

EXAMINING THE SOURCES OF PUBLIC SUPPORT FOR WILDLAND FIRE POLICIES



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Recent severe wildfires have reinforced the need for successful mitigation strategies to be coordinated across all levels of government that address the needs and concerns of homeowners who live in the wildland/urban interface (WUI).

Despite the growing body of social science literature on agency-initiated wildland fire policies and homeowner mitigation strategies, knowledge gaps surrounding these policies and strategies still exist (Cortner and Field, 2004). To better manage the human dimensions of wildland fire, a better understanding of the underlying mechanisms that influence public support for agency and homeowner behaviors is therefore needed.

We examined the influence of three sets of predictors—sociodemographic, situational, and psychological—on two agency policies, prescribed fire and mechanical thinning, and two homeowner actions, defensible space and Firewise construction.

We anticipate that the differences in the relationships among the predictor variables that are precursors to each policy provide a basis

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Only Starting To Emerge

Half a century ago, Lasswell (1951) emphasized the importance of merging social science and policy. Work in policy arenas (such as housing and labor) has empirically linked public beliefs and policy issues (Hyman and others, 2001). Natural resource managers have similarly recognized that the social sciences can inform the decisionmaking pro-

cess (O’Laughlin, 2003). Hoover and Langner (2003), for example, noted “the importance of understanding ...attitudes, perceptions and beliefs about fire in developing feasible fire management strategies.” Despite this recognition, social science-based analyses of wildland fire policies are only starting to emerge in the literature (Cortner and Field, 2004).

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to better understand the social complexities of each wildland fire policy. Thus, our major working hypothesis is that wildland fire policies have distinct sources of public support that, to be effective, must be understood.

Predicting Policy Support

Combinations of underlying factors have been shown to influence support for wildland fire management alternatives (Kneeshaw and others, 2004; Taylor and others, 1988). In general, the wildland fire literature has addressed the three categories of predictor variables used in our study:

1. **Sociodemographic variables.** These variables are commonly measured in social science surveys and are frequently reported in wildland fire management studies. Variables such as age, sex, education, and income have been shown to be related to residents’ perceptions of wildland fires and potential mitigation strategies (Hoover and Langner, 2003). Individuals with more income, for example, have more personal resources to adopt some homeowner wildland fire mitigation strategies (such as Firewise construction).

2. **Situational variables.** These factors define a given context and influence what the public perceives as acceptable or feasible (Kneeshaw and others, 2004; Taylor and others, 1988). Large tracts of forested land often surround homes built in the WUI. Proximity of a home to a forest is likely to enhance the homeowners' general awareness of the potential dangers associated with wildland fires and their willingness to accept mitigation efforts.

3. **Psychological variables.** These variables—such as specific beliefs and attitudes regarding wildfires—are perhaps most important to understanding wildland fire policy support. The public often under or overestimates wildfire risks. Large attitudinal differences sometimes exist between experts and non-experts in risk situations (Vogt and others, 2005).

Not all of these three classes of predictors, however, are likely to contribute equally to support—or oppose—agency wildland fire policies or homeowner mitigation strategies. Social-psychological theories for these disparities suggest that the “specificity” principle (the correspondence between the measured concepts) influences the strength of observed relationships between variables (Fishbein and Ajzen, 1975; Vogt and others, 2005).

This principle predicts that *general* sociodemographic variables (such as education and income) and *general* situational variables (such as home ownership) that are not wildland fire-specific will explain less of the variability in support for agency prescribed burning, for instance, or for homeowner wildland fire mitigation strategies such as defensible space.

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More *specific* psychological variables (beliefs about effectiveness and aesthetics of mitigation efforts) would be expected to account for relatively more variation in response. Situation variables (such as proximity to a forest) might be somewhere in between in predictive potential.

Thus, situational variables raise awareness of the potential risks of wildland fires, but are less specific than the psychological variables.

Survey and Model

Data for this study were obtained from a mail survey of residents living in six WUI counties in Colorado. A random sample of these residents was mailed a survey in May 2004. After a postcard reminder and two repeat mailings, 532 completed surveys were returned, for a 47-percent response rate.

The survey contained four separate *dependent variables* representing different wildland fire mitigation strategies. Each was introduced with a short description and a captioned illustration. Two strategies dealt with defensible space and Firewise construction homeowner activities, and two concerned the agency activities of mechanical thinning and prescribed burning.

For the homeowner activities, respondents indicated whether or not they currently practiced defensible space or Firewise construction. For the agency action strategies, respondents rated three prescribed burn questions and

four mechanical thinning questions, each measured on 7-point agree–disagree scales. (For analysis consistency with the homeowner activity variables, these composite indices were collapsed into dichotomous variables where “0” reflected opposition and “1” indicated support for each agency action.)

Variables and Predictors Examined

Three sets of *independent variables* were examined. The *sociodemographic* predictors included age, sex, total annual household income, and education. Four general *situational* predictors were examined:

- Year-round residency,
- Distance of home from forested area,
- Own or rent property, and
- Years living in Colorado.

The psychological variables measured respondents' specific familiarity, perceived effectiveness, and aesthetic impacts regarding prescribed burning and mechanical thinning. For defensible space and Firewise construction, individuals also indicated whether or not the actions enhanced the safety of their property. These variables were coded on 9-point scales (1 = not at all familiar, 9 = extremely familiar).

A more comprehensive discussion of the scientific issues, methods used in this study, and full exposition of the statistical tests used are available in Absher and Vaske (2006a, 2006b).

Survey Results

More than three quarters of the WUI residents surveyed, 79 percent, practiced at least one type of defensible space activity (such as cleaning gutters or pruning trees), and 47 percent engaged in some form of Firewise construction. Nine out of 10 respondents, 90 percent, approved of mechanical thinning, and 82 percent supported prescribed burning activities.

The respondents were typically male (65 percent), about 56 years old, had at least some college education, and reported household incomes slightly more than \$70,000 per year. These sociodemographic results are typical of homeowners in WUI settings. A majority of

respondents were year round (84 percent) homeowners (93 percent) who lived in, or near, a forest and had resided in Colorado an average of 26.7 years.

In terms of the psychological variables, the respondents were supportive of both agency and homeowner mitigation efforts, with averages ranging from 5.32 to 6.83 on a 9-point scale.

Statistical Analyses

Separate statistical analyses (logistic regression models) were calculated for each of the three sets of predictor variables on each of the four criterion variables (see table). Significant relationships linkages are indicated by check marks.

Among the sociodemographic indicators, only age (mechanical thinning model) and income (Firewise construction, mechanical thinning, and prescribed burning models) were statistically significant. None of the sociodemographic variables statistically influenced defensible space activities.

Overall, the sociodemographic variables were weakly linked to the personal action strategies and only slightly better represented in the agency actions. Again, for more detailed information on the methods or results of the statistical models and tests, please see Absher and Vaske (2006a, 2006b).

Patterns of significant linkages of sociodemographic, situational, and psychological influences on wildland fire policies.

Influences by type	“Personal Action” Policies		“Agency Action” Policies	
	Defensible Space	Firewise Construction	Mechanical Thinning	Prescribed Burning
<i>Sociodemographic:</i>				
Gender				
Age			✓	
Education				
Income		✓	✓	✓
Sub-group			✓	✓
<i>Situational:</i>				
Year-round resident				
Forest proximity	✓	✓		
Home ownership	✓			
Years in Colorado	✓			✓
Sub-group	✓	✓		
<i>Psychological:</i>				
Familiar with policy	✓	✓	✓	✓
Think it's effective	✓			✓
Think it's safe	✓		n/a	n/a
Think it improves look			✓	✓
Sub-group	✓	✓	✓	✓

n/a = not applicable

Three of the four situational variables (forest proximity, home ownership, years in Colorado) influenced participation in defensible space actions (see table). In the Firewise construction model, only distance from the forest was significant. None of the four situation predictors influenced mechanical thinning. In the prescribed burning equation, only years living in Colorado was significant.

Overall, the situational factors were important to defensible space decisions, but only weakly tied to the other actions.

The psychological variables explained more of the variability in both the personal and agency action models than either the sociodemographic or situational variables. Perceived familiarity with the action was significant in all four models. Effectiveness influenced defensible space and prescribed burning actions. Safety was significant in the defensible space model. Aesthetic impacts influenced ratings of agency actions, but not the homeowner actions. Taken as a whole, the subgroup of psychological variables was consistently the best predictor of policy support.

Understanding Public Support

Variables in each of the three classes of predictors can influence agency policy and individual homeowner behavior. Consistent with social psychological theory and the previously discussed specificity principle, specific wildland fire beliefs and attitudes (such as psychological predictors) had more predictive power than either the general sociodemographic or general situational indicators.

These results point to the utility of knowing the social and psychological precursors. Especially noteworthy is the fact that psychological linkages to all wildland fire policies are strong and pervasive.

The policy-specific pattern of significance also differed between the sociodemographic, situational, and psychological predictors. The sociodemographic variables had more influence in *agencywide* policy models, while the situational variables were relatively more important in understanding *homeowner* actions.

Among the psychological variables, perceived familiarity with the agency or homeowner actions had

A total of 90 percent of the study's respondents supported mechanical thinning; 82 percent supported prescribed burning activities.

a strong and consistent influence on each policy. This suggests that greater support for these policies and actions might be possible if the communication strategy enhances residents' knowledge or understanding of the rationale for them.

To enhance compliance with Firewise construction and defensible space strategies, agencies should pay attention to the psychological drivers and to the situational variables such as proximity to the forest. Given the homeowners' costs associated with adopting Firewise construction and the potential barriers that these pose to compliance, our results also sug-

The use of social science data to inform wildland fire policy can clarify different considerations that are important in affecting support, opposition, or behavioral compliance with wildland fire policy.

gest that residential land developers and the home construction industry should be an important target for communication efforts—especially if they will agree to incorporate Firewise principles more often and more aggressively market such options to customers.

This Study: Initial Step

In summary, our work in this study represents an initial step toward bridging traditional discursive policy analysis with a theoretically grounded empirical approach espoused by Lasswell (1951). Our three-factor causal model offers a theoretical framework for better understanding policy support and homeowner behavior.

Furthermore, our results support the working hypothesis of differential social causes and suggest that fire managers need to engage homeowners and the general population differently. However, because less than half of the variance was explained in any of the models, more work is needed to identify a comprehensive model of policy support for wildland fire actions—and to demonstrate its use in other geographic or resource settings.

Our general modeling approach should also be broadly applicable to other policy arenas, especially those focused on natural resource management or natural disaster issues. Recognizing these causal influences can improve policy development,

communications, and local community involvement strategies.

These results also underscore the utility of including psychological determinants in the policy analysis model, as well as the need to carefully assess the role of constituent influences for a specific policy.

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AN INVITATION TO COLLABORATE WITH YOUR PEERS

The Wildland Fire Lessons Learned Center's "MyFireCommunity" Web site—located at <<http://www.myfirecommunity.net>>—allows wildland fire professionals across agencies and geographic areas to collaborate and communicate on the issues and challenges that face them in their day-to-day jobs.

"Neighborhood" groups have already been formed on topics such

as applied fire effects, fire behavior, and aerial ignition. Members often request to join these existing groups or create new groups to share ideas, work on documents, plan meetings or workshops, and more. These neighborhood groups also provide a convenient location to share and store documents in a safe and secure environment.

New neighborhoods are continually being formed.

There are also specific practitioner groups using the "MyFireCommunity" Web site for positions such as fire use modules, fire information officers, fire behavior analyst, fire prevention/education, and interagency hotshot crews.

Fire professionals can become members of MyFireCommunity.net through an easy registration process on the Web site. They will then have immediate access to information and discussions on countless wildland fire arena topics. ■