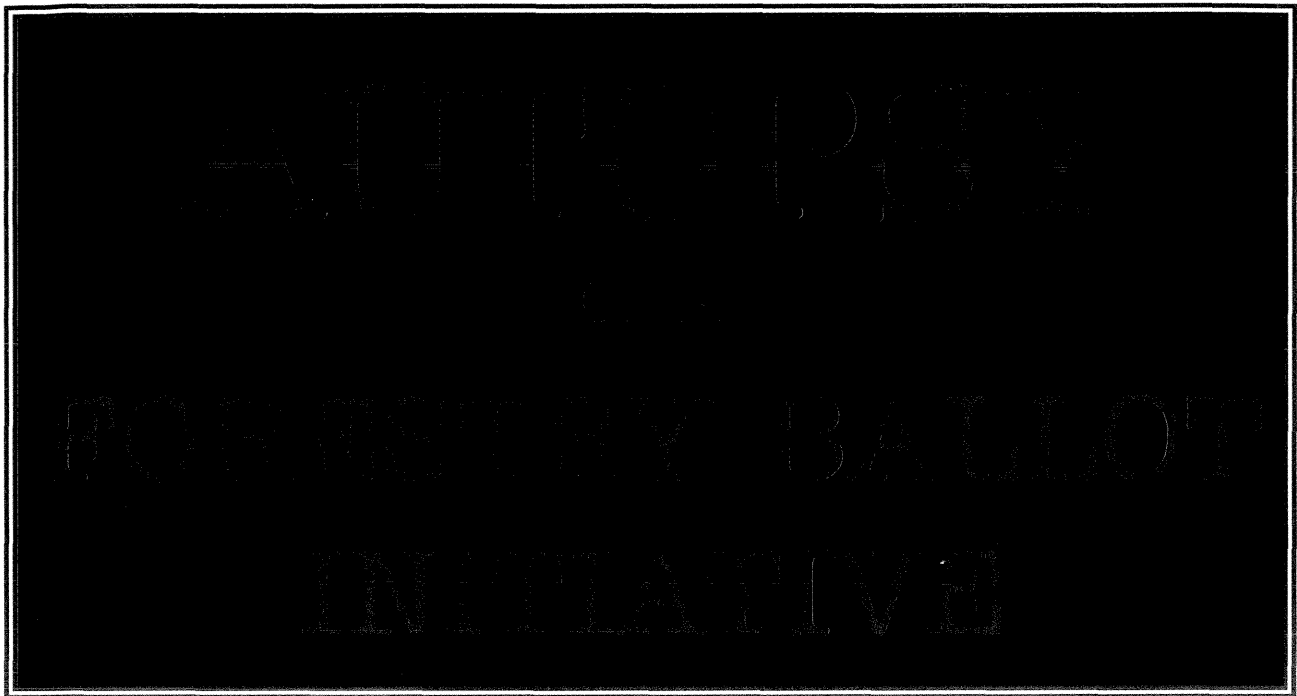




Characterizing Voter Support for Oregon's Measure 64

Jeffrey D. Kline and Catriona Armstrong

ABSTRACT

On November 3, 1998, Oregon voters soundly rejected a ballot initiative intended to promote sustainable forestry practices and protect forest ecosystems by restricting clearcut logging and herbicide and pesticide use. We found that initiative support was greater in more urban counties composed of more educated residents earning higher incomes and with higher proportions of registered Democrats. Opposition was strongest in counties composed of higher proportions of forest industry employees and native-born Oregonians. Measure 64 voting data provide an opportunity to examine the potential relationship between the changing socioeconomic landscape and the public's perception of the role of forestry.

Keywords: clearcutting; policy; sustainable forestry

In November 1998, Oregon residents voted on a ballot initiative called the Oregon Forest Conservation Initiative. Known in Oregon as Measure 64, its stated intent was to promote sustainable forest practices and protect forest ecosystems by restricting clearcut logging and the use of chemical herbicides and pesticides on

all forestlands in the state (Oregon Elections Division 1998a). Oregon voters rejected Measure 64 by a margin of 4 to 1, with many environmental groups calling it poorly written and too extreme. Interest in restricting certain forestry practices in Oregon continues. Currently, efforts are being made to place a new Forest Restoration Initia-

tive on the November 2002 ballot (Oregon Elections Division 2000). Based on early drafts of this new initiative, some observers have suggested that it could gain broader public support (Bernton 1999).

The forest industry long has been an important feature of Oregon's economy. In recent years, however, its relative importance has been declining as other nonforest sectors have grown. Oregonians also have been changing, due in large part to population growth and immigration from other states. Oregon residents gradually have become more likely to live in urban areas and less likely to be directly involved with the forest industry. How might these socioeconomic changes affect the future of forestry in Oregon? What do they imply about the likely outcome of future for-

estry ballot initiatives? Measure 64 voting data provide an opportunity to examine the potential relationship between the changing socioeconomic landscape of Oregon and the public's perception of the role of forestry.

We examined the Measure 64 ballot initiative along with recent socioeconomic changes occurring in Oregon. We used county-level voting data to develop an empirical model describing voter support for or opposition to Measure 64 as a function of the prevailing socioeconomic characteristics of county residents. We found support for Measure 64 to be positively correlated with population density, income, education, and the proportion of county voters who are registered Democrats. We found support for Measure 64 to be negatively correlated with the proportion of workers employed in the forest industry and the proportion of residents who are native-born Oregonians.

Initiatives in Other States

Measure 64 was not the first statewide forestry-related ballot initiative placed before voters in the United States. California voters were presented with three separate forestry-related initiatives on their November 1990 ballot. Proposition 130 was petitioned by environmental groups seeking certain restrictions on forest harvest and management practices (Hastings Law Library 2000). It failed, with 53 percent of voters opposing. Proposition 138 was petitioned by the forestry industry as a somewhat more moderate alternative to Proposition 130; it also failed, with 71 percent of voters opposing (Davis et al. 1991). Proposition 128, a more general environmental initiative known as "Big Green," also proposed forestry-related policies and programs and failed (Davis et al. 1991).

In Maine, two competing forestry measures appeared on the November 1996 ballot; voters were able to vote for one or the other or neither. The Compact for Maine's Forests sought to "promote sustainable forest management practices" by mandating restrictions on clearcutting, among other ob-



Proportionally fewer Oregonians than ever before are directly involved with the timber industry. This change has been most evident in the more-populated counties along Interstate 5 in the Willamette Valley. Shown here, recent construction on the edge of Corvallis.

jectives (Maine Elections Division 1996a). The compact was crafted by Governor Angus King as an alternative to a citizens' initiative to ban clearcut logging (Young 2000). The compact received 48 percent of the vote while the citizens' initiative received 29 percent and "neither" received 23 percent (Maine Elections Division 1996b). The compact appeared on the Maine Ballot alone in 1997 and failed, with 53 percent of Maine voters opposing (Maine Elections Division 1997). In November 2000, Maine voters faced yet another initiative, this time to require landowners to obtain clearcut logging permits and to define clearcut levels (Maine Elections Division 2000a). That measure failed, with 72 percent opposing (Maine Elections Division 2000b); the strongest opposition was from those living in rural areas of the state (Young 2000). Efforts already are under way to place yet another measure before Maine voters in 2001 (Young 2000).

Measure 64

In Oregon, Measure 64 proposed to outlaw several forestry activities, including:

- Use of chemical herbicides and pesticides.

- Harvest of any tree greater than 30 inches dbh.

- Onsite slash burning.
- Clearcutting, defined in western Oregon as a harvest leaving fewer than 70 trees with a minimum of 11 inches dbh per acre, and in eastern Oregon as fewer than 60 trees per acre.

In addition, under Measure 64:

- Any citizen could have sued to enforce the act without liability for fees and damages unless the suit was judged frivolous.

- All forest riparian systems would have been declared navigable, making them subject to federal regulations.

- Restrictions adopted under the measure were intended to apply to all private, state, and federal forestlands (Oregon Elections Division 1998a).

Substantial economic impacts to Oregon's forestry industry were predicted. Clearcutting accounts for 89 percent of Oregon's timber harvest (Barnard 1998), and current rules under the Oregon Forest Practices Act permit clearcuts of up to 120 acres in size, and require that at least two standing trees and two downed logs be left per acre, among other restrictions (*The Forestry Source* 1998). An Oregon Forest Industries Council analysis estimated that new restrictions mandated

Table 1. Votes cast in favor of Measure 64, by county.

County	Percent votes in favor	Rank (out of 36 counties)
Baker	9.2%	27
Benton	21.4	3
Clackamas	19.0	7
Clatsop	18.5	8
Columbia	13.8	17
Coos	10.4	24
Crook	8.9	30
Curry	14.2	16
Deschutes	17.0	9
Douglas	7.8	32
Gilliam	11.5	23
Grant	4.8	36
Harney	7.7	33
Hood River	20.4	5
Jackson	16.3	12
Jefferson	12.2	21
Josephine	12.7	20
Klamath	8.8	31
Lake	5.3	34
Lane	21.0	4
Lincoln	24.0	2
Linn	9.0	29
Malheur	12.0	22
Marion	16.4	10
Morrow	12.8	19
Multnomah	31.8	1
Polk	15.0	14
Sherman	9.0	28
Tillamook	15.3	13
Umatilla	14.6	15
Union	9.5	26
Wallowa	5.2	35
Wasco	16.4	11
Washington	20.1	6
Wheeler	9.6	25
Yamhill	13.6	18

SOURCE: Oregon Elections Division 1998b.

by Measure 64 would have decreased annual timber harvest to one-third of projected sustainable harvest; reduced revenue from harvest taxes, payments, and fees by \$74 million; and caused the loss of 59,500 jobs (Beuter 1998). Another analysis predicted that 63 percent of the currently harvestable timber on state and private lands would have become unharvestable (White 1998). The official voters guide for the 1998 election warned of a reduction in state revenues of \$25 million (Oregon Elections Division 1998a). Conversely, proponents suggested that Measure 64 would benefit the state economy by making forestry sustainable and by improving the environment (Brinckman 1998).

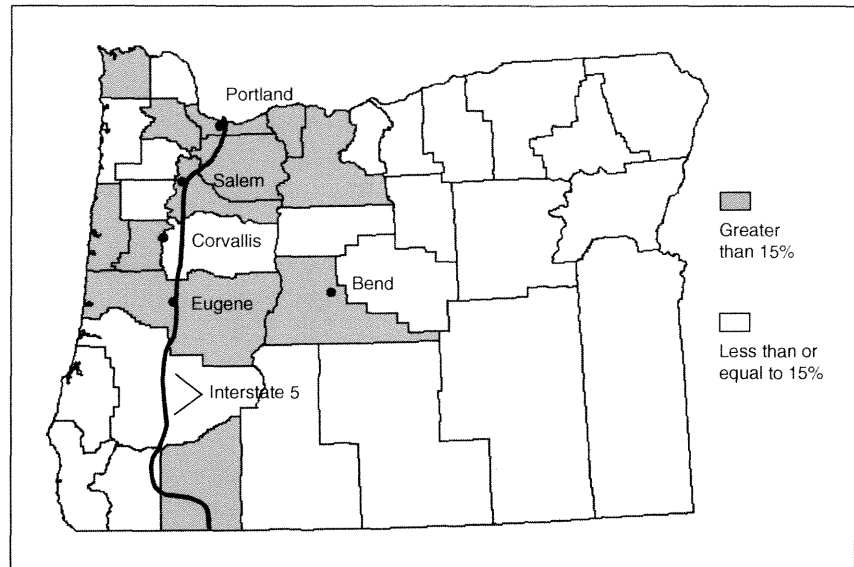


Figure 1. Percentage of votes cast in favor of Measure 64, by county.

Measure 64 was initiated by Oregonians for Labor Intensive Forest Economics (OLIFE), a nonprofit political action campaign based in Eugene whose mission is to implement "sustainable, nondestructive forest use policies" (OLIFE 1998). Twice before, OLIFE had tried to bring clearcut logging bans before Oregon voters (*The Oregonian* 1998a). Earlier versions were filed with the Oregon Elections Division in 1994 and 1996, but they failed to attract the support necessary to be listed on the ballot. OLIFE was joined by another group—Yes on 64—as the principal advocates of Measure 64 (Stangell 1999).

Among the initiative's most vocal opponents was a coalition of business and timber interests and forest owners called the Healthy Forests Alliance (Stangell 1999). Healthy Forests Alliance waged a vigorous campaign opposing the initiative, reportedly spending \$3.5 million (Barnard 1998). This spending easily overshadowed the shoestring budget of the grassroots campaign waged by OLIFE and other initiative proponents (Barnard 1998), who reportedly raised about \$100,000 (Binole 1998a).

Measure 64 was controversial even among some environmental groups. High-profile supporters included the Oregon Natural Resources Council, Sierra Club, and Rainforest Action Network. However, other groups—in-

cluding the Audubon Society, 1000 Friends of Oregon, and the Oregon Environmental Council—declined to endorse the initiative (Binole 1998b). Many environmental groups have long been opposed to clearcutting (Barnard 1998), but felt that Measure 64 was poorly drafted and unduly restrictive (Bernton 1998). Portland-based *The Oregonian* urged readers to vote against Measure 64 (*The Oregonian* 1998b) as did other leading newspapers. In its endorsement of a "no" vote, the fairly liberal newspaper *Eugene Weekly* perhaps best summed up reluctant environmental opposition to Measure 64: "It is demoralizing and disquieting to recommend a 'no' vote on an anti-clearcutting measure... However, Measure 64 falls way short of offering an effective solution to the clearcut issue. The bill is economically short-sighted and politically naive" (*Eugene Weekly* 1998).

Statewide, just 19 percent of Oregonians voted in favor of Measure 64 (Oregon Elections Division 1998b). Approval rates tended to be higher in more urban and suburban western counties such as Multnomah County (32 percent), including the city of Portland; Benton County (21 percent), including the city of Corvallis and Oregon State University; and Lane County (21 percent), including the city of Eugene and the University of Oregon (table 1, fig. 1). Approval rates

tended to be lower in more rural and eastern counties such as Grant (5 percent), Wallowa (5 percent), and Lake (5 percent).

Changes in Oregon

Oregon has experienced gradual but steady socioeconomic change in recent years. Oregon's population increased from 2.1 million in 1970, to 2.6 million in 1980, to 2.8 million in 1990, to 3.4 million in 2000 (US Bureau of the Census 1993, 2001). As Oregon's population has grown, it has gradually become more urban. Between 1980 and 1990 the number of Oregonians living in metropolitan areas increased 14 percent, while the number living in non-metropolitan areas decreased by 3 percent (McGinnis et al. 1996). By 1990, metropolitan residents accounted for 69 percent of the state population.

In-migration from other states has played a significant role in determining the size and composition of Oregon's population (Vaidya 1998). By 1990, 53 percent of Oregon residents were born outside the state (US Bureau of the Census 1993). Attracted by Oregon's amenities and the economic opportunities offered by a growing technology sector, these new residents tend to be better educated than native Oregonians and a greater proportion hold professional occupations (Vaidya 1998). Nearly 70 percent of in-migrants settle in the more urban counties of the northern Willamette Valley, extending roughly from Portland to Eugene in western Oregon (Vaidya 1998).

Meanwhile, the proportion of Oregon's workers whose jobs depend on the forest industry has been falling (*fig. 2*), declining from 8.4 percent in 1980 to 4.4 percent by 1998 (Oregon Employment Department 1998). Between 1988 and 1996, jobs in the wood products industry fell by 19 percent, while jobs in recreation, tourism, research, and fishing increased by 42 percent (Binole 1998b). Technology and construction in particular are on a long-term upward trend and now account for 51 percent of Oregon's export economy, while wood products account for 12 percent (Office of Economic Analysis 1999). The combined

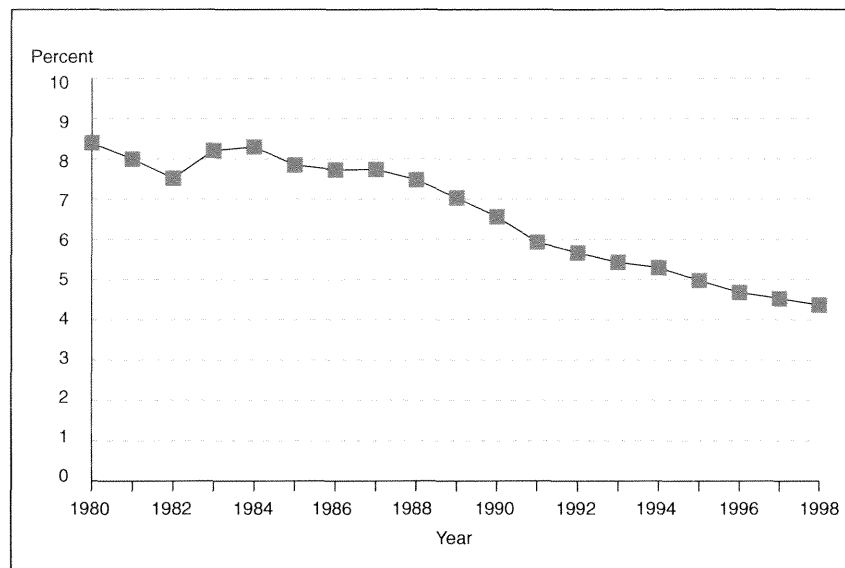


Figure 2. Forest-related employment as a percentage of all employment in Oregon, 1980–98. Average employment for SIC codes 8, 24, 25, and 26, divided by average employment for all industries, as reported by the Oregon Employment Department (1998).

effect of population growth and the development of nonforest economic sectors has reduced the proportion of Oregonians directly involved with the timber-production aspects of forests and forestry. This change has been more evident in more populated counties of western Oregon, particularly those in the Willamette Valley along the Interstate 5 corridor.

Previous research suggests that support for environmental protection generally tends to be stronger among people who are more urban, educated, affluent, and politically liberal and who are less directly involved with natural resource industries (Jones and Dunlap 1992). Studies conducted in Oregon suggest that these and other socioeconomic characteristics, such as less involvement with the timber industry, tend to be correlated with stronger environmental orientations toward forests (Schindler et al. 1993; Steel et al. 1994, 1998). These environmental orientations may translate into greater support for banning clearcutting, establishing wilderness areas, and protecting fish and wildlife habitat (Steel et al. 1994).

Recent statewide surveys indicate that Oregonians place a high value on clean air, clean water, and the protection of wilderness and wildlife; they place a higher value on noneconomic

forest values than on economic values (Davis and Hibbits, Inc. 1999). A growing urban population also can increase demands for outdoor recreation opportunities. Oregon is well known for its outdoor amenities and Oregonians place a high value on them. In one survey, Oregonians cited natural beauty and recreation opportunities as the attributes they most value about living in the state (Oregon Business Council 1993).

In many ways, the changes affecting Oregon are not unique. A growing number of social scientists believe the nation is experiencing rapid and significant change in forest values (Bengston 1994) and attitudes concerning forest management (Davis et al. 1991; Schindler et al. 1993). Egan and Luloff (2000) observe that in many areas of the United States, urbanites are migrating to rural areas seeking to improve their quality of life. These ex-urbanites are bringing with them different attitudes, needs, and values than those of long-term residents. Egan and Luloff call it the "exurbanization" of America's forests. The process is manifested in changing attitudes regarding the use and management of forests, and a push for forestry policies and practices that reflect these changing forest values (Egan and Luloff 2000). That Measure 64 even made it onto the ballot in

Analyzing County-Level Voting Data

To prepare county-level voting data for regression analysis, the percentage of voters in each county voting in approval of the initiative is divided by the percentage of voters rejecting the initiative. The dependent variable is a logit transformation of this value, computed as

$$\text{logit}(Yes_m) = \ln \left[\frac{P(Yes_m)}{1 - P(Yes_m)} \right]$$

where $\ln$ is the natural logarithm and $P(Yes_m)$ is the percent of voters in each county m voting in approval of the initiative (Deacon and Shapiro 1975). The logit transformation can be used as a dependent variable in the regression equation

$$\text{logit}(Yes_m) = \beta x_m$$

where x is a set of independent explanatory variables describing the characteristics of voters in each county m and β is a set of estimated regression coefficients. The regression model is estimated using weighted least squares with weights w_m defined as

$$w_m = \left[\frac{n_m P(Yes_m)}{n_m (1 - P(Yes_m))} \right]$$

where n_m is the total number of participating voters in each county m . The empirical technique is referred to as the minimum chi-squared approach (Greene 1997) and has been used in previous studies of voting behavior regarding natural resource policy-related referenda (Deacon and Shapiro 1975; Kline and Wichelns 1994).

1998 is evidence that these processes are taking place in Oregon, a state that has had a close association with the timber industry since its earliest days.

Socioeconomic Factors and the Vote

Many studies have used surveys to examine environmental attitudes and how they often differ across socioeconomic categories. Measure 64 voting data provide an opportunity to examine the actual decisions of voters regarding forestry policy. Although it is not possible to examine voting by individual Oregonians, because data describing individual voters is not collected during elections, it is possible to examine aggregate voting by county using county-level election results from the Oregon Elections Division. Election results include the number of voters in each county voting in favor of or in opposition to Measure 64, among other data.

The voting data can be examined

using standard empirical techniques developed to analyze proportions data. An empirical measure can be constructed to describe the level of voter support for Measure 64 in each county (see "Analyzing County-Level Voting Data"). The level of voter support can be used as a dependent variable in a regression equation describing voter support within each county as a function of average socioeconomic characteristics within each county. The method could also be used to examine voter opposition to Measure 64 and that analysis would yield regression coefficients that are identical in magnitude and statistical significance but opposite in sign. The empirical analysis relies on the use of US census and other county-level socioeconomic data to construct explanatory variables potentially related to voters' perceptions regarding Measure 64.

Previous studies hypothesized that public support for restricting forestry

activities is stronger among more urban, more educated, younger, more politically liberal individuals, and women (Schindler et al. 1993; Steel et al. 1994, 1998). Many of these socioeconomic characteristics are described by the variables *Population Density*, *Household Income*, and *Education* (table 2). Previous studies also have found that support for environmental protection is higher among Democrats (Jones and Dunlap 1992) and women (Mohai 1991). We included the variable *Democrat* in the model to account for prevailing political affiliations within each county. We initially included variables describing the median age of county residents and the proportion of county population that is female. Although, the estimated coefficients for each variable possessed the expected sign—negative for *Age* and positive for *Gender*—neither coefficient was found to be statistically significant. Because both age distribution and gender composition tend not to vary much from one county to the next, it is possible that the statistical insignificance of *Age* and *Gender* in the empirical models is due to their lack of variation within the sample.

Given the potential impact of Measure 64 on the forest industry, we suspected that the economic importance of forestry employment within counties could be an important factor affecting county-level voter support. People whose livelihoods depend on the timber industry may hold views regarding forestry that are different from those who do not depend on the timber industry (Brunson et al. 1997). We included the variable *Forest Employment* to account for these possibilities. In addition, recent in-migration has resulted in greater numbers of new residents who are more likely to live in urban areas of the state and tend to be better educated than native Oregonians (Vaidya 1998). Because these factors often are correlated with environmental views toward forests (Schindler et al. 1993; Steel et al. 1994, 1998), we included the variable *Native Oregonian* to describe the proportion of each county population that is native-born Oregonian.

The *Household Income* and *Educa-*

tion variables were found to be sufficiently collinear (Pearson correlation coefficient = 0.57) to warrant testing these two variables separately. Two empirical models were estimated, one including *Household Income* and one including *Education* (table 3). Both models are highly significant with r^2 values of 0.772 and 0.783. The signs of the estimated coefficients for all explanatory variables in both models are consistent with expectations; all coefficients are statistically significant at the 5 percent level or better.

The models suggest that county-level voter support for Measure 64 is positively correlated with population density, household income, education, and the proportion of county voters who are registered Democrats. Support is negatively correlated with the proportion of workers in each county employed in the forest industry and the proportion of residents who are native-born Oregonians.

The empirical results are consistent with the hypothesis that support for restricting forestry activities is more prevalent among individuals living in more urban areas, earning higher incomes, and who are more educated and less directly involved in the forest industry. If the proportion of voters who are registered Democrats can be considered a crude measure of political "liberalness" in Oregon, then the empirical results also are consistent with the notion that environmental views toward forests are stronger among more politically liberal individuals. The empirical results also support the notion that native Oregonians tend to be less in favor of restricting forest practices than their newer, nonnative fellow citizens.

Conclusions and Future Implications

Oregon is a state with a growing population, expanding urban areas, and an increasing number of workers employed in nonforest-related sectors. Previous research using surveys of the public suggest that these and other socioeconomic characteristics tend to be associated with greater support for environmental protection generally, and changing public attitudes toward forestry in particular. Our analysis of ac-

Table 2. Definitions and sample means of explanatory variables.

Variable	Definition	Mean
Population density	County population (1,000s) per square mile	0.081
Household income	Median household income (\$1,000s) in county	24.67
Education	Proportion of individuals in county aged 25 years or older with a four-year college degree	0.164
Forest employment	Proportion of individuals in county employed in Standard Industrial Classification (SIC) codes 8, 24, 25, and 26 in 1998	0.077
Democrat	Proportion of registered Democrats in county	0.385
Native-born Oregonian	Proportion of native-born Oregonians in county	0.502
Age	Median age of the county population	35.928
Gender	Proportion of women in county population	0.503

Table 3. Estimated coefficients of the referendum voting models.

Variable	Model including income variable		Model including education variable	
	Estimated coefficient	t-statistic	Estimated coefficient	t-statistic
<i>Intercept</i>	-2.650	-4.893	-2.403	-5.057
Population density	0.293	2.343	0.288	2.358
Household income	0.028	2.652	—	—
Education	—	—	2.058	3.017
Forest employment	-3.992	-4.641	-3.347	-3.694
Democrat	4.140	3.853	3.673	3.610
Native-born Oregonian	-2.497	-3.245	-1.966	-2.702
<i>Summary statistics</i>	n = 36; adjusted r^2 = 0.772; f = 24.640 ($p < 0.0001$)		n = 36; adjusted r^2 = 0.783; f = 26.192 ($p < 0.0001$)	

NOTE: Variable definitions are provided in table 2. Model estimated using logit-transformed voting data as the dependent variable (see "Analyzing County-Level Voting Data," p. 24).

tual voting data yielded results consistent with the findings of previous research. The results suggest that potential relationships exist between socioeconomic factors and voter support for a forestry ballot initiative to restrict clearcutting in Oregon.

The relationships between socioeconomic factors and environmental concern have remained relatively stable in recent years, and increased activism on behalf of the environment is likely (Jones and Dunlap 1992). A decade ago, researchers declared that public concern for environmental quality had reached an all-time high in the United States (Dunlap and Scarce 1991). As Egan and Luloff (2000) suggest, public attitudes toward forestry also appear to be changing. It is conceivable that continued socioeconomic change will lead

to continued changes in public attitudes toward forestry and increased political activism seeking additional restrictions on forestry activities at both the national and state levels.

Forestry policymakers and professionals are left to wonder what the future holds for forestry in Oregon. If Measure 64 did nothing else, it showed that at least some level of public support exists for restricting forestry activities in the state. Some observers suggest that future forestry initiatives could be more moderate than was Measure 64, potentially attracting support among a broader coalition of environmental groups and the public. For example, the Forest Restoration Initiative filed for the November 2002 ballot includes provisions enabling exceptions on the basis of undue economic hard-

ship for woodlots of 160 acres or less, among other provisions (Bradbury 2000). Continued socioeconomic change coupled with more moderately crafted forestry initiatives would seem to imply that such initiatives could fair better before Oregon voters in the future than did Measure 64. As one Washington State official said following the defeat of Measure 64, "We [the Pacific Northwest] have more and more people who don't have a connection to the timber industry or timber jobs and they don't accept the clearcut notion" (Barnard 1998). Indeed, in a recent essay, Bliss (2000) suggests that public opposition to clearcutting is widespread, deep, and "symptomatic of public alienation from forestry in general" (p. 5).

Currently estimated at 3.4 million, Oregon's population is projected to reach 4 million by 2015 and 4.3 million by 2025 (US Bureau of the Census 1996). Although much of this growth is expected to occur in the Willamette Valley of western Oregon, at least some predominantly rural eastern counties will experience it as well, further transforming the political landscape of the state. Deschutes County, located on the eastern slope of the Cascades, is now the fastest growing county in the state. With its growing population of new retirees, telecommuters, and second homebuyers, it is perhaps Oregon's best example of what Egan and Luloff (2000) describe as the exurbanization of America's forests. This kind of change likely will continue to transform the political climate of forestry for years to come.

Literature Cited

- BARNARD, J. 1998. Clearcut ban seen too radical by even environmentalists. *The Oregonian*, October 11. Available online at www.oregonlive.com/todaysnews/9810/st101207.html. Last accessed by authors March 2001.
- BENGSTON, D.N. 1994. Changing forest values and ecosystem management. *Society and Natural Resources* 7:515-33.
- BERNTON, H. 1998. Measure 64 could reshape Oregon's forestry landscape. *The Oregonian*, October 12. Available online at www.oregonlive.com/todaysnews/9810/st101210.html. Last accessed by authors March 2001.
- . 1999. Initiative proposes longer logging cycles. *The Oregonian*, April 16. Available online at www.oregonlive.com/news/99/04/st041604.html. Last accessed by authors March 2001.
- BEUTER, J.H. 1998. *Ballot Measure 64: Its potential impact on Oregon's forests and forest economy*. Report prepared for Oregon Forest Industries Council by Duck Creek Associates, Inc., Corvallis, OR.
- BINOLE, G. 1998a. Cut down by voters, "64" boosters reevaluate. *Portland Business Journal*, November 13. Available online at portland.bcentral.com/portland/stories/1998/11/13/story8.html. Last accessed by authors March 2001.
- . 1998b. Playing field not level for Measure 64 boosters. *Portland Business Journal*, October 19. Available online at portland.bcentral.com/portland/stories/1998/10/19/story3.html. Last accessed by authors March 2001.
- BLISS, J.C. 2000. Public perceptions of clearcutting. *Journal of Forestry* 98(12):4-9.
- BRADBURY, B. 2000. News release, September 13. Office of the Secretary of State, Salem OR.
- BRINCKMAN, J. 1998. Kitzhaber opposes ban on clearcuts. *The Oregonian*, August 25. Available online at www.oregonlive.com/news/99/04/st082505.html. Last accessed by authors March 2001.
- BRUNSON, M., B. SCHINDLER, and B.S. STEEL. 1997. Consensus and dissension among rural and urban publics concerning forest management in the Pacific Northwest. In *Public lands management in the West*, ed. B.S. Steel. Westport, CT: Praeger Publishers.
- DAVIS, L.S., L.W. RUTH, D. TEEGUARDEN, and R. K. HENLY. 1991. Ballot box forestry. *Journal of Forestry* 89(12):10-18.
- DAVIS AND HIBBITS, INC. 1999. *Oregonians discuss forest values, management goals and related issues*. Report prepared for Oregon Forest Resources Institute. Portland, OR.
- DEACON, R., and P. SHAPIRO. 1975. Private preference for collective goods revealed through voting on referendum. *American Economic Review* 65(Dec.):943-55.
- DUNLAP, R.E., and R. SCARCE. 1991. The polls—Poll trends: Environmental problems and protection. *Public Opinion Quarterly* 55:651-72.
- EGAN, A.F., and A.E. LULOFF. 2000. The exurbanization of America's forests: Research in rural social science. *Journal of Forestry* 98(3):26-30.
- EUGENE WEEKLY. 1998. Endorsements '98. October 22, p. 12.
- THE FORESTRY SOURCE. 1998. Oregon voters to decide on clearcutting ban. September. Available online at www.safnet.org/archive/oregon998.htm. Last accessed by authors March 2001.
- GREENE, W.H. 1997. *Econometric analysis*. Upper Saddle River, NJ: Prentice Hall.
- HASTINGS LAW LIBRARY. 2000. California ballot propositions database. Hastings College of Law, University of California, San Francisco.
- JONES, R.E., and R.E. DUNLAP. 1992. The social bases of environmental concern: Have they changed over time? *Rural Sociology* 57(1):28-47.
- KLINE, J., and D. WICHELS. 1994. Using referendum data to characterize public support for purchasing development rights to farmland. *Land Economics* 70(2):223-33.
- MAINE ELECTIONS DIVISION. 1996a. Maine citizen's guide to the referendum election, Tuesday, November 5, 1996. Department of the Secretary of State, Augusta.
- . 1996b. Referendum election results—Questions 1-4, November 4, 1996. Department of the Secretary of State, Augusta.
- . 1997. Referendum election results, November 4, 1997. Department of the Secretary of State, Augusta.
- . 2000a. Maine citizen's guide to the referendum

- election, Tuesday, November 7, 2000. Department of the Secretary of State, Augusta.
- MAINE ELECTIONS DIVISION. 2000b. Referendum election tabulations, November 7, 2000. Department of the Secretary of State, Augusta.
- MCGINNIS, W.J., R.H. PHILLIPS, and K.P. CONNAUGHTON. 1996. *County portraits of Oregon and northern California*. General Technical Report PNW-GTR-377. Portland, OR: USDA Forest Service, Pacific Northwest Research Station.
- MOHAI, P. 1991. Men, women, and the environment: An examination of the gender gap in environmental concern and activism. *Society and Natural Resources* 5(1):1-19.
- OFFICE OF ECONOMIC ANALYSIS. 1999. *Oregon Economic and Revenue Forecast* 14(1).
- OREGON BUSINESS COUNCIL. 1993. *Oregon values and beliefs: Summary*. Portland, OR.
- OREGON ELECTIONS DIVISION. 1998a. Official 1998 general election voters guide. Oregon Secretary of State, Salem, OR.
- . 1998b. November 3, 1998 general election. Oregon Secretary of State, Salem, OR.
- . 2000. 2002 initiative, referendum, and referral log. Oregon Secretary of State, Salem, OR.
- OREGON EMPLOYMENT DEPARTMENT. 1998. *Oregon covered employment and payrolls by industry and counties: 1980-1998*. Salem, OR.
- THE OREGONIAN. 1998a. Measure 64—Logging/pesticides. October 12. Available online at www.oregonlive.com/today/news/9810/st101212.html. Last accessed by authors March 2001.
- THE OREGONIAN. 1998b. Oregonian endorsement—No on ballot measure 64. October 12, p. 4.
- OREGONIANS FOR LABOR INTENSIVE FOREST ECONOMICS (OLIFE). 1998. Available online at www.efn.org/~olife/home.html. Last accessed by authors March 2001.
- SCHINDLER, B., P. LIST, and B.S. STEEL. 1993. Managing federal forests: Public attitudes in Oregon and nationwide. *Journal of Forestry* 91(7):36-42.
- STANGELL, J. 1999. The OSAF response to Measure 64; forestry in the spotlight. *Western Forester* 44(2):10-11.
- STEEL, B.S., P. LIST, and B. SHINDLER. 1994. Conflicting values about federal forests: A comparison of national and Oregon publics. *Society and Natural Resources* 7(2):137-53.
- STEEL, B.S., B. SHINDLER, and M. BRUNSON. 1998. Social acceptability of ecosystem management in the Pacific Northwest. In *Ecosystems management: A social science perspective*, eds. D.L. Soden, B.L. Lamb, and J.R. Tennert, 147-60. Dubuque, IA: Kendall/Hunt Publishing.
- US BUREAU OF THE CENSUS. 1993. *1990 census of population*. Washington, DC: US Department of Commerce.
- . 1996. *Population projections for states, by age, sex, race, and hispanic origin: 1995 to 2025*. PPL 47. Washington, DC: US Department of Commerce.
- . 2001. *Resident population and apportionment of the US House of Representatives*. Washington, DC: US Department of Commerce. Available online at www.census.gov/dmd/www/resapport/states/oregon.pdf. Last accessed by authors March 2001.
- VAIDYA, K.L. 1998. *Oregon update: In-migrants: Oregon's new residents*. Salem, OR: Office of Economic Analysis, Department of Administrative Services.
- WHITE, V. 1998. *Would clearcut ban undercut Oregon's economy?* Portland: Oregon Tax Research.
- YOUNG, S. 2000. Forestry referendum rejected for third time. *Bangor Daily News*, November 8. Available online at www.bangornews.com/cgi-bin/article.cfm?storynumber=23590. Last accessed by authors March 2001.

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