

**RESEARCH PROPOSAL**

**THE GREAT FLOOD OF 1993: AN EXAMINATION OF  
DISASTER RELOCATION AND COMMUNITY**

SOCY 5031: Research Design

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# **THE GREAT FLOOD OF 1993: AN EXAMINATION OF DISASTER RELOCATION AND COMMUNITY**

## **Abstract**

The Great Flood of 1993 was one of the most destructive natural disasters ever experienced in United States history. The flooding was severe enough to cause the residents of three Midwest towns to physically relocate. Nearly seven years after the Great Flood, there has been little rigorous examination of the social consequences of how the relocation experience has affected the residents of the relocated communities. The objective of the proposed research project is to further our understanding of the significant characteristics of sense of community, as defined by the residents of the three relocated towns. A second project objective is to examine the social impact of relocation after a natural disaster on the human sense of community, with a specific focus on the demographic characteristics of the relocated residents. A literature review is included of disaster relocation theory and sociological community theory. A synthesis is provided of the literature concerning demographic characteristics, relocation, and sense of community. The research design includes a description of the three communities selected as population cases for the study. The proposed data collection methods include document analysis, intensive interviewing, and a mail questionnaire survey. The data will be analyzed sequentially, as it is collected. The intent of the proposed research project is to contribute to the current body of knowledge in sociological community theory and disaster relocation literature. The long-term impact of disaster relocation on the victims', when carefully assessed, could suggest new directions for post-disaster recovery operations.

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## **THE GREAT FLOOD OF 1993: AN EXAMINATION OF DISASTER RELOCATION AND COMMUNITY**

The world is becoming increasingly vulnerable to natural disasters. As the global population increases and as more people migrate to hazard prone areas, natural disasters are reaching catastrophic proportions. From 1973 to 1997, an annual world average of 84,034 individuals were killed by natural disasters, and an additional 143,864,855 were impacted in a significant way (International Federation of Red Cross and Red Crescent Societies 1999). An estimated \$500 billion in total losses have resulted from natural disasters over the past two decades (Mileti 1999).

Floods are considered the most destructive of all natural disasters because they are the most common, cause the greatest number of deaths, and result in the most damage (Miller 1997). Flooding of rivers and streams is the most frequent type recorded around the globe, most often stemming from long periods of rain or from rain combined with melting snow and ice. River floods inundate the largest areas of land and destroy more lives and property than any other form of flooding (International Federation of Red Cross and Red Crescent Societies 1999).

From 1965 through 1989, flooding and flood related events accounted for 77 percent of all United States Presidential disaster declarations (L. R. Johnston Associates 1992). This is not surprising considering the fact that flooding is common in all 50 states, although the frequency and type of flood varies considerably from state to state (see Figure 1). Hundreds of riverine floods, great and small, occur annually in the United States, resulting in drastic and widespread detriment to lives, property, and the environment (L. R. Johnston and Associates

1992). An estimated 2,300 deaths and \$27.7 billion to \$277 billion in combined property and crop losses were recorded over the past two decades in the U.S. as a consequence of flooding (Mileti 1999).

During the spring and summer of 1993, the Mississippi and Missouri Rivers overflowed their banks and wrought devastation on nine states throughout the Midwest (see Figure 2). The “Great Flood of 1993” was one of the worst natural disasters ever experienced in the nation’s history. Unusually volatile climate conditions and human alteration of the river system played key roles in the magnitude of the flooding along the Upper Mississippi River (Changnon 1996). The raging waters killed 52 people, and displaced some 54,000 more (Changnon 1996; Miller 1997). Over 50,000 structures were damaged and destroyed, and land spread over 10 million acres was inundated with water (Becker 1994; Larson 1996). Damages have been estimated from \$12 billion to \$18 billion in total losses (Becker 1994; Changnon 1996; Larson 1996; Mileti 1999; Schwab 1998). The Great Flood of 1993 was the most severe flood ever experienced in the United States in terms of precipitation amounts, record river levels, area of land flooded, persons displaced, crop and property damage, and flood duration (Miller 1997).

The 1993 flooding was severe enough to cause the residents of three Midwest towns to physically relocate (Changnon 1996). The financial rationale for relocating property that has been continually struck by disaster seems obvious; it is tremendously expensive to manage insurance costs and repeatedly repair and replace damaged structures (L. R. Johnston Associates 1992). However, nearly seven years after the Great Flood, there has been little examination of the social consequences of how the relocation experience has affected the residents of the relocated communities. In particular, how do the disaster victims’ define sense

of community? When focusing on specific demographic characteristics of the relocated residents, namely gender, age, and ethnicity, which groups are most susceptible to post-disaster relocation impact on the human sense of community?

### **Purpose Statement**

Much information concerning the impact of the Great Flood of 1993 was gathered during and immediately following the disaster, and yet few questions have been asked of the people who were affected years after the flooding has ended (Changnon 1996). The objective of the proposed research project is to further our understanding of the significant characteristics of sense of community, as defined by the residents of the three relocated Midwest towns. A second project objective is to examine the social impact of relocation after a natural disaster on the human sense of community, with a specific focus on the demographic characteristics of the relocated residents. There is a popular impression regarding the general loss of sense of community amongst the victims relocated as a result of the 1993 floods (Cummings 1999). However, there is a lack of rigorous scholarly research to verify these assumptions.

This study will contribute to the current knowledge in disaster relocation literature and sociological community theory of the long-term outcomes and social consequences of disaster relocation. The information gathered on the impact of the disaster relocation experience will help guide policy makers, practitioners, and researchers in their applied and academic work. The increased understanding of the disaster relocation process is of significant importance in the effort to benefit future natural disaster victims.

## Literature Review and Hypothesis

### Disaster Relocation Theory

Relocation is a rare event (Garrison 1985; Mileti and Passerini 1996; Raphael 1986; Walters 1978). According to Walters (1978), people almost always rebuild damaged cities on the same sites rather than relocate to safer territory. Reconstruction is most often driven by the human interest to resurrect predisaster patterns of culture and human interaction, and it is this interest that all but guarantees that cities restore their predisaster physical character by repairing or replacing what was lost (Arnold 1993; Mileti and Passerini 1996). Because the relocation of entire communities is such an uncommon occurrence, there are few in-depth investigations of the relocation process, and an even smaller amount of research on the long-term consequences.

(One well-known community relocation study will be discussed later). So why did the Federal Emergency Management Agency (FEMA) support relocation versus reconstruction after the floods of 1993? To answer this question, it is important to first examine the historical context of disaster relocation.

***Historical Context.*** In 1927, the Mississippi River swept across Illinois and Missouri south to the Gulf of Mexico, leaving millions of acres of land covered in waters as deep as thirty feet, and displacing thousands of inhabitants (Barry 1997). Floods continued to ravage many regions of the United States during the 1930s (Platt 1997). It was these major flood events that first led researchers and policy makers to question disaster recovery practices (Carter 1942). One individual who closely examined the nation's policies was Gilbert White, a young scholar at the University of Chicago who served on the Water Committee of the National Resources Planning Board (Reuss 1993). His significant contribution was to propose nonstructural solutions to

address flood hazards (O’Riordan 1997; Platt 1997). Particularly relevant to this study, White (1942) recommended that local solutions need to be acceptable and intelligible to the local citizens, but should always be part of a mix of responses, each economically feasible, socially agreeable, and environmentally accommodative. The significance of the Great Flood of 1993 was that more than half a century after White first proposed returning areas of the floodplain to open space and moving people out of harm’s way, the government was finally prepared to take action (O’Riordan 1997).

***Sustainable Redevelopment.*** In the aftermath of the Great Flood of 1993, the movement was begun toward “sustainable redevelopment” – the practice of recovering from disasters in ways that improve the quality of people’s lives, the durability of their communities, and the prospects for future generations (Becker 1994). A White House Task Force called for profound reforms in the nation’s disaster recovery policies, including the use of sustainable redevelopment practices as communities attempted to rebuild from the devastating floods. “Relocations, in particular, offer a unique opportunity to start from scratch in planning and constructing to assure that sustainable development becomes an integral part of the entire community” (White House Task Force, in Becker 1994:1). Therefore, the government viewed the consequences of the 1993 flood as an opportunity to remove substantially and repetitively damaged structures from the floodplain. Community relocation would make it possible to return areas of the floodplain to open space and at the same time reduce future flood losses (Changnon 1996).

As a result of the White House Task Force recommendations, three Midwest towns were entirely relocated from the floodplain. Initially, the communities that were rebuilding in a more sustainable manner after the disaster were heralded as revolutionary; representing a unique

shift of paradigms, a transformation in the way people relate to the natural and constructed environment, and an innovative alteration in the manner communities envisioned their futures (Passerini 1998). While the three towns were designed to be models of post-disaster relocation, many have argued that they ultimately failed because of the loss of community cohesion amongst their citizens. The government may have “won” in saving the town, but did the residents ultimately “lose” their sense of community?

### **Community Theory**

***Theoretical Inheritance.*** The theory and examination of human communities has been of concern of social scientists for over a century. If there is a founding father of the theory of community, the title perhaps best suits Ferdinand Tonnies (Bell and Newby 1971). Tonnies first published *Gemeinschaft and Gesellschaft (Community and Society)* in 1887. In brief, *gemeinschaft* characterizes the community as a primacy of common will over individual will, leading to a sense of communality over individuality (Kourvetaris 1994). Other eminent sociologists such as Durkheim, Tocqueville, Comte, Le Play, Marx, and Weber strongly contributed to the theoretical foundation through early inquiries and explanations in attempt of defining the critical characteristics of community and its societal importance (Bell and Newby 1974).

***Community Studies – Current Context.*** Over the years, social scientists have continued to search for a precise and consistent definition of community. According to Altman and Wandersman (1987), there is a certain ambiguity associated with the term community because it has several meanings that are not always precisely differentiated. Even considering the difficulties associated with defining and exploring the concept of community due to its’ abstract nature,

researchers have continued the study because of its central importance to the discipline of sociology. The community is recognized as a key concept for understanding social life, and it is considered an important predictor of various other aspects of quality of life (Chekki 1990:1). For the purposes of this study, the community will be defined as a group of individuals or institutions who share a given area of space; live within that area's borders for a long duration; frequently socially interact with each other; and share a culture (Curtis and Aguirre 1973; Quarantelli 1978).

***Relocation and Sense of Community.*** Every human community has its own culture – the beliefs, ideals, and customs – that all members share but which may differ between societies (Mileti and Passerini 1996). It is culture that symbolically binds individuals to their towns and cities. People often resist relocation because it threatens their social and cultural identity, which is strongly place-oriented (Aneshensel and Stone 1982; Blazer 1982; Cobb 1979; Erikson 1974; Oliver-Smith 1982). Even when rational economic reasons for community relocation and structural changes exist, as they did after the 1993 floods, people may resist relocation if the move is seen as "...a step away from proven traditional strategies...ingrained in local culture" (Oliver-Smith 1982:99). Handmer (1985) suggests that resistance to relocation after a natural disaster may be a last ditch effort to strengthen what remains of the sense of community; resistance to relocation may be seen and felt as an affirmation of community identity, and defense against cultural collapse. Sarason (1974) suggested that the ingredients of sense of community are as follows:

- the perception of similarity to others;
- an acknowledged interdependence with others;

- a willingness to maintain this interdependence by giving to or doing for others what one expects from them; and
- the feeling that one is part of a larger dependable and stable structure (p. 157).

***The Community Context of Disaster Relocation.*** The community has been identified as one of the victims of natural disasters (see Barton 1969; Erikson 1976; Wallace 1957). One of the most widely known studies in this area is Kai Erikson's work on the Buffalo Creek flood in West Virginia. Erikson revealed a cultural setting where the individual was deeply dependent upon the community prior to the disaster. The flood led to the destruction of more than the physical community; the damage included the loss of social networks, cohesion, and community identity as well.

Despite Erikson's (1976) discouraging findings, there is general agreement in the literature stating that opportunities arise out of disastrous situations as well: Heightened levels of community solidarity are repeatedly reported in the immediate aftermath of a disastrous event (Barton 1969; Dacy and Kunreuther 1969; Drabek 1986; Dynes 1970). After disaster strikes, there is a temporary focus on the event that precipitates a pulling together of community, albeit short-lived (Demerath and Wallace 1957; Drabek 1986; Oliver-Smith 1979). Drabek (1986) states that while immediate response of post-disaster community solidarity has been well documented, we lack a general understanding of the dynamics that guide its demise.

### **Demographic Characteristics, Relocation, and Sense of Community**

The independent variables of particular interest to this study are the demographic characteristics of the victims who were relocated after the Great Flood of 1993. These variables include the attributes that profile the position that one holds in the societal structure. Personal

characteristics have been shown to correlate with how people define sense of community (Altman and Wandersman 1987; Sarason 1974).

**Gender.** Prior research has illustrated that gender is strongly connected with the post-disaster response and recovery process. Women's traditional community-building roles place them at the forefront of disaster recovery efforts (Enarson and Hearn Morrow 1994; Pardo 1995). However, the temporary focus on the disastrous event that precipitates a pulling together of community is a transitory phenomenon (Demerath and Wallace 1957; Drabek 1986; Oliver-Smith 1979). It appears that women continue to make a stronger effort than men to maintain the community network, even after the short-term pulling together of community has dissipated following the disaster (Pardo 1995). Therefore, the research suggests that women are also more affected when the community recovery efforts do not yield noticeable results (Enarson and Hearn Morrow 1994).

**Age.** Age is a second demographic characteristic that has been consistently related as an important factor in psychological and sociological reactions to critical life events (Bolin and Klenow 1988). Research has shown that the correlation between age of adult victims and the disaster recovery process is negative (Friedsam 1962; Perry 1979). That is, as the victims' age increases, the less likely they are to adjust to the establishment of a new sense of community, particularly if they have been a resident of the community for an extended period of time (Quarantelli 1993).

**Ethnicity.** For the purposes of this study, an ethnic group is composed of "people who conceive of themselves as being alike by virtue of common ancestry, real or fictitious, and are so regarded by others" (Shibutani and Kwan 1963:31). Research has indicated that variation

occurs, due to differences in ethnicity, in disaster victims' ability to cope and recover from disruptions experienced during natural disasters (Bolin and Bolton 1986). Aptekar (1990) found that ethnic status contributed to victims' psychosocial reactions to disasters. Garrison (1985), in a literature review on disaster relocation, determined that relocation for minority ethnic groups is particularly stressful and difficult. It has been suggested that the post-disaster recovery and re-establishment of a sense of community cohesiveness is more difficult for ethnic minorities because of pre-disaster underrepresentation issues (Aptekar 1990; Garrison 1985).

### **Hypotheses**

Based on the literature presented on how post-disaster relocation and demographic variables influence the human sense of community, the following hypotheses are presented:

- H1:** The post-disaster relocation experience has a more significant impact on the sense of community of adult female victims than of adult male victims.
- H2:** The post-disaster relocation experience has a more significant impact on the sense of community as the age of the victim's increase.
- H3:** The post-disaster relocation experience has a more significant impact on the sense of community of adult minority ethnic groups than of adult non-minority ethnic groups.

## Research Design

### Selection of Population Cases for Study

In the aftermath of the Great Flood of 1993 there seemed to be a consensus from local, state, and federal sources that rebuilding or restoring to pre-flood conditions was not an acceptable policy position (Changnon 1996). Congress provided \$6 billion in federal relief funds to be allocated for the elevation, acquisition, or relocation of structures throughout the Midwest (Larson 1996). The projects ranged in size and complexity from the elevation of one home in a neighborhood to whole communities being relocated to new locations. According to the Federal Emergency Management Agency (1999), the rationale for relocating communities out of the flood plain is to prevent further human suffering and personal losses, and also to reduce the costs to the nation for responding to and recovering from flood disasters. The three towns that were entirely relocated from their original sites were Valmeyer, IL, Pattonsburg, MO, and Rhineland, MO. A fourth community, Grafton, IL, was also scheduled to be relocated to higher ground, but nearly all of the residents moved to other communities before the relocation project could be completed. Valmeyer, Pattonsburg, and Rhineland were selected as the population for this study because of their uniqueness, considering that they were the only communities entirely relocated after the Great Flood of 1993.

***Valmeyer, IL.*** Valmeyer, a community of about 600, is located just south of St. Louis, MO. Rains from the Great Flood of 1993 put the town under as much as 20 feet of water that stood in some places for weeks, leaving 90 percent of Valmeyer's buildings damaged beyond repair (Morrison 1996). The new Valmeyer was built from scratch on a new site of land located about

two miles east and 400 feet higher than the original town. Relocating Valmeyer was a \$22 million dollar project, one of the most expensive in the nation's history (Becker 1994).

***Pattonsburg, MO.*** Pattonsburg, a Midwest farm community of 400, had been flooded 33 times this century. The town was struck twice by major flooding during the summer of 1993. The final flood brought residents to the realization that their community could not continue to survive, and in the fall of 1993, more than 90 percent of the residents voted in favor of relocating their town and rebuilding it on higher ground (Changnon 1996). Pattonsburg had contemplated moving their town several times over the years, but the financial resources were never available to make the plans a reality. In the spring of 1994, Pattonsburg received news that it would receive \$12 million in federal disaster assistance to relocate (Becker 1994). About half of the residents chose to move their homes to the new site, while the other half were forced to rebuild their homes due to massive flood damage.

***Rhineland, MO.*** Rhineland was flooded on four separate occasions during the spring and summer of 1993. After the fourth flood, the town's 157 residents voted to move the town entirely off the floodplain. What makes Rhineland's story unique is that most of the relocation consisted not of building new homes, but of picking up the old ones and moving them to the new site (Cummings 1999). New buildings were constructed for the 18 local businesses, as most were damaged beyond repair.

### **Data Collection Methods**

Three of the most prevalent and useful purposes of social research involve exploration, description, and/or explanation of some topic or event of interest (Babbie 1998). There is virtually no limit to what can be studied in the social sciences. However, in order to reach valid

and reliable conclusions, it is of utmost importance to first develop an appropriate strategy for answering the question at hand.

In attempt to fulfill the study's objectives, a combination of research methods will be utilized. Data collection will be divided into three parts, with each method underlying the next. The first objective of the proposed research project is to further our understanding of the significant characteristics of sense of community, as defined by the relocated residents of the three Midwest communities. Descriptive fieldwork will be utilized in two phases (document analysis and intensive interviewing) to define and operationalize the dependent variable "sense of community." One of the major advantages of descriptive fieldwork is to provide rich historical background and insight into the question at hand (Axinn, Fricke, and Thornton 1991; Massey, Alarcon, Durand, and Gonzalez 1987).

The second project objective is to examine the social impact of relocation after a natural disaster on the human sense of community, with a specific focus on the demographic characteristics of the relocated residents. The study's hypotheses are directly related to this second objective. The first two descriptive fieldwork phases of the study must be completed before the second objective and hypotheses can be addressed. Once the dependent variable "sense of community" is operationalized, a mail questionnaire survey will be developed to compare and measure the demographic characteristics of the relocated residents and their perceptions of how the post-disaster relocation experience has impacted the human sense of community. As a result of the quantitative analysis of the survey data, the hypotheses will either be accepted or rejected.

***Descriptive Fieldwork - Document Analysis.*** The first phase of the data collection process will consist of an analysis of relevant documents in text format. The primary purpose of this phase is to gain preliminary knowledge of the three relocated communities. According to Fraenkel and Wallen (1996), an advantage of document analysis is that the researcher can examine records and documents to get a feel for past and present social life, in an unobtrusive manner. Of particular interest to this study is determining the popular portrayal of sense of community through the print media.

A non-probability purposive sample of readily available print media from 1991-1999 will be examined. The sample will include news transcripts obtained from key word searches using Nexis/Lexis. (Nexis/Lexis is a full text searchable computer database containing newspaper articles from international, national and local papers, magazines, and radio news transcripts). Nexis/Lexis provides links to the three communities' local newspapers and *The St. Louis Post-Dispatch*, which are the four most relevant newspaper media sources available. Library search databases such as *Chinook* and *First Search* will also be utilized to obtain books, journal articles, and magazine articles regarding the three communities. Finally, the World Wide Web will be used as a search tool to obtain information relevant to the three communities. The Internet contains a wide variety of homepages, specifically related to the three communities, designed by federal agencies, individual researchers, environmental groups, local residents, and local businesses. A few examples of such websites include: [www.fema.gov](http://www.fema.gov); [www.eco-ops.com](http://www.eco-ops.com); [www.sustainable.doe.gov](http://www.sustainable.doe.gov); [www.disasterrelief.org](http://www.disasterrelief.org); [www.conradol.com/valmeyer.html](http://www.conradol.com/valmeyer.html).

***Descriptive Fieldwork – Intensive Interviewing.*** Defining a problem is not as simple as one might initially think. Most of the words used in everyday language communicate vague and unspecific meanings. In science, it is essential to specify exactly what we mean, and do not mean, by the terms we use (Babbie 1998). According to Simon (1985), a key linkage in the struggle to have theoretical statements and the empirical work deal with the same phenomena is a sound definition of the variables (p. 54). The process of definition, which moves one from the concept level to the operational level, is an integral part of measurement. One needs to clearly define constructs so they can be measured. For this proposed research project, the independent variables (gender, age, ethnicity) are clearly defined above. However, the dependent variable (sense of community), while previously defined by Sarason (1974), is still an ambiguous concept. For example, some may define their sense of community as grounded in the geographical place where they reside, and others may describe this concept as a more abstract connection of relationships and social networks.

Considering these issues, the second phase of the data collection will involve intensive interviewing with a sample of the local residents. An intensive interview follows a preplanned outline of topics, which are asked in a reasonably consistent manner, relying primarily on open-ended questions. One of the primary goals of intensive interviewing is to develop a comprehensive picture of the interviewees' attitudes in his or her own terms (Schutt 1996:325). An interviewing guideline will be developed to provide a list of topics to suggest lines of inquiry (see Weiss 1994). The qualitative interviews will engage the researcher more actively with select residents; listening to lengthy explanations concerning the residents' definition of sense of community, asking follow-up questions tailored to the preceding answers, and seeking to learn

about their interrelated belief and value system. This part of the research is key in order to define the dependent variable, sense of community, concretely from the perspective of the residents. The interviews will be tape recorded (with the interviewees' permission) while the researcher takes notes.

**Sample.** The independent variables of interest for this study are the demographic characteristics (gender, age, ethnicity) of the local residents who were relocated. With this thought in mind, the interviewees will be selected using a quota sampling technique. Quota sampling is a type of nonprobability sampling method in which elements are selected to ensure that the sample represents certain characteristics in proportion to their prevalence in the population (Schutt 1996:586). The three towns' annual reports of proportions of town residents' demographic characteristics, in terms of gender, age, and ethnicity, will be used to ensure that the interview sample represents those characteristics in proportion to their prevalence in the population. The final number of interviewees will be decided based upon time and financial considerations. However, the intention is to expand the sample until the researcher has reached "theoretical saturation" (Glaser and Strauss 1967:61) – when the categories of views that emerge from the data have been filled and the new material no longer seems to explain the researchers' base of knowledge (when the researcher begins to hear the same themes over and over again).

**Quantitative Method – Mail Questionnaire Survey.** After the dependent variable "sense of community" has been clearly operationalized, through the descriptive fieldwork phases, the third phase of data collection will be completed. Since many theoretical constructs in sociology are too abstract to adequately measure, operational definitions improve the validity and reliability of

the research (Babbie 1998). In attempt to test the study's hypotheses pertaining to the post-disaster relocation experience and the impact on the sense of community, with a specific focus on gender, age, and ethnicity, a mail questionnaire survey will be developed.

The proposed research will be further strengthened by the collection of quantitative survey data. The strength of the method lies in collecting large amounts of information from a relatively large number of respondents (Babbie 1973). Such efficiency will allow for the maximization of available time and resources (Frey 1989).

A mail questionnaire survey, appropriate to the aims of the research, will be designed and pretested after the qualitative research phase has been completed. The self-explanatory survey will contain demographic questions relevant to the hypotheses (age, gender, ethnicity). The survey will also contain questions that are operationalizations of the defining characteristics of sense of community discovered through the qualitative research methods. The specific content of the survey is yet to be determined, as the questions are contingent upon the first two data collection phases, in attempt to operationalize the dependent variable. A letter of explanation and a stamped return envelope will be mailed with the questionnaire to the residents of the three communities.

Respondents will be asked to return the questionnaires within 7-10 days, and as they are returned to the researcher, the methodological data will be recorded using a return rate graph (see Babbie 1973). Respondents will have been identified for the purposes of a follow-up mailing, and this method will be employed in attempt to increase response rates (see Frey 1989).

*Sample.* Saturation sampling is a type of nonprobability sampling where every person from a given population is selected as a sampling unit (Simon 1985). The combined population of the three communities is less than 1500 residents; thus, a saturation sample for the mail questionnaire is feasible in this situation. The following qualifications will be used for inclusion in the sampling frame:

- all residents currently over 18 years of age;
- had resided in the community for at least one year prior to the flood;
- relocated after the Great Flood to the new community site; and
- has remained in the community since the time of the flood (1993) to present day (1999).

*Justification for Qualitative and Quantitative Research Methods.* Schutt (1996) states that supplementing quantitative data collected in experiments and surveys with more qualitative data obtained with field research techniques can clarify the meaning of particular measures and the nature of causal influences (p. 355). Often the main purpose of combining methodologies is to enhance the final quality of the data collected (see Axinn et al. 1991; Massey et al. 1987). According to Babbie (1998), replication and triangulation are general solutions to problems of validity in social research.

### **Data Analysis**

The data analysis phases of the project will be completed sequentially as the data collection methods are employed. The first phase of data analysis process will involve the informal analysis of relevant documents gathered from the Lexis/Nexis and World Wide Web searches. The approach taken will be that of qualitative or nonfrequency analysis. In this approach, there is no formal counting of the frequencies with which units fit the various categories. Instead, the attempt is made merely to ascertain whether certain categories are or

are not present in the communication (Fraenkel and Wallen 1996). The specific focus of the analysis will be gaining preliminary knowledge of the three communities, in attempt to get a feel for social life and popular portrayal of sense of community through the print media.

The second phase will involve the analysis of the qualitative portion of the data. Preliminary analysis will be based on the field notes; immediately following the intensive interviews. The recorded interviews will be transcribed as soon as possible following the interviews, and the full transcriptions will be reviewed several times in attempt to develop a comprehensive picture of the interviewees' attitudes and descriptions of sense of community. This part of the research is key in order to provide in-depth insight and to operationalize the dependent variable, sense of community, concretely from the perspective of the residents.

The third phase of data analysis will involve the description and explanation of the survey questionnaire data. Descriptive univariate analysis will provide information on the proportions of respondents and their reactions to the variables asked about. The descriptive analysis will be presented as percentages for each study community (Valmeyer, Pattonsburg, and Rhineland), and frequency distributions will be used to report the data in a manageable form. Comparisons will then be made across subsamples by use of an appropriate test statistic. Explanatory, multivariate analysis will be used in attempt to discover the relationship between multiple variables. Multivariate tables will be constructed in order to explain the dependent variable through the use of more than one independent variable.

### **Benefits of the Proposed Research**

The proposed research project will examine the impact of post-disaster relocation on the human sense of community, with specific focus on the gender, age, and ethnicity of the

residents of three relocated Midwest towns following the Great Flood of 1993. The results will increase the general understanding regarding the long-term impact of disaster relocation on the human sense of community, with particular attention given to demographic characteristics of the victims. The study will help to determine whether, and to what degree, relocation does impact sense of community. This will contribute to the current body of knowledge in disaster relocation literature and sociological theory of the long-term impacts and social consequences of disaster relocation. The information will help guide policy makers, practitioners, and researchers in their applied and academic work.

Beyond the contribution to the body of knowledge in community theory and disaster relocation literature, some more practical applications may derive from the study. The long-term impact of disaster relocation on the victims', when carefully assessed, could suggest new directions for post-disaster recovery operations. This will improve the current level of understanding of the disaster recovery process in attempt to benefit future natural disaster victims.

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**Figure 1. United States – Estimated Proportion of Land in Floodplain.**

Source: Thompson, Stephen A. and Gilbert F. White. 1985. "A National Floodplain Map."  
*Journal of Soil and Water Conservation* 40:417-419.

**Figure 2. Areas of the Midwestern United States Flooded in 1993.**

Source: Interagency Floodplain Management Review Committee. 1994. *Sharing the Challenge: Floodplain Management into the 21<sup>st</sup> Century*. Washington, DC: U.S. Government Printing Office.