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The Effects of Wildland Fire on a Community: A Study of Bell County, Kentucky

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THE EFFECTS OF WILDLAND FIRE ON A COMMUNITY: A STUDY OF BELL
COUNTY, KENTUCKY

A Thesis
Presented to
The Faculty of the Department of Sociology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts in Sociology
By
Mary Elizabeth Moneta

December 2006

The Effects of Wildland Fire on a Community: A Study of Bell County, Kentucky

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The Effects of Wildland Fire on a Community: A Study of Bell County, Kentucky

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Directed by: Dr. Douglas C. Smith, Dr. Holli Drummond, Dr. Jerry Daday, and Dr.
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As the number of people living in forested areas continues to grow, so does the likelihood that an individual will suffer from a wildland fire. There has been little research produced strictly looking at the human dimensions of wildland fire, especially in southern rural communities (Machlis, Kaplan, Tuler, Bagby, and McKendry 2002). Using two of Kumagai, Carrol, and Cohan's (2004) propositions on the social impact of disaster and the theoretical framework of Emile Durkheim's (1933) view of community and collective consciousness, the primary purpose of this research was to aid in understanding the effects of wildland fire on the social and economic well-being of a community.

This research examined a specific location in Kentucky, Bell County. Bell County has suffered many wildland fires, especially with wildland–fire arson. In June of 2006 questionnaires exploring residents' perception of wildland fire on the social and economic well-being of the local community were sent to a random sample of area residents.

Two aspects of community and wildland fire were examined, the impact of wildland fire on community and blame for damage caused by inadequate efforts to control wildland fires. Partial correlations were used to measure the relationship between variables. The findings suggest that there is no consistent positive or negative impact of wildland fire on all individuals in a community. No consistent relationship exists between wildland fires' impacts and aspects of community in a negative way. Respondents themselves were less likely to report gain or loss and more likely to report that others had gained or lost in income. The longer respondents have lived in Bell County, the more likely they will discuss wildland fire. Respondents did not blame any local, state, or federal agency for wildland fire. In fact, the more one is tied to community (in terms of quality of life, trust in government, and strong neighbor relations), the more supportive one is of local government. The implications of this study could include policy changes with regards to wildland fire, information gathered would help aid in the understanding of the effects of wildland fire within a rural community. Due to the small sample ($n = 140$) and weak response rate (18.8%), the information gathered may only be generalizable to Bell County or the respondents themselves. Future research would be suggested, research at a qualitative level, through participant observation and in-depth interviews of residents of Bell County, Kentucky.

CHAPTER I

INTRODUCTION

Wildland fires pose a significant threat to forests, forest-related industries, and the communities that depend on the forests. However, more is known about the biophysical dimensions of wildland fire, such as fire ecology and fire behavior, than about the human dimensions, such as the social and economic well-being of a community (Beebe and Omi 1993; Cortner, Swinford, and Williams 1990; Cortner, Zwolinski, Carpenter, and Taylor 1984). In 2002 Machlis, Kaplan, Tuler, Bagby, and McKendry developed a social science research plan for federal wildland fire management so that an integrated approach to the understanding of the effects of wildland fire might begin. In their report they noted that researchers still do not have an accurate and comprehensive understanding of the human dimensions of wildland fire needed by foresters and other practitioners to develop and implement fire-management plans. The purpose of this research is to aid in understanding the effects of wildland fire on the social and economic well-being of a community.

As the number of people living in forested areas continues to grow, so does the probability that more people living in the wildland-urban interface will experience a wildfire on or near their property at some point in time (Cheng and Becker 2005; Cortner and Gale 1990; Flint and Luloff 2005). The social and emotional impacts of such a fire are costly not only to individuals experiencing them but also to the communities in which

they reside. Little research has been conducted that would aid agencies in understanding the human dimensions of wildland fire (Gordon and Maida 1992).

The Commonwealth of Kentucky provides an excellent context for examining the social effects of wildland fire. In Kentucky there are 12.7 million acres of forest, roughly 48 percent of the forest covering Kentucky before European settlement. Fifty percent of the state is presently covered by forest, and of that 93 percent of forest land is privately owned (Kentucky Division of ...2005a). Kentucky ranks eleventh out of fifty states in the highest number of acres covered by forest per person in the United States. These forested lands provide multiple benefits to the residents of Kentucky—including timber production, wildlife habitat, recreational opportunities, water quality, and aesthetic beauty.

Kentucky also has an enormous wildland fire problem, especially with wildland fire caused by arson. In 2005 there were 1,678 wildland fires (Kentucky Division of...2005b). The majority (61%) of these fires were attributed to arson. Arson-attributed fires are significant because Kentucky's percentage of arson-related fires is higher than the national average of 20 percent.

Another characteristic of the state of Kentucky is that its landscape is dotted by small rural communities. Many of these communities suffer from high rates of persistent poverty and depend on forests to provide income both through forest products and a tourist-recreation amenity. Thus, Kentucky has many potential study sites from which to choose.

This research will examine a single, specific place in Kentucky—Bell County (See Appendix A for maps). Bell County is a rural county, with 63% of the population living

outside urban areas. Forty-one percent of residents live in poverty, which is much higher than the national average of 18 percent.

At first glance there appears to be nothing unusual in Bell County aside from the crushing poverty. Bell County has the typical cluster of small communities that you could find in most states. Everyone local knows everyone else, and in some round-about way they are all related to each other. People know what is going on in their community and who is involved. However, it is not until one looks past the facade, that one can see the true community. Yes, there are beautiful homes, nice cars, and beautiful views of the mountains, but something else lurks. When one enters the county, locals watch, wondering who you are and what you are doing in “their” town. What family are you related to? What are you trying to take from them? Are you trying to take their land, their food, their livelihood?

Bell County suffers from a persistent predicament, wildland fires. Moreover, wildland-fire arson is the cause of several of these fires. There had been no research conducted in Appalachian communities to study the effects of wildland fire, let alone wildland-fire arson. Hence, this research studies the effects of wildland fire on the social and economic well-being of a community.

A survey was employed to uncover the social and economic well-being of a community due to a wildland fire. I have provided a review of relevant literature followed by an explanation of the methods that were used to conduct my research. The third section includes an elaboration of my research results. The final section of my study involves a detailed discussion with some concluding final thoughts.

CHAPTER II

LITERATURE REVIEW

One may draw on several literatures to answer questions about the human dimensions of wildland fire. These include literature on social ties as well as wildland fire research.

Social Ties

The focus of sociology has been the study of values and norms that bind or separate individual people as well as associations, groups, and institutions. Classical sociologists focused on explaining and understanding the effects of the rapid changes taking place during the beginning of the industrial and scientific revolutions. For example, Emile Durkheim (1933) feared that chaos could arise from a society that was growing increasingly individualistic and more secular. In his view individuals living in small towns were held together by “mechanical solidarity” in that they were very similar to each other, sharing the same norms, values, beliefs, attitudes, and jobs. When individuals moved to big cities those mechanical social ties that bound them to others were often disrupted opening the migrants to the possibility of anomie, or normlessness.

Durkheim focused on how modern organic society produced moral order and how community solidarity can be maintained despite the increasing division of labor and declining significance of religion in society. He believed that societies and communities

possessed a collective consciousness, which embodies the moral order of society and represents a source of social control and social cohesion in society. Durkheim believed that this collective consciousness promoted social solidarity and mutual trust. Social solidarity, according to Durkheim, is the bond among all individuals within a society (Durkheim 1933).

Durkheim believed that even immoral acts, such as crime and deviance, could promote social cohesion and mutual support in a community by reinforcing norms. He realized that deviance and crime were important to the well-being of society and that deviance produces moral and legal laws that reaffirm the moral boundaries of society (Giddens 1972). When a law is violated, especially within small communities, everyone talks about it. Meetings are sometimes held, articles are written in the local newspaper, and the community becomes active when a norm is broken. Members of the community (society) cling together in opposition to the violation, which reaffirms the bonds within the community (society) and its adherence to the norms. Also, Durkheim believed that deviance and crime can also help promote social change. Deviance can help society to rethink its boundaries and move toward social change (Giddens 1972).

Today sociologists and criminologists study the effects of the role of social ties, social capital, mutual trust, social control, and social support within the community. Early sociologists such as Durkheim focused on how crimes strengthen our moral order and value, whereas more recent statements examine the opposite causal relationship: the effects of social cohesion, social capital, and social trust on crime, deviance, and a host of other social problems. For example, criminologists such as Sampson and his colleagues used the term collective efficacy to measure the effect of social cohesion and trust on

crime (Sampson, Morenoff, and Earls 1999; Sampson, Raudenbush, and Earls 1997).

Sociologist, Robert Putnam uses the term social capital, defined as “the collective value of all social networks and inclinations that arise from these networks to do things for each other” (Putnam 2000, p. 126). Putnam examines the strengths of social ties and networks in America over time.

Classical ideas, such as Durkheim’s collective consciousness, and modern concepts such as social capital and collective efficacy are all capturing the importance of social cohesion, support, and trust in communities. These concepts are essential to an understanding of community in people’s lives. While many contemporary researchers are looking at community-level variables such as social capital and collective efficacy as independent variables, examining their effect/influence on social problems (i.e., crime and deviance), this research returns to Durkheim’s original notion by examining the effects of a problem on the strength of social networks and social ties in a community. To accomplish this, this researcher examined the effects of wildland fires on the strength of community-level variables in a rural county in Eastern Kentucky.

Wildland-Fire Research

Little work has been done to develop the social science research to understand the human dimensions of wildland fire as Machlis et al. (2002) advocate. However, Kumagai, Carroll, and Cohn (2004) gathered current disaster literature to give direction for wildland-fire research. They have developed a set of seven propositions on social impacts of disaster they believe will hold true for wildland-fire events. Four of the propositions require a macro-level analysis, and three of the propositions require a micro-

level analysis. In the present research, the researcher used two of their propositions from the micro level in applying the broader literature of disaster research to evaluate the effect of wildland fire on a community.

First, Kumagai et al. (2004) emphasize the fact that natural disasters do not necessarily bring negative economic impact to a stricken community. Many disaster studies indicate that natural disasters, at least in the short term, often do as much to revitalize a disaster-stricken community's economy as to harm it. The main reason for the economic gain is the financial assistance from the state or local government. Some businesses such as construction will have economic gain while small businesses and home owners have economic downfalls (Kumagai et al. 2004). Thus, disasters may result in a positive impact on the stricken community (Mussari 1978). The present research will contribute to our knowledge of how wildland fires affect communities through disruption in the social and economic networks. Although there are losses and gains, this study will examine the net effects of social networks on community.

Based on the literature of the impact of wildland fire on a community the researcher purposed three sets of hypotheses on the impact of wildland fire on community. All independent variables listed in the three hypotheses below are designed to measure the strength of the community ties.

The more people are involved in relations with their neighbors, trusting of the local government, the longer they have lived in Bell County, the higher they rate the quality of life, the more they are involved, and the more interested in the affairs of Bell County they are, the more likely they are to know someone who suffered lost income and damaged property.

The more people are involved in relations with their neighbors, trusting of the local government, the longer they have lived in Bell County, the higher they rate the quality of life, the more they are involved, and the more interested in the affairs of Bell County they are, the more likely they are to know someone who moved due to wildland fire.

The more people are involved in relations with their neighbors, trusting of the local government, the longer they have lived in Bell County, the higher they rate the quality of life, the more they are involved, and the more interested in the affairs of Bell County they are, the more people with whom they will discuss wildland fire.

Kumagai et al. (2004) also emphasize that disaster often motivates affected people to instigate blaming behavior toward government agencies and institutions. In a study evaluating the effect of wildland fire in a western state, it was found that a community's reaction to disaster relies heavily upon perception of the rescue and recovery efforts following a disaster (Carroll, Cohn, Seesholtz, and Higgins 2005; Halvorson 2002). The responses shown can be both negative and positive, depending on the specific situation. People responded positively to others reaching out and the community pulling together to get through the disaster; however, those same people had a negative reaction to the disbursement of aid by the fire department and often felt the department had in some way failed them. They believed that the firefighters had "ineffective firefighting tactics" (Carroll et al. 2005). Studies examining floods, hurricanes, and earthquakes found that victims of natural disaster often blame Red Cross, FEMA, insurance agencies, or government officials for the lack of preparation and response services following the disaster (Hans 1990; Hans and Ermann 1989; Rochford and Blocker 1991; Shaver 1985).

A similar phenomenon is observed among victims of wildland fire although research indicates the primary causes of damage to homes during the wildland fire are factors that property owners can usually control (Cohen 1999; Cohen and Saveland 1997). For instance, some victims of the Wenatchee Complex Fires of 1994 blamed the USDA Forest Service (USFS) because they believed that the Forest Service had delayed in their response of their initial attack and the firefighting strategies were inadequate (Carroll et al 2005; Daniels 1997). Fire officials were dismayed when victims of a wildland fire blamed fire fighters and others responsible for fire management for damage resulting from uncontrolled fires (Kumagai et al. 2004).

In the 1988 Yellowstone fire the general public's attitude toward wildland fire was that the government's wildland fire policy had failed because they were unable to stop the wildland fire. The residents expected that firefighters would adequately protect residents' homes and businesses from the wildland fire. The firefighters had to follow policies instead of protecting homes, businesses, and human life. The firefighting efforts during the wildland fire were largely driven by public outcry from those who said the fire was a result of policy failure. Once the community members believed that the wildland fire was a policy failure, their trust in the land management agencies diminished and so did their trust in the governmental agencies (Lichtman 1998). While these studies provide useful information about the blaming patterns of residents from various disasters, the present research will aid in the understanding of how residents of a wildland fire produce such behavior.

Based on the literature review the researcher proposes three hypotheses evaluating blame for damage caused by wildland fire. Again, all of the independent variables are designed to measure the strength of community ties.

The more one is a part of the community, the more one will blame local agencies and organizations and state or federal agencies.

The more one is part of the community, the less one will blame individuals for incurring damage.

The more one is part of the community, the less one will believe that governmental and nongovernmental organizations are ready to deal with wildland fire.

CHAPTER III METHODS

Bell County, Kentucky is in the Appalachian Mountains in the very southeastern corner of the state and serves as my study sites (see Appendix A for maps). Bell County was formed in 1867, named for Joshua Fry Bell, a lawyer and a member of Congress. The elevation in Bell County ranges from 975 to 3500 feet above sea level. The county seat is Pineville (population 2,931), and the largest town is Middlesborough, with a population of 16,939 residents (U.S. Census 2000). Scattered throughout the 360.77 square miles, of Bell County are close to thirty rural communities consisting of 10 to 300 residents (Bell County Chamber... 2006).

As of the 2000 Census the population in Bell County was 30,060; the 2005 census projections list the population at 29,655 (U.S. Census 2000). Bell County has seen a decline in its population since the economic boom of the 1950s as the population has decreased by 39 percent over the last fifty years. This decrease could be due to several factors: community members moving to find work, community members dying, and no influx of people moving to the area. However, the main reason for the decline could be the fact that families are choosing to be smaller. It was common in the 1940s and 1950s for a family to have 12 children. Most of the families in Bell County have been living there for generations.

The racial makeup of the county was 96 percent white, 2 percent African American and 1 percent Other (U.S. Census 2000). The median income for a household in Bell County was \$19,057 (An average household size was 2.44 persons), and the median income for a family was \$23,818. (An average family size was 2.95 persons) The urban population was 36.5 percent, and the rural population was 63.5 percent. The poverty rate was 41.07 percent. The average educational level obtained was a high school diploma.

Tourism is the main source of revenue for Bell County. Points of interest in Bell County are the Kentucky Ridge State Forest, consisting of 11,363 acres (Kentucky Atlas and ...2006a); Pine Mountain State Park, consisting of 1,519 acres (Kentucky Atlas and ...2006b); and the Cumberland Gap that stretches through Tennessee, Kentucky, and Virginia. Bell County, like many other Appalachian counties, has had a very high occurrence of wildland fires, most of which (85%) have been attributed to arson.

Data Collection

In June of 2006 this researcher sent surveys to 1,000 randomly selected households in Bell County. Mrs. Geraldine Jeffers, the Property Value Assessor (PVA) for Bell County gave the researcher an exhaustive list of residential addresses. An adult, 18 years or older, in each household who most recently had a birthday was asked to complete the questionnaire. (See Appendix B for the cover letter and Appendix C for a copy of the survey.) One week before the surveys were mailed to potential respondents a press release was issued to the local radio station and local newspaper (see Appendix D). There was an article about the research printed in the local newspaper. Three weeks after the initial surveys were sent, follow-up postcards were sent to nonrespondents (see

Appendix E). The effect of the postcards was an increase of 38 respondents to the initial survey. Of the 1,000 surveys distributed the researcher received 149 completed surveys. Sixty-four surveys returned blank, and 211 were undeliverable. The response rate from those individuals who responded with a completed survey or a blank survey was 26.9 percent and the response rate of those who elected to participate in the survey (completed surveys only) was 18.8 percent.

The reasons for the low survey response could be related to the sample frame, to cultural differences between males and females, and to the strong ties of Bell County residents. Due to the closeness of the community, Bell Countians are leery of outsiders. Because the researcher is not from Bell County and does have ties in Bell County, the individuals who received the survey may not have wanted to give the information because of the “outsider” status. Moreover, questionnaires were addressed to the property landowner at the property address and not the current resident who was living at the property address. Thus, the low number of responses to the survey may also be due in part to the fact that landlords may not have received the survey because the tenants living at the property neglected to forward him or her the survey.

Given that the survey response was low, additional checks were performed to detect if the sample differed from the overall county population. Looking at the 2000 U.S. Census data for Bell County, there are demographic discrepancies that exist in home ownership, sex, age, and occupation between those who responded to the survey and those listed in the 2000 Census.

Renters are underrepresented in the sample. A little more than 96 percent of the sample owned their own homes while only 67.6 percent of the county residents owned their own homes according to the U.S. Census. This difference is due to how the sample was chosen. Selecting the sample from a list of Bell County property owners neglects those individuals who rent and do not own property. Moreover, the questionnaire envelope was addressed to the landlord of the property instead of the current resident, which limited renter participation. Consequently, homeowners are overrepresented in the data; however, they have the most to lose when a wildland fire occurs.

In addition, men were overrepresented in the data. Male respondents comprised 56.6 percent of the sample, while males make up only 47.8 percent of Bell County residents according to the census. This result is most likely due to Bell County culture. The researcher received several phone calls telling me that “a man” would be better suited to answer for the survey. “Honey, I think that I should not fill this out. I believe that a man is better for this. I am a widow. It was his job to do this stuff,” said a respondent who received the survey.

More older individuals participated in the survey than younger individuals. The median age of those who responded to the survey is 57 years; however, the county median age according to the 2000 US Census is 37 years old. This discrepancy may also be explained because younger individuals are less likely to own property and more likely to rent.

There are also discrepancies between the occupations represented in the data collected and those listed the 2000 US Census. The data gathered showed more

respondents in professional management occupations and construction, extraction, and maintenance occupations in this sample and fewer respondents in service occupations, sales, and office occupations, and production, transportation and material-moving occupations. Again this difference probably occurs because this sample consists of older males.

Table 1. Occupational Category

Occupation	Sample 2006	Census 2000
Management and professional	52.1%	24.2%
Service	7.0%	17.5%
Sales and office	12.7%	23.7%
Construction, extraction, and maintenance	22.5%	13.5%
Production, transportation, and material moving	5.6%	20.0%

Data from American Fact Finder (2000 U.S. Census)

Given these demographic characteristics the findings of this study will more likely represent higher-class males who owns their own homes. The data collected do not adequately represent younger individuals, “blue-collar” workers, and females. Still, the information obtained maybe generalizable to communities in the Appalachian Mountains and smaller communities within the state of Kentucky who have similar cultures. However, the findings may not be generalizable due to the small sample size (n = 149) and weak response rate (18.8%).

Dependent Variables

Several sets of dependent variables were used in this study to examine the hypotheses. These dependent variables include questions on impacts of wildland fire, attribution of blame, and views of preparedness.

Economic and Social Impacts on Wildland Fire

The first set of dependent variables measure the impacts—both economic and social—of wildland fire. This researcher will discuss each of these in turn.

Economic Impacts. In this survey the economic impact of wildfire is measured by two sets of matrix items. The lead question content was derived from research by Machlis et al. (2002: 154), while the individual matrix items were derived from a community survey (Claude and Luloff 1995). One set of matrix questions assesses property damage and destruction. The lead question is: “In the past five years have any of the following types of property you know about been damaged or destroyed by wildfire?” This researcher then asked about whether one’s own house or property, friends’ houses or property, other family members’ houses or property, one’s workplace, any business one frequents, any nearby public building, and any nearby places of worship were damaged or destroyed by wildfire. Response categories for each item were “Not at all” (1), “Somewhat Damaged” (2), and “Completely Destroyed” (3). See Appendix F , Table 8 for the factor analysis output for property damage and destruction.

The second economic impact measure examined changes in income due to wildfire. These questions were derived from research by Kumagai (2001). The lead-in to this set of items was “Have any of the following people experienced a change of income

due to wildland fire in Bell County?” In examining change in income, this researcher asked questions about one’s own household, one’s other family members, one’s friends, and one’s neighbors. Respondents were asked to respond using a Likert-type scale with the following response categories: “Yes, a loss of income” (1), “No change” (2), and “Yes, a gain in income” (3). Correlations were used. The alpha for respondent and family was 0.69 and the alpha for friends and neighbors was 0.63.

Social Impacts. The social impact of wildfire was measured by moves caused by wildland fire and the number of individuals with whom one has discussed wildfire. Moves caused by wildfire were measured using a the question “Have any of the following people had to move due to wildfire or threat of wildfire in Bell County?” This matrix question was developed from research by Kumagai, Daniels, Bliss, and Edwards (2004). Again the individual items were suggested by Claude and Luloff’s community survey (1995). Four questions follow assessing moves by one’s own household, other family members in Bell County, friends in Bell County, and neighbors in Bell County. Response categories for these four variables were: “Yes” (1) and “No” (2). See Appendix F, Table 9 for the factor analysis output of moves caused by wildland fire.

The last social impact of wildland fire is the amount of discussion about wildfire in which one has taken part. This information was assessed by asking the respondents: “With how many different people did you discuss a local wildland fire?” Responses for the variable were open-ended.

Attribution of Blame and Assessment of Readiness

The second set of hypotheses concerns the attribution for blame for damage caused by wildland fire. Blame was measured by a series of matrix-formatted items with the lead-in question: “How strongly do you agree or disagree with the following statements?” Statements included in this set examined the extent to which fire victims are blamed with statements such as “If a person builds in a forested, bushy, or grassy place, it is his or her own fault if a wildland fire damages his or her property” and “As long as you take precautions with your land, wildfires should not be a problem.” These statements were drawn from a series of measures used by Brennan, Luloff, and Finley (2005) to examine forest management and were changed to examine wildfire.

Initial response categories for all the questions in this set followed a true Likert scale from “Strongly agree”(1), “Agree” (2), “Neither Agree nor Disagree” (3), “Disagree” (4) and “Strongly disagree” (5). During data cleaning some response categories for two statements of blame were collapsed because their extreme categories were statistical outliers. In these two cases the variables were treated as separate indicators, and they were not used to construct a scale.

Another set of matrix items examined the blame attributed to local, state, and federal agencies during recovery efforts. The blaming of agencies and organizations was measured with the following lead-in question: “Thinking back to the most recent wildland fire, how strongly would you agree or disagree with the following statements?” Actual wording for items in this matrix can be found on the survey in Appendix B. These statements were drawn from a series of measures used by Kumagai, Daniels, Bliss,

and Carroll (2005) on wildland fire research. Initial response categories for all these questions also follow a true Likert scale from “Strongly agree”(1), “Agree” (2), “Neither Agree nor Disagree” (3), “Disagree” (4) and “Strongly disagree” (5). Again, during data cleaning some response categories for this item were collapsed because the extreme categories were statistical outliers. In these cases the variables were treated as a separate indicator and they were not used together to construct a scale.

Readiness was measured by two matrix-formatted sets of questions from the current survey. The first asks “How ready do you think the following groups are for a wildland fire?” The groups evaluated include local government, local fire department, Kentucky Division of Forestry, USDA, Red Cross, FEMA, and Salvation Army. These statements were drawn from a series of measures by Kumagai et al. (2005). Initial response categories for all the questions in this set follow a true Likert scale from “Very Ready”(1), “Ready” (2), “Unready” (3), “Very Unready” (4), and “Don’t Know” (5). During data cleaning the Don’t Know category was reclassified as missing data. In addition, some response categories for these seven items were collapsed because their extreme categories were statistical outliers. Again, these seven indicators were treated as separate variables. They were not added together to construct a scale.

Independent Variables

There was one independent variable used in this study to study the hypotheses; the independent variable is community. The survey included many community variables. These variables were factor analyzed and combined into several valid and reliable aspects of community. Principal components lead to each factor being analyzed; then the researcher named the factors. The following six aspects of community emerged through

this process: neighbor relations, trust in local agencies, length of residence, quality of life, community involvement, and community interest. Neighbor relations were measured using three questions “How would you describe your feelings toward your neighbors?”; “How often do you see or meet your neighbors?” and “How much do you trust your neighbors?” These three items were drawn from previous community surveys by Claude and Luloff (1995) and combined into a factor weighted scale. See Appendix F, Table 6 for the factor analysis output of neighbors.

The second measure of community was trust in local agencies. Trust in local agencies was measured by combining three items into a factor-weighted scale. These items were: “How much do you trust local government?”; “How much do you trust local law enforcement?”; and “How much do you trust local fire department members.” Response categories for these items were: “ Trust Them a Lot” (1), “Trust Them Some” (2), “Trust Them Only a Little” (3), and “Do Not Trust Them” (4). These three items were drawn from previous community surveys by Claude and Luloff (1995) and combined into a factor-weighted scale. See Appendix F, Table 7 for the factor analysis output of trust in local agencies.

Length of residence was measured by the open-ended question: “How long have you lived in Bell County?” This item came from a study of the Port Allegany, Pennsylvania region (Doss, Grimm, Smith, Theodori, and Luloff 2005). Responses of more than 20 years on this item were collapsed so that the response categories for this variable ran from “1 year” to “20 or more years.” There were 20 categories used, ranging from one to twenty. The categories were created to deal with outliers.

Quality of life in Bell County was measured with the question “Overall, how would you rate the quality of life in Bell County.” This item was also taken from the Port Allegany study (Doss et al. 2005). Response categories listed for this item ranged from “Excellent” (1), “Good” (2), “Fair” (3), or “Poor” (4). However, no respondent answering the survey responded that the quality of life in the county was poor. So the lowest response category for this item with an answer was “Fair” (3).

Community involvement was measured using the question “Overall, how would you describe your level of involvement in local Bell County activities and events?” This item was also taken from the Port Allegany study (Doss et al. 2005). Response categories for this item ranged from “Very Active” (1), “Somewhat Active” (2), “Not Very Active” (3), or “Not At All Active” (4).

Last, community interest was assessed with the question: “How interested are you in knowing what goes on in Bell County?” Again, this variable was previously asked in the Port Allegany community study (Doss et al. 2005). Response categories were: “Very Interested” (1), “Somewhat Interested” (2), “Neither Interested Nor Disinterested” (3), “Somewhat Disinterested”(4), or “Very Disinterested (5).

Control Variables

Four control variables were used in this study: home location, respondents’ sex, respondents’ age, and respondents’ hearing of the survey. Home location is measured by one matrix-formatted question: “How far is it from your home to a forested, brushy, or grassy place? This question was modified from a study done on waste-to-energy incineration by Walsh, Warland, and Smith (1993, 1996). Respondents were asked to

respond by a Likert-type scale, of “On or immediately adjacent to your property” (1), “¼ Of a Mile But Not More Than a Mile From Your Property” (2), “One Mile or More” (3). Respondents’ sex was measured by the response to the statement: “You Are: Male or Female?” Respondents were asked to choose either “Male”(1) or “Female” (2). Age was measured by one matrix-formatted question: “What is your present age?” Respondents were asked to write their ages in the space provided. Respondents varied in age from 18 to 90 with a median age of 57 years.

Hearing of the survey was measured by one matrix-formatted question: “Did you hear about this study on the radio or in the newspaper before you received this survey?” This question was asked to assess the effect of a news release made by the researcher to local media outlets in hopes of raising the response rate. Respondents were asked to respond “Yes”(1) or “No” (2).

Analysis Plan

To test the hypotheses the surveys were coded and the variables were examined for outliers and missing data. After examining the possibility of scaling some of these variables to reduce the number of models to be run, this researcher examined the hypotheses using partial-correlation analysis to hold the control variables constant. (Appendix F contains the factor analysis output, and Appendix G contains the bivariate correlations for each relationship). This method of analysis was chosen because of the small sample size (n=149). The partial correlations are used instead of multivariate regression because the partial correlations allow the researcher’s data to be presented in a parsimonious fashion.

CHAPTER IV ANALYSIS

The first set of six hypotheses examined the economic and social impacts of wildland fire on community. The first set of hypotheses stated that the more people are involved in relations with their neighbors, are trusting of the local government, have lived longer in Bell County, rate the quality of life high, are more involved in the community, and are more interested in the affairs of Bell County, the more likely they are to know someone who suffered lost income and damaged property. Table 2 shows the partial correlations of wildland fire impacts with aspects of the community controlling for age, sex, distance from a person's home to a forested area, and whether a person had heard or read about the study before receiving it. In all six hypotheses considered in this section the only significant relationship is between quality of life and knowing someone who suffered economic impacts and damaged property from wildland fire (Table 2).

The second set of hypotheses in this section states that the more people are involved in relations with their neighbors, are trusting of the local government, have lived in Bell County longer, rate the quality of life as high, are more involved in the community, and are more interested in the affairs of Bell County, the more likely they are to know someone who moved due to wildland fire. Looking at Table 2, there is no significant relationship between any of these independent variables and one's knowledge

of someone who moved due to wildland fire. Therefore none of these hypotheses is supported by the data.

Table 2. Partial Correlation of Impact of Wildland Fire on Community with Aspects of Community, Controlling for Age, Sex, Distance, and Hearing of Study (n = 101)

	Neighbors	Trust in Local Agencies	Length of Residence	Quality of Life	Involvement	Interest
Income of family	-.090	-.051	-.054	-.043	-.125	-.105
Income of others	-.023	-.177	.064	-.217*	-.055	.041
Damage because of wildland fire	-.059	.120	-.068	.051	.092	-.084
Moved because of wildland fire	.057	-.075	.005	-.041	.096	.166
Number of people with whom discussed wildfire	.049	-.115	.257**	-.007	.089	.045

*p < .05, **p < .01, ***p < .001

The final set of hypotheses in this section states that the more people are involved in relations with their neighbors, are trusting of the local government, have lived in Bell County longer, rate the quality of life as high, are more involved in the community, and are more interested in the affairs of Bell County, the more people with whom they will discuss wildland fire. Of all the six hypotheses tested in this set the only significant relationship that emerges is between the longer one has lived in Bell County and the greater number of people with whom he or she has discussed wildland fire.

In summary, the pattern of findings in Table 2 leads one to believe that wildland fire does not affect community members who do not suffer damage or personally know someone who suffers damage. Wildland fires may occur so often in Bell County that they are a normal part of community members' daily life. They discuss wildland fire, but it does not influence their trust in the neighbors or their local government, nor does it affect their interest or involvement in the community. Only when they know someone who has suffered damage does it affect anything, and in those cases it may affect their outlook, an example of feelings of empathy for the wildland fire victim, but does not prompt any other reaction.

The second set of hypotheses dealt with respondents' attitudes toward the responsiveness of government agencies. Nonresponsiveness is one form of blame. Agencies are also more likely to suffer blame if they are believed unprepared to deal with significant wildland-fire threats to the community.

The first hypothesis in this section stated that the more one is part of the community, the more one will blame local agencies and organizations and state or federal agencies. In other words the more one is part of the community, the more one will believe that local agencies were nonresponsive to wildland-fire impacts and the more one will believe that state and federal agencies were nonresponsive to local wildland-fire impacts. Table 3 presents the partial correlations between agency responsiveness and aspects of community, while controlling for age, sex, distance of home from a forested area, and whether respondents had read or heard about the study before receiving it.

Table 3. Partial Correlation of Local and Federal Response to Wildland Fire with Aspects of Community, Controlling for Age, Sex, Distance, and Hearing of Study (n = 100)

	Trust in Local Neighbors	Trust in Local Agencies	Length of Residence	Quality of Life	Involvement	Interest
Fire dept. did all it could to lessen the damage	.216*	.368***	.047	.362***	.025	-.008
Local govt. very helpful	.285**	.501***	-.038	.206*	.077	-.057
State & fed. agencies responded	.228*	.315***	.056	.151	.0163	-.115

* p<.05 ** p<.01 *** p<.001

Looking at Table 3 one can see that closeness to neighbors, trust in local government, and assessment of quality of life in Bell County show consistent relationships with responsiveness. The specific findings are as follows:

- The closer people are tied to neighbors, the more likely they are to believe that the fire department, the local government, and the state and federal agencies did all they could to lessen wildfire impact.
- The more people trust the local government agencies, the more likely they are to believe that the fire department, the local government, and the state and federal agencies did all they could to lessen wildfire impact.
- The higher people rate the quality of life, the more likely they are to believe that the fire department and the local government did all they could to lessen wildfire impact.

While a relationship does exist, it is not in the direction expected. In other words, the more one is integrated into the community (through relations with neighbors, trust in government, and quality of life), the more one believes the local governmental agencies did all they could to lessen wildland-fire impact. The initial hypothesis expected a negative relationship between these variables.

The second hypothesis in this section stated that the more one is a part of the community, the less he or she will blame individuals for incurring damage. This hypothesis relates to how much blame was placed on individual community members and their actions. Table 4 presents the partial correlations between individual blame and aspects of community while controlling for age, sex, distance of home to forested areas, and whether the respondent heard about the survey before receiving it. Two relationships between aspects of community and individual precautions are found. The more people are close to their neighbors, the less likely they are to believe that precautions limit wildfire impact. The more people are interested in what goes on in the community, the less likely that they are to believe that precautions limit wildfire impacts. There is no relationship between being part of the community and blaming individuals for incurring damage. Therefore, this hypothesis was not supported by the data.

The findings in Table 4 show that being a part of the community does not lead one to blame the victim for their wildfire damage. Again, wildfires may be such an unpredictable, yet daily, part of life that individuals who suffer damage are just viewed as unlucky. This belief may also support the view that nothing locals do will increase their safety. In fact, the more residents take an interest in the community and the more they

interact and trust their neighbors, the more likely they are to hear stories of individuals who have taken precautions, yet still suffered losses.

Table 4. Partial Correlation of Blame for Damage Caused by Wildland Fire with Aspects of Community, Controlling for Age, Sex, Distance, and Hearing of Study (n = 100)

	Neighbors	Trust in Local Agencies	Length of Residency	Quality of Life	Involvement	Interest
Wildfire damages their own fault	.014	-.095	-.128	.045	.050	-.233
Precautions limit fire problem	-.251*	-.005	.039	-.138	-.071	-.198*

* $p < .05$

The third hypothesis in this section stated that the more one is part of the community, the less one will believe that governmental and nongovernmental organizations are ready to deal with wildland fire. This hypothesis deals with beliefs about readiness of organizations and ties to community. Table 5 presents partial correlations between the readiness of organizations and aspects of community while controlling for age, sex, distance of home from forested areas, and whether the respondent heard about the survey before receiving it.

Respondents who are close to their neighbors are more likely to believe that the local government and the Salvation Army are ready for a wildland fire. In addition, those respondents who are trusting of local agencies are more likely to believe that the local government, the Kentucky Division of Forestry, the Red Cross, and the Salvation Army

are ready for a wildland fire. There is also a correlation between those individuals who have a high quality of life believing that the local government and the Salvation Army are ready for a wildland fire. There is no relationship between being part of the community and refusal to believe that governmental and nongovernmental organizations are ready to deal with wildland fire. Therefore, this hypothesis is not supported by the data.

In Table 5 there appears to be two things occurring. First, several aspects of the community are related to the belief that the local government is ready for wildland fire. This belief may relate to the fact that the local government has a management plan in place. The fire management plan may not require individual community members to be interested in or have any involvement with the fire-management plan. However, such a plan would improve one's trust in the government and one's neighbors and improve one's outlook on the quality of life in the community. Moreover, such a plan would outline contingencies to be followed that would provide support and relief even if the local fire department is not prepared to deal with wildland fire.

Second, there may be several agencies in the community that locals do trust for their wildland-fire readiness. Most of these agencies are local branches of national organizations. The local population may see these agencies as having the necessary ties to the outside world to bring in relief should something catastrophic occur. Again, individuals trusting in the local government (and their management plan) would trust that the local government would tap these agencies for their support when needed.

Table 5. Partial Correlation of Readiness for Wildland Fire with Aspects of Community, Controlling for Age, Sex, Distance, and Hearing of Study (n = 100)

	Neighbors	Trust in Local Agencies	Length of Residency	Quality of life	Involvement	Interest
Local govt.	.310*	.411**	.213	.313*	.005	-.204
Local fire dept.	.103	.256	-.067	.263	.049	-.163
Kentucky Division of Forestry	.258	.278 *	.007	.126	-.114	-.229
USDA forest service	.103	.186	-.014	.138	.010	.037
Red Cross	.216	.365**	.032	.162	-.238	-.145
FEMA	.035	.239	-.065	.208	-.161	-.003
Salvation Army	.361*	.394*	.069	.282*	.058	.139

* p<.05, ** p<.01, *** p<.001

CHAPTER V

DISCUSSION AND CONCLUSIONS

The focus of the study has been the effect of wildland fire on the social and economic well being of a community, specifically Bell County, Kentucky. In specific, this researcher examined the impact of wildland fire on a community (social and economic), the blame applied for damage caused by wildland fires, and the prevention/mitigation efforts adopted by residents because of wildland fire. In Bell County wildland fire was a very salient topic based on the data collected from the respondents who live there. Ninety percent of the respondents recalled a wildland fire in the past five years, and 91 percent remembered discussing the issue of local wildland fires with family members or friends in the last five years.

Wildland fires in Bell County create collective consciousness through the discussions of wildland fire. However, it does not translate into action or sanctions. Members of the community talk about wildand fires with each other, they hold town-hall-style meetings, and they feature the wildland fires on the television and in the local newspaper. It appears that members of the community come together because of wildland fire (strengthening of social networks and social ties); however, nothing is done to prevent the wildland fires from occurring or to stop the wildland-fire arsonist.

Impact of Wildland Fire on Community

Impact of wildland fire on a community was measured using partial correlations in the testing of three hypotheses relating the social and economic impacts of wildland fire with various aspects of the community. Previous researchers suggest that natural disasters do not necessarily have a negative impact on communities; however, it has never been tested in a community with a significant number of wildland fires.

The findings in this research are congruent with Kumagai's findings that natural disasters do not necessarily bring negative economic impact to a stricken community (Kumagai et al. 2004). This sample showed no consistent relationship between wildland fire impacts and aspects of community. Respondents reported knowing individuals in the community whose incomes increased due to wildfire and other individuals whose incomes decreased due to wildfire. However, it is important to recognize that these reports of change in income rely on the respondent's perceptions of other community members experiencing change in income due to a wildland fire. Respondents themselves were less likely to report gain or loss and more likely to report that others had gained or lost.

Still, two aspects of the three hypotheses were supported. The first supported hypothesis stated that the higher people rate the quality of life of Bell County, the less likely they are to know someone who suffered a loss of income and property damage. The higher the quality of life and the less likely one is to know someone who has suffered damage makes some sense in that if people know of someone who has lost income or experienced damaged property they are less likely to be able to rate the quality of life as high.

The other supported hypothesis of this group states that the longer people have lived in Bell County, the more people with whom they will discuss the wildland fire. Bell County as a community has many strong ties. It makes sense that the longer people have lived in a place, the more ties they have with others in the community. As people interact on a daily basis, the topic of wildland fires is bound to enter their conversation, especially because there have been many wildland fires in the past few years.

Blame for Damage

The second area this study examined focused on blame and culpability for the damages caused by wildland fire. Kumagai emphasizes that disaster damage often motivates affected people to blame government agencies for their response (or lack thereof) to the disaster (Kumagai et al. 2004). However, my findings are different. The researcher found that the respondents in the sample do not blame any local, state or federal agency response. In fact, the more one is tied to community (in terms of quality of life, trust in government, and strong neighbor relations) the more supportive one is of local government.

There are at least three different reasons why these findings would turn out this way. The first is that community members have already constructed groups to blame for the wildfires: arsonists and pot smokers. Out of the 149 surveys completed, 46 of the survey respondents hand wrote that they believed that arsonists were responsible for the wildland fires in Bell County. The survey did not specifically ask any questions on arson because the researcher did not want to bias respondents or cause them to refuse to participate due to the negative implications the label “arson” has for the community and its members.

Ariel Sewell (2006a), a member of the Kentucky Division of Forestry, explained that it was common knowledge that many fires in Bell County are arson. “Certain communities have local fire bugs. Most people know who they are, but catching them in the act of putting fire to the ground is difficult. If we don’t see them actually light a fire or if nobody will testify if they saw them, the person cannot be charged.” He believes that many people do not testify because individuals are afraid of retribution and /or they live in the same community as the “fire bug.” Retribution can take the form of a vast array of responses, from burring an individual’s woods, burning an individual’s home, or threatening his or her family with physical harm.

On 37 of the surveys returned the respondents hand wrote “pot smokers”are the cause of wildland fires. In correspondence with Ariel Sewell (2006b), he stated, “I hear many say that pot growers start fires either because they are clearing an area to plant or in retribution for the state police and drug task force destroying their plants.” They are saying “You burn my plant I’ll burn your woods.” Thus more than 50 percent of the respondents believed that marijuana growers and arsonists caused the county’s wildland-fire problem. Of course, these conclusions are speculative and are not based on any of the quantitative measures employed in the survey.

Another reason for this finding is the strength of community ties. Community members with very strong ties are less likely to speak badly of one another’s work because the gossipers are likely to be stigmatized for making statements. One example of a very strong social tie can be found in Walsh’s (1988) study of Three Mile Island. Here Walsh found that locals would not speak out against the Three Mile Island reactor restart

because it might damage their relationships with friends or family members whose livelihoods depended on the facility.

The third reason that respondents in Bell County may not blame the local, state, and federal government for their response is that they did not experience wildland fire personally. Kumagai et al.'s (2004) proposition says that affected people are more likely to blame the government for its responsiveness. In this sample, however, very few individuals experienced damage personally (although they did know individuals who had experienced some damage and income loss because of the strong social networks within the county). Because my sample was drawn at random, I could not survey only those affected by wildland fire. Thus, while my findings are interesting, they do not necessarily refute Kumagai et al.'s (2004) hypothesis.

Limitations

The first limitation to be addressed is the low response rate (18.8%). The response rate is due in part to the nature of the rural, Appalachian county in which this researcher chose to conduct the research. Bell County has strong internal community ties and is wary of outsiders because many outsiders have been quick to take advantage of Appalachian communities like this one. The researcher believes that, if she were better known to community members, she might have received a higher response.

The second limitation is lack of funding for the research. Due to a limited amount of funding (\$750 grant), this researcher was unable to work with a focus group that could have been used to the researchers advantage, by making sure that the questions asked on the survey were pertinent to the community and that respondents could understand the

questions on the survey. The researcher sent a copy of the survey to only one member of the community. While the feedback was important, it was not as informative as a focus group would have been. Furthermore, the small amount of funding, this researcher received could not permit this researcher to fully employ the Dillman method to increase the response rate (Dillman 2001).

A related issue is the fact that this study relied on quantitative data rather than qualitative data. In quantitative data the researcher is limited in the depth of feedback that he or she can receive from the respondent. Moreover, the survey forces the respondent to choose an answer from a set list. While two respondents may have differing views, they may be forced to choose the same response category. With a qualitative-data approach this researcher could have asked more open-ended questions that would have given the reader a deeper understanding of the effects of wildland fire on the social and economic well-being of a community. Also, qualitative data would provide a more accurate understanding because the information gathered would be from individual members of the community, through detailed interviews and through personal observations of community members.

Moreover, a multimethod approach, combining quantitative and qualitative data, would have been more effective by providing a well rounded gathering of information. A multimethod approach would allow for a more personal and concrete explanation of the effects of wildland fire on the social and economic well-being of a community.

The final limitation is that the researcher had to rely on cross-sectional rather than time-series data. A much stronger examination of wildland fire effects would be possible if this researcher could have collected baseline data before a wildfire and then collected

information on the impact after the fire. Time-series data would allow the researcher to test all of Kumagai et al.'s (2004) propositions.

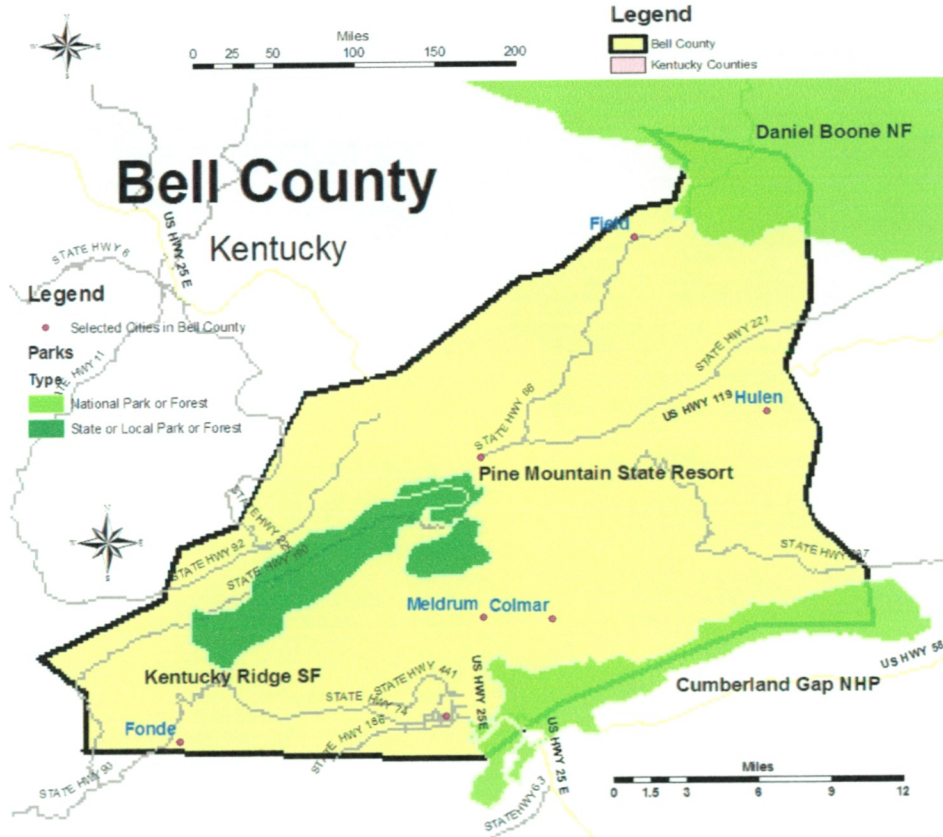
Further Research

Further research should take a more in-depth analysis in understanding the effects of wildland fire on the social and economic well being of a community. This researcher believe that a more in-depth analysis could be done in Bell County, Kentucky using participant observation and in-depth interviewing. By fully participating in the community further research would allow the researcher to become a part of the "human experience" by analyzing the social relationships that exist within the community (Berg 2001).

Participant observation will also allow the researcher to gather first-hand information and have higher concrete validity than survey research. Immersion into Bell County would offer the future researcher an opportunity to examine wildland fires and the community's response while the event is happening. The immersion would also provide a window into the reaction of unintentional versus intentional wildland fires. Moreover, conducting in-depth interviews with members of the community about the effects of wildland fire on the social and economic well being would aid in the understanding of the effects. Information gathered from the interview is something that could not be gathered from a mailed survey.

APPENDIX A
MAPS OF BELL COUNTY

Kentucky
Bell County



APPENDIX B
COVER LETTER

July 1, 2006

Dear Resident of Bell County,

I am writing to ask your help in a study of the effects of wildland fires on the social and economic well-being of Bell County. Bell County has had many wildfires in the last five years, which is why it has been selected for this project. For the study I am contacting one thousand households in Bell County and asking for one person within each household to complete the questionnaire included in this mailing.

Your household was chosen at random from the entire population of households in Bell County to answer questions about the impacts that wildfire may or may not have had on you, your household, your friends and acquaintances, and your county. Each response is vital to the success of this project as I hope to represent the full range of experiences that the citizens of Bell County have had.

I would like to ask that the person in your household who is 18 years old or older whose birthday is closest to today's date complete the survey. I know that this request sounds strange, but researchers have found that the procedure ensures that the number of men and women answering the survey will be proportional to the number of men and women in Bell County households.

The survey is voluntary. However, you can help me very much by taking a few minutes to share your experiences and opinions. Completion of this important survey implies that you have consented to

participate in this survey. If for some reason you prefer not to respond, please let me know by returning the blank questionnaire in the enclosed stamped envelope.

Your answers are completely confidential and will be released only as summaries in which no individual's answers can be identified. The ink-stamped number on the survey's cover is your number on the mailing list. This number permits me to check with nonrespondents to see if they need a replacement survey or other information. When you return your questionnaire (whether completed or blank), your name will be deleted from the mailing list, which means that your identity can never be connected to your answers in any way. Moreover only I, and my two advisors, Dr. Douglas Smith and Dr. Holli Drummond, will have access to the questionnaire you return.

Please mail the survey back to me using the enclosed self-addressed stamped envelope by Friday, July 21, 2006. I would be happy to talk with you about the study if you have any questions or comments. My number is (270) 535-3667, or you can write to me at the address on the letterhead.

This project has been reviewed and approved by the Western Kentucky University Human Subjects Review Board, Sean Rubino, compliance manager. He can be reached at (270) 745-4652.

If you would like to receive a copy of the survey results, please write your name and address on the questionnaire, and I will see that a copy of the final report is sent to you. Thank you very much for your help with this important study.

Sincerely,

Mary Moneta

Department of Sociology

APPENDIX C
SURVEY

Wildfire's Impact on Community: A Study of Bell County



This questionnaire seeks your opinion about issues of wildfire and community in Bell County. In these areas complicated value judgements must be made. There are no right or wrong answers. Please just answer to represent your own point of view. Your responses will be completely anonymous.

START HERE

1. **How serious is Bell County's problem with wildfire (fires that start burning in fields or in forested, grassy, or brushy areas) ? Would you say...**
 - Not serious at all
 - Not very serious
 - Somewhat serious
 - Very serious
2. **How far is it from your home to a *forested, brushy, or grassy* place?**
 - On or immediately adjacent to your property
 - Less than ¼ mile but not more than a mile from your property
 - Between one mile and 5 miles
 - More than 5 miles
3. **How long have you lived in Bell County?**

_____ Years of residence
4. **Do you recall any wildfires in any of these areas of Bell County in the last five years?**
 - Yes
 - No → (Skip to Question 11)
5. **Do you remember discussing the issue of local wildfires with any family or friends during the last five years?**
 - Yes
 - No → (Skip to Question 7)
6. **(If Yes) With how many different people did you discuss a local wildfire?**

_____ Number of people

7. In the past five years have any of the following types of property you know about been damaged or destroyed by wildfire?

	Not at all ▼	Somewhat Damaged ▼	Completely Destroyed ▼
Your house or property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A friend's house or property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any other family members house or property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your work place (if you are not self employed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any business you frequent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any nearby public buildings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any nearby places of worship	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Has any of the following people had to move due to wildfire or threat of wildfire in Bell County?

	Yes ▼	No ▼
You and your household	<input type="checkbox"/>	<input type="checkbox"/>
Other family members living in Bell County	<input type="checkbox"/>	<input type="checkbox"/>
Friends living in Bell County	<input type="checkbox"/>	<input type="checkbox"/>
Neighbors living in Bell County	<input type="checkbox"/>	<input type="checkbox"/>

9. Has any of the following people experienced a change of income due to wildfires in Bell County?

	Yes, a Loss of Income ▼	No Change ▼	Yes, a Gain in Income ▼
You and your household	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other family members living in Bell County	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friends living in Bell County	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Neighbors living in Bell County	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Thinking back to most recent wildfire, how strongly would you agree or disagree with the following statements?

	Strongly Agree ▼	Agree ▼	Neither Agree nor Disagree ▼	Disagree ▼	Strongly Disagree ▼
When the wildfire struck, the community pulled together to help victims	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When the wildfire struck, the fire department did everything it could to minimize damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local government officials were very helpful in dealing with the aftermath of the wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildfires are just a part of the natural cycle within a forest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insurance companies responded quickly to handle victims' claims	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State and federal agencies responded quickly to help Bell County after the wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. How strongly do you agree or disagree with the following statements?

	Strongly Agree ▼	Agree ▼	Neither Agree nor Disagree ▼	Disagree ▼	Strongly Disagree ▼
If people build in a forested, bushy, or grassy place, it is their own fault if a wildfire damages their property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildfires are an act of God .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The government should prohibit building in areas that could suffer damage from wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildfires are just a part of the natural cycle within a forest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If the government allowed more logging, there would be fewer wildfires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
As long as you take precautions with your land, wildfire should not be a problem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. How ready do you think the following groups are for a wildfire?

	Very Ready ▼	Ready ▼	Unready ▼	Very Unready ▼	Don't Know ▼
Local Government .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local Fire Department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kentucky Division of Forestry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
USDA Forest Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red Cross	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FEMA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salvation Army	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Have you done any of the following things to lessen the possible impact of wildfire on your property?

	Yes ▼	No ▼
Removed leaves and overhanging branches from around buildings	<input type="checkbox"/>	<input type="checkbox"/>
Kept a buffer space of 30 feet between buildings and treeline	<input type="checkbox"/>	<input type="checkbox"/>
Stored firewood at least 30 feet away from the house	<input type="checkbox"/>	<input type="checkbox"/>
Pruned all trees so that the lowest limbs are 6 to 10 feet from the ground	<input type="checkbox"/>	<input type="checkbox"/>
Made sure that the roofing materials on your buildings are fire-proof	<input type="checkbox"/>	<input type="checkbox"/>

14. To what degree do you feel at home in Bell County?

- Very much
- Somewhat
- Not at all

15. Overall, how would you rate the quality of life in Bell County?

- Excellent
- Good
- Fair
- Poor

16. Overall, how would you describe your level of involvement in local Bell County activities and events?

- Very active
- Somewhat active
- Not very active
- Not at all active

17. How interested are you in knowing what goes on in Bell County?

- Very interested
- Somewhat interested
- Neither interested nor disinterested
- Somewhat disinterested
- Very disinterested

18. How would you describe your feelings toward your neighbors? Would you say that you are:

- Very close
- Somewhat close
- Neutral
- Somewhat distant
- Very distant

19. How often do you see or meet these types of people?

	More than once a week	Once a week	Two to three times a month	Once a month or less	Never
	▼	▼	▼	▼	▼
Your family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your close friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your neighbors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. How much do you trust the following types of people?

	Trust them a lot ▼	Trust them some ▼	Trust them only a little ▼	Do not trust them ▼
Your family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your neighbors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local law enforcement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local fire department members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. You are:

- Male
 Female

24. What is your occupation?

22. What is your present age?

_____ Years of age

25. Did you hear about this study on radio or in the newspaper before you received this survey?

- No
 Yes

23. What is your current living situation?

- Own my home
 Rent my home
 Living in someone else's house
 Living in an institution or group home

Thank you for completing this questionnaire. Your time and thoughts are greatly appreciated. If you have any comments for me regarding this survey, you can write them on the cover or in the space below. If you would like to receive a copy of the final report, please write your name and address below, and I will send them to you when I finish my analysis. Thank you again for your cooperation.

Mary Moneta
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APPENDIX D
PRESS RELEASE

FOR IMMEDIATE RELEASE

Contact:

Mary E. Moneta

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Monetme@wku.edu

Important Study of Wildland Fire to Be Conducted in Bell County, Kentucky

Bowling Green, KY–June 22, 2006–A Western Kentucky University Sociologist, Mary Moneta, is collecting data on wildfires’ effects on the surrounding communities. Bell County has been selected as a study site, due to its ties to the forest and forest-related goods and services. The study will focus on the impact of wildfires on area residents and will aid in improving understanding of the long- and short-term effects of a wildfire.

The research team, led by Moneta, is asking that members of the Bell County community take a few minutes of their time and share their experiences and opinions on this important community issue. Area residents will receive surveys that should be filled out and returned to the research team at Western Kentucky University.

This project is sponsored by Western Kentucky University Sociology Department and The Social Science Research Lab.

For information

Contact: monetme@wku.edu

Phone:270-535-3667

APPENDIX E
POSTCARD

July 31, 2006

Four weeks ago a survey seeking your opinion about effects of wildfires on the social and economic well-being of Bell County was mailed to you. Your household was chosen at random from the entire population of households in Bell County, to answer questions about the impacts that wildfires may or may not have had on you, your household, and your county.

If you have already completed and returned the questionnaire to me, please accept my sincere thanks. If not, please do so today. I am especially grateful for your help as I am looking for people like you to share your thoughts and feelings on the impact of wildfires and our understanding of their long- and short-term effects of a wildfire.

If you did not receive a questionnaire or if it was misplaced, please call me at 270-535-3667, and I will get another survey in the mail to you as soon as possible.

Mary Moneta
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1906 College Height Blvd. #11057
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APPENDIX F
FACTOR LOADINGS AND WEIGHTED VARIABLES

Table 6. Factor Loading and Weights of Variables Measuring Neighbors

	Factor 1 Relations with Neighbors	Factor Score Variable Weight
How would you describe your feelings toward your neighbors? Would you say you are: (1= very close to 5 = distant)	.757	.427
How often do you see or meet your neighbors? (1 = more than once a week to 5 = never)	.569	.370
How much do you trust your neighbors? (1 = trust them a lot to 4 = do not trust them)	.713	.414
Eigenvalue	2.04	
Proportion of Variance	67.95	
Alpha	0.73	
(N)	148	

Table 7. Factor Loading and Weights of Variables Measuring Trust in Local Agencies

	Factor 1 Level of Trust in Local Government	Factor Score Variable Weight
How much do you trust your local government? (1 = trust them a lot to 4 = do not trust them)	.882	.404
How much do you trust your local law enforcement? (1 = trust them a lot to 4 = do not trust them)	.889	.407
How much do you trust your local fire department members? (1 = trust them a lot to 4 = do not trust them)	.784	.359
Eigenvalue	2.18	
Proportion of Variance	72.75	
Alpha	.81	
(N)	143	

Table 8. Factor Loading and Weights of Variables Measuring Property Damage

	Factor 1 Damage to property	Factor Score Variable Weight
Your house or property (1 = not at all to 3 = completely destroyed)	.216	.106
A friend's house or property (1 = not at all to 3 = completely destroyed))	.372	.183
Any other family member's house or property (1 = not at all to 3 = completely destroyed)	.517	.253
Your work place (if you are not self employed) (1 = not at all to 3 = completely destroyed)	.673	.330
Any business you frequent (1 = not at all to 3 = completely destroyed)	.559	.294
Any nearby public buildings (1 = not at all to 3 = completely destroyed)	.435	.213
Any nearby places of worship (1 = not at all to 3 = completely destroyed)	.765	.375
Eigenvalue	2.04	
Proportion of Variance	29.12	
Alpha	.54	
(N)	148	

* Matrix question: "In the past five years, have any of the following types of property you know about been damaged or destroyed by wildfire?"

Table 9. Factor Loading and Weights of Variables Measuring Move because of Wildland Fire

	Factor 1	
	Moved due to Wildland Fire	Factor Score Variable Weight
You and your household (1 = yes or 2 = no)	.886	.312
Other family members living in Bell County (1 = yes or 2 = no)	.869	.306
Friends living in Bell County (1 = yes or 2 = no)	.721	.254
Neighbors living in Bell County (1 = yes or 2 = no)	.883	.311
Eigenvalue	28.40	
Proportion of Variance	70.97	
Alpha	.85	
(N)	147	

* Matrix question "Has any of the following people had to move due to wildfire or threat of wildfire in Bell County?"

APPENDIX G
BIVARIATE CORRELATIONS

Table 10. Bivariate Correlation of Impact of Wildfire on Community

	Trust in Neighbors	Trust in Local Agencies	Length of Residence	Quality of Life	Involvement	Interest
Income of family	-.087	-.092	.020	-.066	-.034	-.138
Income of others	-.034	-.135	.089	-.159	.016	.070
Damage due to a wildland fire	-.035	.065	-.136	-.001	.066	-.051
Moved due to a wildland fire	.037	-.029	-.038	.064	.031	.097
Number of people with whom discussed wildfire	.041	-.042	-.206*	.010	-.028	.002

* p<.05, ** p<.01, *** p<.001

n = 140

Table 11. Bivariate Correlation of Local and Federal Response to Wildland Fire

	Neighbors	Trust in Local Agencies	Length of Residence	Quality of Life	Involvement	Interest
Fire dept. did all it could to lessen the damage	.267**	.344***	-.033	.258**	.076	.000
Local govt. very helpful	.313***	.465***	-.140	.181*	.057	-.014
State & Fed. agencies responded	.218*	.322***	-.001	.148	.034	-.071

* p<.05, ** p<.01, *** p<.001

n = 126

Table 12. Bivariate Correlation of Blame for Damage Caused by Wildland Fire

	Neighbors	Trust in Local Agencies	Length of Residency	Quality of Life	Involvement	Interest
Wildfire damages their own fault	.015	-.081	-.124	.076	.072	-.127
Precautions limit fire problem	-.125	.041	-.080	-.171*	-.106	-.081

* $p < .05$, ** $p < .01$, *** $p < .001$

n = 143

Table 13. Bivariate Correlation of Readiness by Wildland Fire

	Neighbors	Trust in Local Agencies	Length of Residency	Quality of life	Involvement	Interest
Local govt.	.356***	.550***	-.120	.360***	.114	-.064
Local fire dept.	.260*	.354***	.039	.261**	.077	-.022
Kentucky Division of Forestry	.200*	.263**	.041	.024	.076	.018
USDA forest service	.110	.141	-.027	.101	.041	.021
Red Cross	.175	.333***	-.063	.170	-.079	.027
FEMA	.078	.284**	.014	.097	-.106	-.097
Salvation Army	.212*	.227*	-.040	.245*	-.003	.071

*p<.05 ** p<.01 *** p<.001

n = 125

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