmentalism has been conceptualized and measured (Van Liere and Dunlap 1981). However, there appear to be at least two broad dimensions of environmentalism, one cognitive in nature and the other behavioral. We used several measures to tap into these two dimensions.

*Cognitive dimension*

*Environmental knowledge.* An environmental knowledge index composed of 13 true-false items was developed in cooperation with representatives of state and federal resource management agencies in the Southern Appalachia region (Cordell et al. 1996). Items included general questions about wildlife, endangered species, forests, and water pollution, as well as more specific questions that framed these issues within a regional context. Questions ranged from difficult to easy. Persons answering incorrectly or who "did not know" the answer were assigned a value of zero. Those responding correctly to an item were assigned a value of one. Index scores could range from 0 (none correct) to 13 (all correct), with higher scores representing greater knowledge about environmental issues facing the SAE. The internal consistency of the environmental knowledge index was satisfactory, with an Alpha reliability of .61 (Table 1).

*Environmental concern.* A seven-item environmental concern index composed of Likert- type items (strongly agree to strongly disagree) was developed. Items included statements related to public concerns about the Endangered Species Act, the Water Quality Act, the Clean Air Act, wilderness, habitat preservation, timber harvesting in National Forests and industrial pollution. Each item was coded l-5 to reflect the degree to which respondents were concerned about these issues. Index scores ranged from 7 to 35, with higher scores representing greater concern for the environment and a pro-environmental stance. The internal consistency of the index was satisfactory, with an Alpha reliability of .73.

*Relative environmental concern.* A single question asked respondents to rank their degree of concern about protection of the natural environment from "most" concern to "least" concern compared to three other issues ("reducing the national debt," "reforming health care," and "reducing crime"). The four issues were randomly ordered in the survey. Higher scores on this measure reflect greater concern for the environment relative to the three other issues.

*Behavioral dimension*

*Environmental behavior.* This index was composed of five items and indicated the frequency (often=3; sometimes=2; rarely=l; never=0)

with which respondents personally engaged in behaviors over a two-year period that promoted environmental values and environmentalism. These behaviors included recycling, purchasing products based on the amount of packaging, switching to products for environmental reasons, watching TV programs about the environment, and reading books or magazines about the environment. Index scores ranged from 0 to 15, with higher scores signifying more frequent environmental behavior. The internal consistency of the index was satisfactory (Alpha=.71).

*Environmental activism.* This index was composed of six "yes/no" items and reflects the degree to which respondents engaged in social and political activities over the past two years that promoted environmental values and environmentalism (writing public officials, voting for pro-environmental candidates, attending meetings, contributing money to environmental groups, participating in clean-ups, and/or subscribing to environmental publications). A "no" answer for any item was scored 0, while "yes" answers were scored 1. Index scores ranged from O-6, with higher scores reflecting higher levels of environmental activism. The internal consistency of the index was satisfactory (Alpha=.66).

### *Design of analysis*

Based on prevailing assumptions, it was hypothesized that urban residents, as a group, are significantly more knowledgeable about environmental issues facing the region and more concerned and committed to environmental values than rural residents. Student's $t$ tests (one-tailed with $p < .05$) and simple and partial correlation analysis procedures were used to test for statistical differences between rural and urban residents on three cognitive and two behavioral measures of environmentalism. Similar correlation analyses were performed to test for significant differences among other demographic groups. Stepwise regression analysis was used to estimate the amount of variance explained by each variable found to have a significant partial correlation with each of the five measures of environmentalism.

## Results

### *Cognitive indicators*

*Environmental knowledge.* Table 2 presents simple correlation results for rural/urban residence, the nine other demographic variables, and the environmental knowledge index. The correlation with rural/urban residence ($r$=–.07, $p < .05$) suggests that in the SAP rural residents are somewhat more knowledgeable about environmental issues than are urban residents. Partial correlation analysis demonstrated that this rather weak relationship was due to the ef-

*Table 1.* **Cognitive and behavioral indicators of environmentalism by rural/urban residence**

| Indicator | Items[a] | Alpha[b] | Range[c] | Mean[d] | SD[e] | N[f] |
|---|---|---|---|---|---|---|
| Environmental knowledge | 13 | .61 | o-13 | | | |
| Rural | | | | 5.2 | 2.4 | 594 |
| Urban | | | | 5.0 | 2.4 | 603 |
| Environmental concern | 7 | .73 | 7-35 | | | |
| Rural | | | | 26.2 | 4.4 | 482 |
| Urban | | | | 26.2 | 4.5 | 498 |
| Relative env. concern | 1 | — | 1-4 | | | |
| Rural | | | | 2.5 | 1.0 | 558 |
| Urban | | | | 2.4 | 1.0 | 582 |
| Environmental behavior | 5 | .71 | o-15 | | | |
| Rural | | | | 10.3 | 3.4 | 568 |
| Urban | | | | 10.2 | 3.3 | 589 |
| Environmental activism | 6 | .66 | O-6 | | | |
| Rural | | | | 2.1 | 1.7 | 578 |
| Urban | | | | 2.0 | 1.7 | 586 |

[a] Figures represent the number of items used in each indicator of environmentalism.
[b] Figures represent the level of internal consistency of the items contained in each indicator based on Cronbach's Alpha.
[c] Figures represent the maximum and minimum scores that were possible on each indicator of environmentalism.
[d] Figures represent the mean scores on each indicator with higher scores reflecting a stronger commitment to environmental values and environmentalism in general. Rural and urban mean scores were not significantly different ($p. <.05$) on any of the five indicators of environmentalism.
[e] Figures represent the standard deviations of the group means.
[f] Figures represent the total number of people who responded to the item(s) included in each indicator based on listwise deletion of missing values. The number of people who responded to the environmental concern indicator is significantly less than the other indicators because there were more don't knows" included in the missing values.

fects **of the other demographic variables** ($r$=–.01, $p$=.40). **Group means for environmental knowledge reveal similar results and indicate that both rural and urban groups share a relatively low level of knowledge of environmental issues facing Southern Appalachia (Table 1). Neither group answered more than 40 percent of the questions correctly.**

**Correlations with the other demographic variables indicate that residents with higher levels of educational attainment, males, those with higher household incomes, non-native residents, and non-Hispanic whites, rural landowners, and persons affiliated with the natural resource industry, farming, or ranching tend to have more knowledge about environmental issues than their respective** coun-

*Table 2.* Simple correlations with cognitive and behavioral indicators of environmentalism

| | Cognitive indicators | | | Behavioral indicators | |
|---|---|---|---|---|---|
| | Knowledge | Concern | Relative concern | Personal behavior | Environmental activism |
| Rural/urban residence | –.07* | –.02 | –.07* | –.03 | –.06* |
| Education | .31*** | .26*** | .02 | .24*** | .30*** |
| Income | .23*** | .17*** | .01 | .14*** | .18** |
| Age | .02 | –.17*** | –.24*** | –.03 | –.04 |
| Political ideology | .00 | .18*** | .09** | .11*** | .13*** |
| Gender | –.30*** | .00 | –.06* | –.03 | –.07* |
| Race/ethnic. | .09** | .09** | .13*** | .08** | .07* |
| Lifetime resident of the SAE | –.10** | –.10** | .00 | –.14*** | –.11*** |
| Rural land owner | .09** | .00 | –.02 | .05 | .08** |
| Affiliated/nat. resource industry, farming or ranching | .08** | –.02 | .03 | .02 | .09** |
| N[b] | 1,005 | 842 | 967 | 978 | 967 |

[a] Significance levels *** ($p$ <.001), ** ($p$ <.01), * ($p$ <.05)
[b] Sample sizes represent the total number of respondents based on listwise deletion of missing values. These numbers are less than the final sample of 1,239 because the people who did not respond to all of the variables in each column were excluded from the analysis and these types of personal questions usually have a significantly higher rate of non-response.

terparts. Of these demographic variables, only education (10 percent), gender (7 percent), and ownership of rural land (1 percent) accounted for statistically significant ($t$ scores: $p$ <.05) variation in knowledge using stepwise multiple regression.

*Environmental concern.* Table 2 reveals no relationship between rural/urban residence in the SAE and degree of environmental concern. Mean scores indicate that the region's rural and urban residents share a moderate-to-strong level of concern about environmental protection and a pro-environmental stance (Table 1).

Inspection of the remaining correlations shows that residents who have higher levels of educational attainment, liberal political views, higher household incomes, are regional in-migrants, younger, and non-Hispanic whites tend to be more concerned about environmental issues than their respective counterparts. Of these six demographic variables, education (6.5 percent), political ideology (3 percent), age (1.5 percent), race/ethnicity (0.5 percent), and income (0.5 percent) explained a significant proportion of the variation in environmental concern using stepwise regression.

*Relative environmental concern.* A significant relationship ($r$=–.07, $p$ <.05) was revealed between rural/urban residence and relative en-

vironmental concern (Table 2). Rural residents appear to place somewhat more importance on environmental concerns relative to other pressing concerns than do urban residents. Partial correlation analysis, however, demonstrated that this weak bivariate relationship was largely accounted for by the effects of the other demographic variables ($r$=–.03, $p$=.16). Group means (Table 1) indicate that environmental protection enjoys a moderate level of importance among both rural and urban residents in the region relative to crime, health care, and the national debt.[6]

Correlations for the remaining demographic variables show that young people, non-hispanic whites, political liberals, and males place higher priority on protecting the environment than their respective counterparts. A significant amount of variation in relative environmental concern was explained by age (5.5 percent), race/ethnicity (1.5 percent), and political ideology (0.5 percent) using stepwise multiple regression.

*Behavioral indicators*

*Environmental behavior.* Data presented in Table 2 reveal no relationship between rural/urban residence and personal environmental behavior. Mean scores (Table 1) suggest that rural and urban residents share a moderate level of participation in activities such as recycling, buying green products, and other pro-environmental behaviors.

Correlations for environmental behavior with other demographic variables reveal that residents with higher levels of education and household income as well as political liberals, non-Hispanic whites and regional in-migrants are more likely to support environmentalism through personal behaviors than are their respective counterparts. Education (5.5 percent), native of the region (1 percent), political ideology (0.5 percent), rural land ownership (0.5 percent), and race/ethnicity (0.5 percent) explained a significant amount of variation in the personal behaviors using stepwise multiple regression.

*Environmental activism.* Table 2 reveals a significant relationship ($r$=–.06, $p$ <.05) between rural/urban residence and environmental activism. Rural residents of the SAE appear more actively engaged in social and political aspects (e.g., letter writing, voting, attending meetings) of environmentalism than urban residents. Partial correlation analysis again demonstrated that this rather weak bivariate relationship was largely due to the effects of other demographic variables ($r$=–.02, $p$=.30). Mean environmental activism scores (Table 1) indicate that rural and urban residents engaged in two of the six activities over a two year period.

[6] Additional analysis revealed that reducing crime was the most important concern for rural and urban residents, followed by health care, environmental protection, and the national debt.

Examination of other demographic variables reveals that residents with higher levels of educational attainment and household income, as well as non-Hispanic whites, females, political liberals, rural landowners, regional in-migrants and those affiliated with the natural resource industry, farming, or ranching, are more engaged in social and political aspects of environmentalism than their respective counterparts. A significant amount of variation in environmental activism was explained by education (9 percent), political ideology (1 percent), rural land ownership (1 percent), and affiliation with the natural resource industry, farming, or ranching (1 percent) using stepwise multiple regression.

### *Summary and discussion*

This study tested for differences among rural and urban residents of the Southern Appalachia Ecoregion on several cognitive and behavioral indicators of environmentalism. Although simple correlation analyses indicated that rural residents scored higher than urban residents on three of the five measures of environmentalism (knowledge, relative concern, and activism), these relationships were weak and disappeared when the effects of other demographic variables were taken into consideration. Moreover, no significant relationships were found between rural/urban residence and environmental concern or personal environmental behavior. Based on these results there is no support for the hypothesis that cognitive and behavioral aspects of environmentalism are more prevalent among urban residents than rural residents in this region. Instead, the findings indicate that rural and urban residents of the SAE are quite similar on both dimensions of environmentalism.

Findings for the three cognitive environmental indicators suggest that rural and urban residents in the SAE share a relatively low level of knowledge about the environmental issues facing Appalachia, but are generally pro-environment. Both groups place greater priority on reducing crime and improving health care than they do on environmental protection, but place greater priority on environmental protection than they do on reducing the national debt. Findings for the behavioral indicators of environmentalism demonstrate that rural and urban residents carry out personal environmental behaviors occasionally and are moderately active in social and political activities that promote environmentalism.

The levels of environmental cognition and behavior among both rural and urban residents in the SAE appear to be fairly consistent with those for the nation (Dunlap 1992; Hart 1995; Ladd and Bowman 1995). The major demographic variables other studies have found to be most consistently linked with environmental concern (age, education, and political ideology) and personal behavior and environmental activism (education, political ideology, and income)

were similarly identified in this study (Dietz et al. 1998; Greenbaum 1995; Jones and Dunlap 1992). Our regression results support previous research indicating that these and other demographic variables explain very little variation in environmental values and environmentalism (Jones and Dunlap 1992). Consequently, knowledge of demographic characteristics provides little insight into who possesses a pro-environmental ethic, and knowledge of the demographic indicators of environmentalism is only a starting point of any effort to understand the variety of factors that help to encourage or discourage formation of such an ethic (Dunlap 1992).

Nevertheless, baseline information on the social bases of environmentalism is important for policy-makers, resource managers, and others. It suggests the types of people within the region who are likely to be better informed, more concerned, and more committed to environmentalism. Public administrators, policy-makers, and resource managers should recognize that the complexity of ecosystem management issues, the variety of public expressions on these issues, the varied ways these issues are conceptualized and measured, and the diversity of populations and groups affected by these issues limit the development and use of a standard profile of environmental supporters. There is no single standard that can be applied accurately to all issues, behaviors, people, and environments.

Indeed, our findings and those of others suggest that the level of support for environmentalism among different groups may be contingent upon a wide range of conditions that operate differently within specific regions, communities, cultures, ecological systems, and points in time. We suspect that the rapidly changing nature of the region's character and composition may help to explain why our findings do not conform to common assumptions about rural-urban differences.

For example, new migrants seem to be reinvigorating or at least strengthening environmental values in rural areas of the SAE.[7] Long-term rural residents also seem to sense that population growth, residential and commercial development, and tourism may be threatening both their way of life and the region's ecology (Cordell et al. 1996). Rural support for environmental values appears to be particularly strong in gateway communities (McMahon et al. 1997). These communities are located near the many national and state parks, wildlife refuges, and other outdoor recreation sites that are found throughout the SAE. They provide a high quality of life for long-term residents and serve as an "environmental refuge" for older baby-boomers, retirees, and other migrants. Conse-

**'Additional analysis revealed that in-migrants who live in rural areas are more concerned about environmental issues, perform more personal environmental behaviors, and are more engaged in environmental activism than lifetime rural residents.**

quently, distinctions between rural and urban environmental values and lifestyles may not be as clear as perhaps they once were in the SAE, or as clear as they appear to be in the American West where environmental concerns have been given more attention and debate. This means that rural-urban differences cannot be ruled out in other regions or areas of the country.

Rural-urban differences also cannot be ruled out on specific environmental issues or proposals. It may be that farmers, loggers, miners, and other rural residents are no less concerned about the environment than their urban counterparts but they may be less supportive of specific "solutions" to environmental problems. These differences may be significant on proposals that entail more land and resource-use regulation for rural residents (Connerly 1986; Freudenburg 1991; Van Liere and Dunlap 1981) and on proposals that seem to threaten their sense of identity, place, and way of life (Carroll 1995; Carroll and Lee 1990). Still, we suspect that general support for environmental values will continue to gain strength in rural areas, especially if current socioeconomic, demographic, and technological trends persist (Brown et al. 199'7; Dillman 1991; Fuguitt and Beale 1996; Fulton et al. 199'7; Johnson and Beale 1994).

We conclude that the majority of residents in the SAE want to preserve the area's natural scenic beauty and its unique cultural heritage. Both native residents and newcomers are concerned about the region's environment and committed to its protection, regardless of whether they live in urban or rural communities.

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