

RESEARCH ARTICLE

Open Access



Culture's influence on social network vulnerabilities for ethnic minorities in rural disaster events

Kim B. Galindo¹, Zohreh R. Eslami^{1,2*} and Hassan Bashir¹

Abstract

This paper aims to explain survey findings regarding disaster recovery processes among ethnic groups in a rural Texas community. The research was conducted over a 4-year period with most of the survey data collected over the summer of 2004. The research was descriptive in nature, attempting to document processes and sources of recovery aid acquisition following a natural disaster, and viewed through the lens of cultural and ethnic literature regarding minorities and disaster recovery processes. The difficulty in explaining research findings comes from the fact that data was collected at the household level, yet the explanations which best elucidate the findings are derived from a different level of analysis than that of the survey. The variation in aid acquisition between ethnic groups is best understood as a manifestation of community cultural norms, which implies both individual, cognitive norms, as well as social norms. Ethnic literature focused on minorities in disaster situations, excerpts from qualitative data, and personal observations are used to support the interpretation of the data presented herein pointing to cultural flexibility in recovery processes, which are stifled by institutional barriers hampering recovery efficiencies.

Keywords: Housing recovery, Culture, Flood, Disaster, Minorities, Rural

Introduction

Recent American disasters have demonstrated that the loss of housing is one of the single greatest component of all losses in a natural disaster. Housing recovery may be the most critical element in overall family and community recovery (Bolin 1985). Of the costs associated with natural disasters recovery, over 50% are directly related to housing restoration, but little systematic attention has been given to the processes people go through in their efforts to re-establish permanent housing (Berke and Wenger 1991; D'Souza 1982; Tootle 2007). Due to the long duration of the housing recovery processes, complexities of reconstruction, research funding, and data collection challenges, the household recovery process has not been well studied nor understood. Few studies exist that focus on the aid acquisition process low-income households' undertake as they try to re-establish permanent housing following a natural disaster. This study follows households from the moment

of impact through the housing recovery stage, 4 years after the event. The lack of studies of this sort, also, implies that the full challenges and voices of natural disaster survivors are lacking from the record (Tootle 2007). This article, in particular, focuses on whether previously documented expression of culture in disaster recovery, for the three largest ethnic groups in the USA, are substantiated in this situation; where the majority of the population is low-income and seeks to find aid to restore their homes.

Culture refers to all learned behavior and constructs that are transferred from one generation to the next and shared among members of a group. This refers not just to such issues as manners, or language, but also to the many tacit and unconscious social and mental constructs that individuals learn through experiential and environmental cues. Humans have differentiated themselves along cultural lines probably since they first evolved, and in classic heuristic fashion, those distinctions have often been relegated to phenotypical categories, particularly in the USA. In most of the literature reviewed and used as a basis for comparison, herein,

* Correspondence: zohreh.eslami@qatar.tamu.edu; zeslami@tamu.edu

¹Texas A&M University, Education City Student Center, Doha, Qatar

²Texas A&M University, College Station, TX 77843, USA

those categories are variously termed racial or ethnic groups. Terms that are synonymous as applied to these studies, and focus on African-Americans (Blacks), Mexican-Americans (Hispanics), and Anglo-Americans (Whites). The literature refers to shared traits or tendencies exhibited among these groups, during various disaster recovery events, but it does not stipulate a deterministic behavioral stance. However, many of those shared tendencies and traits have also been exhibited in aspects of life, other than disaster recovery, and have often come to exemplify hegemonic cultural tendencies within each ethnic group. Although there is variation between and among ethnic subgroups, this paper is narrowly focused on comparing ethnic behavioral patterns from this study as they compare with the larger ethnic tendencies documented in disaster-research literature. This study in no way attempts to discredit or dismiss the many other social and physical variables that can contribute to vulnerabilities, and present additional obstacles in the disaster recovery process.

There have been multiple studies centered on different variables that contribute to increasing vulnerabilities and significantly impact the disaster recovery process: ranging from gender (Anderson 1994; Drotet et al. 2015; Enarson 2012; Ganapati 2012), age (Sanders et al. 2003), language (Lindell and Perry 2004), socio-economic status (Barrios 2016; Comerio 1998; Cutter et al. 2006; Green and Olshansky 2012; Hawkins and Maurer 2009), education (Yamamura 2010), location (Brody et al. 2011; Peacock et al. 2014; Zahran et al. 2008; Zhang 2012), hazard agent (Caruson and MacManus 2008), physical limitations (Kessler et al. 2008), political structures (Binder and Greer 2016; Brody et al. 2011; Pendall 2000; Van Zandt et al. 2012), housing conditions (D'Souza 1982), and more. None of these variables act in isolation or can be said to be the primary factor determining recovery processes, albeit they do add to issues of vulnerability. Vulnerability is defined as population characteristics that generate differential and heightened challenges in anticipating, coping, and recovering from disasters (Cutter et al. 2006; Flanagan et al. 2011; Van Zandt et al. 2012). "The social aspect of vulnerability disputes the popular belief that natural disasters are indiscriminate events and instead suggests that natural disasters are socially constructed" (Peacock et al. 2014, p. 356). Notwithstanding, this, now commonly accepted, tenant (among disaster researcher and policy experts) that disasters occur due to human constructs has not influenced land-use risk much, and there has been little progress made in systematically attenuating those constructs to assist in the housing or resettlement process once a disaster hits. There is little governmental support for housing restoration (other than as a reinsurer for flood risk), so most low-income people are forced to depend on informal networks for support, whether that be financial or other.

This article attempts to explore the impact of ethnic cultural norms in the housing recovery process within a rural setting. We do not mean to imply all culture is consumed under the guise of ethnic boundaries or determinism; however, there is substantial literature that describes hegemonic cultural trends or tendencies within these ethnic groups that allows us to compare the study population with documented trends and, by extension, expectations. For example, Cutter et al. (2003, 2006) and Tierney et al. (2001) found that additional environmental vulnerabilities are introduced to social groups due to characteristics such as levels of urbanization, gender, ethnicity, age, and education, among others. In this study, we are able to control for many complicating factors that are often integrated with ethnicity because of the community's relative isolation and homogenic demography. The rural nature and size of this community allowed us to compare each ethnic group against the other in this locality, thus providing a modicum of a control factor. But, we do recognize that other issues can and did emerge which directly influenced recovery efforts, ranging from geographic location of a house to economic, age, and other demographic status that are not addressed in-depth within this article. The location of this case study is centered on a community, which is representative of many rural towns found scattered throughout the USA; and is in turn, structurally similar to other small urban centers found in developing nations. The structural similarities between Switchback (a pseudonym) and other vulnerable communities include difficulties with resource acquisition, ties to the greater political networks, social fragmentation, low educational and income attainment levels, and lack of "star power," or a stage from which to garner popular support and resources (Miller and Simile 1992). The similarities between Switchback and other small or rural communities elucidate structural vulnerabilities that work to hamper recovery further.

Review of the literature

Engaging with any new process or system is always challenging, but familiarity with the underlying rules guiding such environments, and previous positive experiences with governmental and aid agencies facilitates the learning process. On average, Anglos have higher educations and incomes, hence they are more likely to know how to work through government programs, and maneuver within an unfamiliar relief system. Additionally, issues of institutional trust are often lower among Anglo groups, who may not have had much direct contact with governmental services, and/or know individuals or networks who can facilitate their bureaucratic encounters. These social networks are established and maintained through both internal and external forces that reinforce these social connections.

Disaster research focused on ethnic and cultural traits has highlighted the role social networks play in every-day life and the recovery process (Morrow 1997). For instance, language barriers are often cited as an issue in risk communication and disaster recovery that increases vulnerabilities for Hispanic populations. Ethnic cultural norms have also been exhibited through differential attitudes toward accepting aid assistance, adopting attitudes toward mitigative actions for risk, the roles of gender in the management phases of both recovery and disaster response actions, as well as in other facets of disaster cycle (Drotet et al. 2015; Hemachandra et al. 2018; Kulatunga 2010; Wang et al. 2017). Additionally, it has been noted that Hispanics tend to settle in neighborhoods with close proximity to family (Mirowsky and Ross 1984). Close proximity to family facilitates mutual assistance for ordinary matters, but ultimately reinforces social barriers with the dominant culture, since family members tend to look to each other for assistance first, before turning to outside agencies (Perry and Nelson 1991). Perry and Mushkatel (1986) found that Mexican-Americans used social networks to relay warning information more than blacks or whites. Comerio (1998) and others have found that past negative experiences with government agencies, fear of authority, distrust in institutions, language, class, education, ethnicity, learned and structural coping mechanisms that dissensive engagement with official systems, and lack of experience with formal organizational services have all been barriers to engagement with aid organizations, and they have contributed to differential access to aid and recovery rates among past research initiatives in the disaster literature (Dash et al. 1997; Kamel and Loukaitou-Sideris 2004; O'Donnell and Giovannoni 1999; Oliver-Smith 1990; Perry and Mushkatel 1986). However, a natural disaster can provide a situation in which one's entire resource network has been affected, and now there is an immediate need to solicit assistance from networks and systems one is unfamiliar with, does not fully trust, nor know how to navigate.

Similarly, multiple studies show that African-Americans tend to rely primarily on their church groups and family members for assistance when needed (Morrow 1997; Rivera and Miller 2007). The African-American community, in particular, has a long history of being deliberately allowed to suffer in the aftermath of destruction because of neglect by all levels of government, but particularly by local government (Bolin 1985; Bolin 2006; Phillips 1993; Dash et al. 1997). Many African-American community members exhibit a lack of civic trust, which is grounded in inequitable policy application throughout the history of disaster relief (Rivera and Miller 2007).

Cultural artifacts and constraints are learned structures and behaviors, which determine one's locus of

control. Disasters challenge one's ability to cope and recover from immense loss in the midst of an altered reality, and often despite a lack of any intact support system (Wisner et al. 1994). Minority status often increases vulnerabilities because of lower visibility and isolation from other groups and power structures (Peacock and Girard 1997; Rogers 1995). The literature is full of stories, in which neither minority populations nor their cultural sensitivities were accounted for, and they were either systematically excluded or overlooked. Bolin and Bolton (1986) concluded that blacks and Hispanics were more likely to be left out of the formal aid network and to economically recover more slowly. Scholars (e.g., Phillips 1993; Bolin 1986) found that Anglos were more likely to rely on formal and institutionalized organizations for disaster information and assistance.

Culture is one of the fundamental aspects of society that influences both the person and the environment. Culture is a complex system of meaning that encompasses norms, beliefs, values, and prescriptions for behavior that are transmitted and passed from one generation to the next (Chun et al. 2006). There have been many different typologies used to categorize regional culture, but one of the most pervasive was first established by Hofstede (1994). He stipulated that most cultures can be characterized by along five dimensions, which permeate organizational and communication patterns. One dimension is of particular interest in the creation of social identity, and it has been characterized as a dichotomy that relates to the central galvanizing unit within a society: Individualism vs. Collectivism (Hofstede 1994). As with most typologies, these are not completely exclusive categories, nor are they diametrically opposed, instead they are used to illustrate general trends or social patterns describing a group. This approach toward culture defining and studying has been further explored by other researchers (Singelis et al. 1995; Hofstede 1994; Oyserman and Lee 2008). They have shown that cultures identified as primarily "Individualistic" also develop a culture which puts greater emphasis on the values of self-determination, competition, and the ability to control one's immediate environment: there is greater emphasis on individual agency. Contrary to these are Collectivistic cultures. In Collectivistic cultures, the central focus for the society is the group: these cultures emphasize social norms, over individual agency. These cultures tend to be more inward focused, and often assess problems or conflict more as threats, emphasizing control over the individuals' response to a situation, rather than the situation itself (Chun et al. 2006). Anglo-European culture and Anglo-American culture have been characterized as individualistic, while Hispanic culture has been generally seen as Collectivistic. Cultural description of African-American practices also

places them in the collectivistic camp (Coon and Kemmelmeier 2001). An application of these principles is the manifestation of cultural patterns that determine where people go to seek aid following a natural disaster, and whether social networks will sustain established patterns during the recovery process.

However, culture is not static and changes over time in response to long-term conditions. Generally, there is a consensus in the disaster literature that minority groups have relied on their own ethnic group for all aspects of the disaster life-cycle from warning to reconstruction. It is not always clear, though, how much of this insular behavior has been self-imposed because of cultural norms, and how much has been imposed upon ethnic groups because of segregationist practices by established power structures. Race, ethnicity, and cultural perceptions become critical to the recovery process and the relationships built between the recovery agencies, local government, and the disaster victims (Fothergill and Peek 2004). Various researchers have pointed out that social disparities and class structures often are accentuated in the aftermath of a disaster (Dash et al. 1997; Bolin 1986; Girard and Peacock 1997; Oliver-Smith 1990; Rogers 1995). Therefore, the question arises as to whether the internal, culturally determined restrictions on in-group self-reliance will prevail, or will new behavioral patterns emerge in response to the stresses exerted during the recovery process.

Transactional stress theory focuses on the congruence between one's self and the environment, especially in times of acute stress or life-changing events (Lazarus and Folkman 1987). It essentially postulates a logical approach to problem solving, once all factors are accounted for, including an individual's assessment of the stressful situation and the resources available to cope with it. Thus, one of the questions driving this research was to see how quickly minority residents recover after a major disaster, and if their coping strategies to deal with the stress of recovery will rely primarily on the inherent logic of the formal, aid-distribution systems, or rather, fashioned through the lens of culture and past negative experiences with other ethnic groups, to eschew formal bureaucratic systems of aid.

Objectives

The setting for this research presented an opportunity in which to compare behavioral variations as they relate to resource acquisition for housing recovery among ethnic groups within a rural community. In American society, the process of recovery is normally a function of local market forces, and is given its impetus through the capitalistic systems of insurance, savings, and governmental loans (Scanlon 1992). However, when these forces are inadequate or nonexistent, housing recovery must take

place through other means. Rural communities often lack the resources to adequately engage market forces for recovery, and thus this community provided a unique opportunity to gauge the effects of culture in the recovery process (Miller and Simile 1992; Rubin 1985). Their smaller size enable a manageable format for data acquisition at the household or individual levels, while still capturing a holistic sense of social dynamics. In addition, rural communities, often, are not able to garner as much media support and attention, and the concomitant influx of resources that is often bestowed on larger urban centers when major disasters strike; thus, negating some convergence effects. In particular, this research will focus on ethnic differences in aid sources accessed by households for permanent housing recovery, to determine if the previously described cultural patterns for aid acquisition were a determining factor in their recovery. The hypotheses for permanent housing, aid acquisition was that Anglos would receive aid from fewer sources than minorities, because they would access individualized, formal systems (i.e., insurance and loans) that could provide greater assistance, and therefore, would not need to depend on informal social networks. This hypothesis is based on research literature that shows most Anglos have tended to rely on insurance and personal savings for recovery, which were often not sufficiently developed to be of extensive aid for minorities (Bolin and Bolton 1986; Bolin 1986; Bolin 2006). Previous research, also, has shown that minority households are likely to have inadequate insurance, and simultaneously more likely to be depend on social networks for recovery assistance (Bolin 1986; Perry and Mushkatel 1986; Oliver-Smith 1990; Peacock and Girard 1997).

Setting

To test how and where disaster survivors sought housing recovery assistance, a rural community was selected in Central Texas that had recently been affected by a flood and received a presidential disaster declaration, opening up the recovery process to Federal resources (FEMA 1998). The community, identified here as Switchback (a pseudonym), was fairly equally divided among the three predominant ethnic groups in America. Switchback is a rural community of 6700 people, situated at a bend on the Guadalupe River in South Central Texas. The flood in question had been precipitated by several days of heavy rains in the Fall of 1998. Flooding is common in this area, especially in the spring and fall, when flash floods would come tearing across the streets, inundating the roadways (Caran and Baker 1986). Yet, this was different. The Guadalupe's water levels had risen by over 30 ft due to rainfall and drainage runoff from the surrounding area, essentially nullifying the effectiveness of mitigation designs for the community constructed in the

1950s by the Army Corp of Engineers (KI98–09 1999; KI98–39 1999; Briffett 1998). The town of Switchback was the single most seriously impacted community of this flood event, succumbing to damage or destruction of a large percentage of its housing stock, when the river jumped its banks and began trying to cut a new channel through the middle of town, affecting areas that were not in a special flood hazard area (SFHA). The flooding was so severe that on October 21, 1998, the President declared the area a federal disaster. This opened the door for national level resources to be brought to the area, administered primarily by the Federal Emergency Management Agency (FEMA 1998).

The town's historical ties to cotton and agriculture meant that slavery had been an important social and economic factor in the town. Original settlers in Switchback were of Anglo and Spanish descent (Chamber of Commerce 1999). In general, Switchback is a very poor community when compared with the national average of \$40,816 per year (US Census Bureau 2000). Overall, these demographic data depict the portrayal of a typical rural community with lower-than-average mean incomes and low educational attainment. A history of ethnic segregation continues to affect the community, and is illustrated through its history and the development of the longest and most violent ethnically charged feud in Texas: The Sutton-Taylor feud (Sonnichsen 2001). The alienation and subordination of the African-American population continued throughout the twentieth century with the application of Jim Crow laws that had some of the most far-reaching consequences through the ethnic separation of the school system.

Both local history and broader cultural messaging seem to fuel ethnic loyalty, which continued to promote a deleterious attitude toward racial minorities very much evident during the research period. The structure of the present city government came into being in the early 1990s, after the city was sued because of a lack of minority representation in local affairs (KI98–01 1999; KI98–06 1999). Until that point, there had been no minority representation on the city council, which was completely elected at large. This lawsuit brought about the development of special electoral districts to facilitate minority representation, though those efforts have been only minimally successful, with the election of only one minority member representing the Hispanic population, and no representation for the African-American community (KI98–03 1999; Sonnichsen 2001).

This tradition of social and political separation is reflected by the settlement patterns in the area and the local power structures. The northern and eastern parts of the town and those areas nearest the river are primarily inhabited by Anglos, while minorities predominate in the south and western portions of the town. Most of the

homes were of older construction and not very large, but there were evident discrepancies in housing quality which were not only vestiges of economic disparities but also racial segregation, as evidenced in the ethnic homogeneity of various neighborhoods.

The fractured social structure infiltrated the African-American community and was evidenced through their religious affiliations. The African-American community was divided into various denominations resulting in small parishes which relied on itinerate ministers, whose primary residences' were often in other towns, which also may have been affected by this regional flood (KI98–03 1999). The lack of religious leadership and unity among the African-American population was particularly noticeable in this community, especially considering the central galvanizing and advocacy role that Church has played for other African-American communities in the disaster recovery process (Smith 1978; Martinez-Brawley 1990). Within Switchback, there was no unifying leadership among African-Americans or anyone to help advocate for their needs. The one exception was an entrepreneur who was new to town, and felt it was an ethical duty to help those who had been historically disadvantaged. He represented a different cultural perspective and interpretation of socio-cultural norms. This gentleman had recently relocated to Switchback from an urban area, and inculcated progressive views toward minority groups, and, unfortunately, he was not successful in advocating for ethnic minority residents.

Researchers attempted to gauge the strength of cultural norms in the recovery process by determining where (sources of aid) people sought assistance and how many different types of aid were provided by each source. The fundamental idea being that the more types of aid a source provided, the fewer number of sources a household would have to reach-out to. The research covered the entire recovery processes as set forth by Quarantelli (1991), from the moment of impact (i.e., warning [or lack thereof], emergency sheltering, temporary sheltering, temporary housing, and to permanent housing). This article focuses primarily on the latter half of the survey: sources of aid for housing recovery, though previous research has shown that there is a tendency for disenfranchised households to "adopt" temporary housing as a permanent solution to a sheltering crisis (Phillips 1993; Quarantelli 1991).

Methodology

Participants

The total population for study consisted of all households residing in neighborhoods that were directly affected by the flood waters, and a new mobile-home park established to house dislocated residents. This produced a sampling frame of 1077 damaged houses. The total

sample consisted of roughly 49% of the affected population, or 500 households. Reports provided by DeWitt County stated that 679 houses were destroyed, 320 homes sustained major damage, and 25 homes had minor damage. Of the 1024 homes affected by the flood, only 3% were covered by flood insurance. Because of the number of vacant, uninhabitable, destroyed, or missing housing units, researchers had to make substitutions to the original sample frame. To accommodate this need, a second systematic random sample was created from the original sampling frame. A vacancy was declared if the household did not receive water, or if no one answered the door after three different attempts were made to deliver the questionnaire. Due to the high incidence of vacant and destroyed homes, researchers could not produce a pure random sample, though efforts were made to systematically ensure randomization by choosing the adjacent structure to the left when using a substitution. Because of time and resource constraints, in addition to the vacant households, only 301 households could be surveyed. This was after subtracting 464 households from the original sample of 765 which were deemed uninhabitable.

The importance of the low incidence of homeowners with flood insurance is crucial for the recovery process, and underscores the heightened level of vulnerability typifying rural and minority communities. Flood insurance is the primary form of permanent housing recovery aid that the government provides. In 1929, the private sector had unanimously decided to not provide flood insurance coverage because of the economic risk it presented, and lack of profit potential involved (FEMA 2017). The government passed The National Flood Insurance Act of 1968 (establishing the NFIP) to provide financial backing for private insurance companies, so they would give a level of mitigation to homeowners against flood losses. Because of the NFIP, now housed under FEMA, homeowners can buy flood insurance, if their communities adhere to minimal standards established by the Federal Government (FEMA 2007). However, one is not required to buy flood insurance unless the individual has a mortgage which is financed by an FDIC (Federal Deposit Insurance Corporation) bank. The community studied, herein, is typical of most places in the USA, where people often forego buying insurance because they either misunderstand their flood risk and/or government disaster assistance programs.

Survey instrument

The research included both quantitative and qualitative aspects. The qualitative aspects included several initial windshield assessments, followed by interviews with key informants from the community, and multiple local visits during the survey data collection phase. A snowball

technique was initially used to identify key leaders within the town in both the political and economic spheres. A total of 38 key informant interviews were conducted; they represented community leaders who were administering and marshaling recovery efforts for the city. They represented city or county employees, private business, state/federal employees, and representatives from non-profit agencies, who provided an array of services within the town. All key informants were Anglos, and were interviewed in an open-ended, unstructured format. Key informant interviews were used to inform the survey and create fix-choice categories by providing the context, and categorical distinctions that framed the household surveys, as researchers tried to reconstruct the housing recovery process.

The survey instrument consisted of questionnaire items that followed a linear progression, guiding respondents to recount their experiences of the flood and subsequent actions undertaken as they proceeded from emergency sheltering to permanent housing. The survey included both open- and close-ended questions. This article focuses on seven questions from the survey that center on housing recovery. Questions 1–3 asked respondents to report the amount of damage to their property and their belongings from a fixed-choice scale ranging from no damage (0% loss) to complete damage (100% loss). The study separated damage estimates for both contents (appliances, clothing, food, etc.) and structural damages to the residence. This distinction is important because of the aid distribution and limitations systems for disaster recovery in the USA. FEMA does not provide direct assistance for disaster recovery, which would involve equity building resources. Hence, anything that could be considered a “substantial improvement” is disallowed under Federal government aid restriction. Data were only collected on damages to physical assets, and did not attempt to estimate losses in other areas, such as cost of goods, economic losses, or emotional and psychological damages incurred. The list of sources that provided aid was derived from interviews with key informants, who reported the various organizations that were locally active in the recovery process.

Key Informants mentioned that most recovery assistance came from family, friends, American Red Cross, Salvation Army, community organizations, federal aid, and churches. However, these organizational distinctions, which were translated into categories for “sources of aid,” were not clear since the Red Cross partners with FEMA to provide emergency disaster aid, and also makes many referrals to the Salvation Army, those organizations also make referrals to other non-profits, and often depend on local networks to obtain needed aid. Several secular non-profits were also funded, or obtained grants from ecclesiastic funds, and various “secular” leaders were also very active in their churches. All these

agencies were central to emergency and temporary housing assistance, and relied on local volunteers; but none of the local, non-profit organizations directly provided permanent housing aid. Because of the small community size, residents often had friends and family who were helping with institutional recovery efforts, especially among the Anglo population.

These sources of aid were divided dichotomously as informal or formal. The distinction was based on how the requests for assistance were processed. If the request had to be made or processed so that a paper trail was produced, and there was some type of eligibility criteria that had to be met to receive aid, then the source was considered formal. If those conditions did not exist, it was informal. This dichotomy turned out to be somewhat oversimplified, because of the small population size, and the interconnections within ethnic enclaves. Respondents were then asked to identify (in nominal format) if one or more of five forms of aid were received: (1) rental assistance, which could be interpreted as temporary housing or assistance paying for housing; (2) replacing belongings; (3) rebuilding materials; (4) labor and services; or (5) other, from each source that provided aid. "Other" often came in the form of food or emotional support, though some respondents also mentioned occasionally receiving advice and information. In cases where straight monetary aid was provided, researchers asked about the primary use of such monies, whether it was used to hire labor and services, such as a contractor or electrician; purchase rebuilding materials; pay for sheltering costs (rental assistance), purchase new belongings; or whether the money was used for other needs. Finally, question 31 covered household demographic information, capturing income, education, gender of head of household, damage, and ethnicity as categorical data and age and size of household through open-ended questions.

To adjust for the primacy of structural viability in the housing recovery process, a new variable was developed: total damage. Total damage was derived by giving 2/3 more weight to structural damage than content damage and adding the two estimates together (i.e., $.66 \times \text{structural damage} + .33 \times \text{content damage}$). Total damage was, then, used as a base measurement for recovery efforts, which allowed researchers to control for damage, along with other demographic variables, when attempting to measure recovery processes among ethnic groups. Additionally, the variable "variation of types of aid" was constructed from the matrix describing sources and types of aid. This variable was used to assess the primacy of any single source of aid.

A substantial problem with the survey was the assumption that housing recovery was complete when the household residents were living in their original site.

The assumption being that the house had been rebuilt to such an extent that it was habitable, and daily routines could be recommenced. This assumption underscores the lack of research data available to inform the public, policy makers, and researchers on the complexities, challenges, and timelines for permanent household recovery. Unfortunately, there was no measure to truly record the nuanced (or rough) degrees of "habitability" of the original site once survivors had moved back. One example particularly stands out; a family was living in a tent on the original slab where their home had stood. There was no affordable housing available in the community nor labor assistance, so the family was slowly rebuilding their home around them, as they camped out on the slab. However, since that family was living on their original site, they met the definition for "recovered" used for the survey. This flaw in survey design skewed the "recovery" results so much that quantitative data did not match qualitative data despite multiple attempts to use various statistical techniques to control for the error, and effectively dissuaded researchers from being able to do statistical analysis or comparisons on recovery rates. Albeit, the data focused on the aid acquisition process still sheds light on some of the complexities and challenges faced by households in the housing recovery efforts following a natural disaster, and how ethnicity affects those realities.

The respondents to the household questionnaire were drawn from a randomly selected sampling frame which attempted to capture all households directly affected by the flood. Because the sample population was randomly selected, parametric analyses could be conducted to provide a quantifiable description of the processes undergone through the recovery process. No attempt was made to obtain a stratified sample based upon gender or age. Data was acquired through the distribution of a household packet, which included the survey and supporting materials, to sampled households. All parts of the survey packet were printed in English and Spanish. The survey consisted of 31 opened and closed-ended questions, but because of its length, attempts were made to speak directly with residents to solicit their participation. Residents were given the option to complete the questionnaire with the assistance of a researcher, or alone, and then the researchers returned to pick-up the completed survey. Due to educational, language, and situational challenges, researchers were often asked to record the answers; assistance was available in English and Spanish. This personal contact with residents allowed researchers to prompt respondents on questions where "other" was selected, and to hear some of the survivor's stories. These exchanges with residents, also, were used to inform the interpretation of the data, and provide a holistic image of the town's local culture.

Data analysis

Demographic summary of households

The research site was selected because of the even distribution of minority representation in the community, and among disaster survivors, and because it received a Presidential Disaster Declaration, making available national level resources for the recovery process. Since the main emphasis for this research is to look at variations in aid acquisition patterns between ethnic groups, differences among ethnic groups were examined using a variety of statistical techniques. Below is a table analyzing basic demographic statistics to determine if there were significant differences among ethnic groups that did not correspond to the natural disaster event, but which could affect the recovery processes.

Those variables that have an asterisk next to the name show that there was a significant difference between ethnic groups on that measurement using an *F* test from an analysis of variance (ANOVA). The ANOVA compares the variance within a subsample group relative to the variance between subsample groups. If the variance among the groups is large compared to the variance within groups, then there is evidence to indicate that a significant difference exists among the subsample means. The *F* test refers to using an *F* distribution to assess the dispersion of the means (variance) from each other; this distribution is often used with smaller sample sizes. One can see that significant differences existed between ethnic groups for the mean age of household, income, education, marital status, head of household, and monthly rent or mortgage. The only variable that was not related to ethnicity was length of residency in town. This shows that different ethnic groups were all similarly, long-time residents of the community; though, there may have been differences in ancestral longevity that were not captured. The low educational and low-income levels of the town are reflective of Southern rural and minority communities and those unaffected by the flood in Switchback (Starr-Cole 2003). By looking at frequencies, one can see Hispanics having lower levels of education, as is supported in other literature (Mirowsky and Ross 1984), and African-Americans earning considerably less than Anglos, yet having very similar educational attainment. Anglos have significantly higher average household incomes than either minority group, whether comparing Anglos against all minorities or against each ethnic group, individually. This snapshot of the community shows that minorities carried a heavier social and economic burden, as compared to Anglos. Moreover, qualitative data supports this, and indicates that the community power structures were not integrated.

Survey results

Of the 13 sources of aid listed on the survey form, only 4 sources were accessed by 50% or more of the respondents, implying that they were central to the housing restoration process. The four central sources of aid were family (57%) followed by the American Red Cross (68%), the Salvation Army (63%), and FEMA (78%), which was accessed by most people. Friends (47%) and churches (44%) were also frequently mentioned as sources of help, though less than half the respondents reported receiving aid from them. Initial analysis showed that family and friends were the main source of aid for labor and services, an essential type of aid in the debris removal and reconstruction phases of recovery, followed distantly by FEMA.

Logistic regression models were developed to compare difference between all types of aid acquisition among ethnic groups. Logistic regressions are used to analyze dependent variables that are dichotomous (1, 0), such as whether a household received aid or not. The models presented in Table 2 were used to control for variables that may have influenced whether a household received aid from any informal source within their social network allowing for a better determination of ethnic variations. These models controlled for total damage, income, single head of household, family size, age, length of residency, and ethnicity. Controlled variables were selected based on previous research (Morrow 1997).

The log regressions showing significant differences in aid from family and friends were only apparent when comparing Anglos to African-Americans and between Hispanics and African-Americans. It was thought that the cultural emphasis on family, and a collectivistic mindset, might have had an impact on why Hispanic families received almost the same levels of aid as Anglos, even after controlling for income. African-Americans, on the other hand, who have also been described in research as having a collectivistic culture, did not support each other as much (Rivera and Miller 2007; Oyserman and Lee 2008). The primary difference between Hispanics' and African-Americans' collectivist culture appears to be their reference or primary group. Hispanics emphasize family, both extended and fictive as their primary group, while African-Americans have looked to their nuclear family, church, and congregation as their primary group (Bolin 1986, 2006; Bolin and Bolton 1986). The lack of informal support among African-Americans was probably a function of the flood severity, and the size of their congregations, which were substantially decreased because they were dispersed among various denominations.

American Red Cross, Salvation Army, church organizations, community-based organizations, and the local bank were sources of aid analyzed under the rubrics of

community-based aid organizations. These organizations were grouped together because they relied primarily on local volunteer labor to organize and sustain them, and they directly incorporate some levels of local leadership in their functional operations, though they were still considered formal sources of aid. All community-based groups required an application process and the ability to show financial need to receive aid from them. All of them were heavily accessed in the recovery process (over 50% of respondents stated they had received help from one or more of these community-based sources).

Here too, ethnicity appeared to be one of the most important factors regarding aid from this consolidated group, even after controlling for total damage, age, single-headed households, education, length of residency in the town, and income. African-Americans who experienced the worst damage received the least amount of aid, so damage in and of itself was not a sufficient variable for the receipt of church aid. Anglos' odds of reporting aid from a church was 4.3 times that of African-Americans' and Hispanics' odds were also 2.6 times higher than that of African-Americans. De Witt County Cares was the local non-profit administering non-governmental, recovery aid. They helped mediate community needs and distribute aid by communicating and partnering with other non-profits. One of the key organizations helping with housing restoration was Mennonite Disaster Services, a faith-based group. During the data collection process, it appeared that most of the assistance provided by volunteers from the Mennonite church was first scheduled to elderly Anglos as they went through the rebuilding process. DeWitt County Cares was initially set up to assist the elderly, nonworking, and disabled populations of town. DeWitt Cares volunteers and workers were primarily

Anglo, and thus, more aware of the needs of this ethnic group (KI98–39 1999). Researchers postulated that their observations may be the result of greater integration by Anglo residents with local power structures and by the greater perceived need of the elderly over younger residents, though demographic data analysis did not point to significant ethnic differences based on age (Table 1).

Families, friends, employers, and churches were also important sources of aid for the replacement of household items and clothing needs. These aid sources seemed to focus their assistance on non-monetary forms of aid, specifically through the distribution of excess inventory items such as household goods or donations provided in-kind. The survey showed that content losses, such as clothing, appliances, and furniture, were easier to obtain through non-profit and informal relief sources than assistance for structural repairs, though this often did not matter, if a household did not have a permanent home, or place to store things. The Red Cross and Salvation Army assisted primarily with food and the replacement of belongings, such as appliances, clothing, and other household items. The ease of content replacement is an indication to the type of help that is perceived as "appropriate," and easy for a community to galvanize around (Rossé 1993). Formal community-based sources of aid, such as Red Cross, Salvation Army, local governmental entities, and even in the informal sector, such as neighbors and employers, did not show significant variations in the sources of aid accessed between Anglos and combined minorities. However, when comparing Anglos to each ethnic group separately, through an ANOVA, significant differences were evident between Anglos and African-Americans. Albeit, none of these sources were important in the housing recovery process.

Table 1 Demographic summary of households sampled

Ethnicity	Age of respondent ^a	Income per year ^a	Single-headed household ^a	Monthly rent/mortgage prior to flood ^a	Education in years ^a	Length of residency in years
Anglo						
Means	57 years	\$29,573	1.57	\$119.54	12.59	25.84
N	84	75	82	78	83	83
African-American						
Means	52 years	\$18,532	1.39	\$132.66	12.12	27.79
N	73	63	72	65	73	73
Hispanic						
Means	47 years	\$17,860	1.57	\$91.67	10.72	26.04
N	93	78	88	90	90	91
Totals						
Means	52 years	\$22,123	1.52	\$112.43	11.77	26.49
N	250	216	242	233	246	247

^aIndicates chi-square significance at the 0.05 level

These findings were contrary to the literature, because Anglos were more likely to report receiving aid from family, friends, and churches when compared to minorities. Since flood insurance was not an available source of aid for most of the respondents, even among Anglos, where it, traditionally, has been most prevalent, people turned to other available resources; most often, informal networks and a mix of governmental, and non-profit aid (Saenz and Thomas 1991). This means that Anglos were just as likely to depend on any, and all, sources of aid during housing recovery, and accessed them for all stages of the recovery process, including permanent housing. And because of their relationships with local decision-makers, they may have received preferential treatment in aid distribution. Anglos were, also, more likely to report recovery aid from SBA loans than were minorities, as per previous findings (Cutter et al. 2003). However, minorities were just as likely to solicit recovery assistance from formal, organizational sources in the housing recovery process, despite a history of local ethnic tensions in the town, contrary to findings from previous research focused on ethnic aid acquisition. Though minorities solicited formal assistance, as evidenced through FEMA applications, they were not able to access that aid as frequently as their Anglo counterparts were.

Logistic regressions were run for governmental aid sources to see if similar patterns would emerge. A total of 2397 applications for disaster aid were received by FEMA from Switchback, showing that nearly all affected households applied for assistance regardless of ethnicity. Yet, here, again, we saw that Anglos were significantly more likely to report receiving aid from FEMA, than African-American households, but they were not significantly different from Hispanics. The odds for Anglos receiving aid from FEMA were nearly ten times higher than both minority groups combined, even though as an aggregate they suffered less damage and had higher incomes. Among the minority groups, African-Americans appear to have significantly lower odds of receiving aid from FEMA than Hispanic households (nearly 66% lower); even though, they earned more than Hispanics, on average. Moreover, FEMA was the only source of aid that provided a fairly even distribution of different types of assistance. This is because most of the aid provided by FEMA came in a monetary form, so households could choose how and where to spend that money. This difference in aid from FEMA attests to differences in temporary housing assistance, as well as the reestablishment of permanent housing. These substantial and significantly lower probabilities for aid acquisition among minorities in general, and African-Americans in particular, seemed particularly surprising since levels of damage and income were controlled for in the analysis.

Some of the incongruence between damage and aid may be explained because of confusion by the aggregation of sources of aid, and the organizational complexities of funding sources made available in the recovery process (Raelin 1980). As noted earlier, respondents were asked to choose from all the sources of aid from which they sought assistance. So, respondents who stated they received aid from small business administration (SBA) may actually have begun their aid solicitation process by applying to FEMA. SBA administers low interest loans, made available to qualifying households, through a FEMA grant program. SBA assistance was accessed significantly more by Anglos than other ethnic groups, which as an aid source requires that recipients be able to show income or assets that could allow the loan to be repaid. Additionally, those loans are, then, processed through the local bank (an identified “community-based, aid source” by key informants). The bank would hold the collateral for the loan, but the federal government would pick-up the difference between the subsidized interest fee, and the comparable going rate. The complex funding mechanisms used to provide recovery assistance may have confused respondents, if they were not sure how to report the aid. To address this issue, respondents were asked to report aid from every source that provided it to them. Logistic regression models were run for SBA loans controlling for various factors including income. The findings show that the only significant difference in the ability to access SBA loans among ethnic groups was income. But, since income and ethnicity were highly correlated in Switchback, Anglos were in a better position to receive SBA loans than their ethnic neighbors. Moreover, since most of the permanent housing, recovery assistance from FEMA came in the form of an SBA loan, it appears that minorities did not receive much aid from governmental sources. Over 50 years of research have shown that ethnicity is highly correlated with education and economic opportunities, thus explaining the relationship between ethnicity and SBA; while also highlighting how social vulnerabilities are exacerbated and institutionalized, even in the distribution of assistance for disaster recovery (Table 2).

To further tease-out and identify aspects of culture and resource acquisition that were affecting residents, data were analyzed by types of aid received. Types of aid were classified under five different categories in the survey: rental assistance, replacement of belongings, rebuilding materials, labor and services, or other. Table 3 provides an overview of whether a particular type of aid was received, irrespective of the source of aid. Aid directly related to emergency sheltering was not included in the analysis presented below.

Table 2 Logistic regressions predicting help from social networks

	Model 1	Model 2	Model 3
	B Exp(B)	B Exp(B)	B Exp(B)
Total damage	.020 ^a 1.020	.022 ^a 1.022	.022 ^a 1.022
Income in hundreds	-.001 .999	-.001 .999	-.001 .999
Single head of household	-.321 .725	-.142 .867	-.142 .867
Number of children	-.025 .975	-.061 .941	-.061 .941
Age	-.002 .998	-.002 .998	-.002 .998
Length of residency	.031 ^b 1.031	.036 ^a 1.037	.036 ^a 1.037
Anglo	.919 ^a 2.508	.381 1.463	1.540 ^a 4.662
Hispanic			1.159 ^a 3.187
African-American		-1.159 ^a .314	
Constant	-1.198 .302	-1.060 .346	-2.219 ^b .109
-2 log likelihood	206.498	199.164	199.164
Cox and Snell	.096	.131	.131

^aMean difference significant at the .05 level

^bMean differences significant at the .10 level

This analysis shows that the most common form of aid received came in the form of replacing belongings (over 82% of respondents stated they received this type of aid). Previous research has showed that most non-profit and informal sources of aid provide assistance primarily in the form of emergency and temporary housing or replacing belongings (i.e., vouchers and/or products), not direct, fungible assistance (Bolin 2006). Significant differences between ethnic groups existed

only in regards to type of aid with rebuilding materials, and labor and services. These are the two most crucial types of aid for the physical restoration of a housing structure; even though, rebuilding materials was the type of aid least often received by all groups. The main sources of aid used to actually purchase rebuilding materials appears to have come from FEMA and/or SBA loans. Since minorities were at a distinct disadvantage in receiving substantial amounts of aid from either source, as discussed previously, they did not receive much of this type of federal aid.

Labor and services, on the other hand, was accessed by all groups, but at significantly different levels. This category included demolition and clearance assistance, as well as construction and all associated trades. Anglos were able to receive the most assistance of this kind, followed by Hispanics and then African-Americans, which was contrary to expectation, especially when recognizing the greater damage levels sustained by minorities. Local impressions provided by key informants, at the beginning of research, also painted a very different picture. Of the five different types of aid available, Anglos reported receiving each type of aid more frequently than minority groups; except for rental assistance, which may have been a function of their lower damage rates.

Next, researchers looked at sources of aid to see if some may have been more important in the housing recovery process because of the amount of aid provided. Since there was no way to quantify the actual value of aid received from each category, types of aid were compared to sources, with that idea that an important source of assistance would provide aid in multiple formats. Researchers were attempting to capture the reliance a household placed on any one source. This was not an ideal analysis since there was no way to capture many of the economic externalities that are essential to the recovery process. But, it does give one a sense of the importance of the various sources of aid. For example, if family provided assistance with all types of aid listed (i.e., rent, replacing belongs, building materials, and labor or services), then family could be assumed to be an invaluable source of help because of the breadth of

Table 3 Types of aid accessed by ethnicity

Type of aid	Ethnicity			Overall averages
	Anglo	African-American	Hispanic	
Rental assistance	53.6% (45)	50.7% (37)	61.3%(57)	55.6% (139)
Replacing belongings	86.9% (73)	76.7% (56)	82.8% (77)	82.4% (206)
Rebuilding materials ^a	65.5% (55)	45.2% (33)	51.6% (48)	54.4% (136)
Labor and services ^a	67.9% (57)	46.6% (34)	58.1% (54)	58.0% (145)
Other ^a	61.9% (52)	45.2% (33)	64.5% (60)	58.0% (105)

^aChi-square significance at .05 level

services provided, even if the depth of that service could not be measured. A combined measurement was developed for the number of types of assistance provided by every source, and is referred to as the “variation in types of aid.”

Table 4 presents Fisher’s least significant difference (LSD), a protected *t* test to verify where differences lie among the ethnic groups for variety of types of aid by source. A previous ANOVA had been run showing significance (.05 on a *t* test) in the variation of means between Anglo and minority groups. Fisher’s LSD was then performed to make a pairwise comparison between the pooled SD and each type of assistance received. This allows one to test where the largest variations exist between each ethnic group and the pooled SD, for variation of types of assistance received.

The analysis shows that the greatest statistical differences lie between rebuilding materials for African-Americans and Anglos, and Hispanics and Anglos. It means that Anglos received this type of aid from more sources than the other groups, or that minorities did not receive this type of aid from many, if any, sources. The main sources of aid used to actually purchase rebuilding materials appears to have come from FEMA and/or SBA loans, almost exclusively, but these could be counted as three separate sources, or more, based on funding and application processes. Since minorities were at a distinct disadvantage in receiving substantial amounts of aid from these sources, as discussed previously, they were not able to access much permanent housing reconstruction assistance.

Labor and services, on the other hand, was accessed by all groups, but at significantly different levels. Anglos were able to receive this type of assistance from more sources than either minority group, and particularly African-Americans. And, there were weakly significant distinctions between minorities (.01), also, regarding labor and services. This difference seems to point to the importance of the size of one’s primary reference group, especially in collectivist cultures, and the need to continually create horizontal relationships within a community to provide diversity and redundancy to ensure household resilience. Since the African-American community was splintered into many denominations, the primary social networks were exceptionally fragile and did not have the critical number to support its members through this natural disaster. The results of this data support Morrow’s (1997) findings on aid distribution among social networks following hurricane Andrew among collectivist cultures, but question her assumption that the differences may be linked to resource availability, since the comparison between Anglos and Hispanics reasserts the finding that income was not significantly related to the receipt of help. Hispanics were significantly poorer than Anglos, and they were dealing with greater losses than their Anglo counterparts were, yet extended help along familial networks almost as much as Anglos. This is an indication of greater robustness among Hispanic social networks, when compared to African-Americans, and their ability to continue practicing cultural behavioral patterns of mutual assistance.

Table 4 Differences in variations of types of aid accessed by ethnicity

Type of aid	Ethnicities	Mean	F test	Mean difference between Anglo and African-American	Mean difference between Anglo and Hispanic	Mean difference between Hispanic and African-American
Rental assistance	Anglo (84)	.8214	1.242	.08170	-.1463	.2280
	African-American (73)	.739				
	Hispanic (93)	.967				
Replacing belonging	Anglo	3.0476	.498	.2805	.2734	.007070
	African-American	2.767				
	Hispanic	2.774				
Rebuilding materials	Anglo	1.1548	5.825**	.4561**	.4451**	.01105
	African-American	.698				
	Hispanic	.709				
Labor and services	Anglo	1.5952	7.794**	.7870**	.4555**	.3316a
	African-American	.808				
	Hispanic	1.139				
Other	Anglo	1.8452	1.021	.3795	-.1225	.5020
	African-American	1.465				
	Hispanic	1.967				

Mean difference significant at the .05 level. **indicates mean different significant at .01 level

In regards to rebuilding materials, there were no significant differences between minority groups. Rebuilding materials is a type of assistance that directly relates to personal wealth accumulation. The lack of this type of assistance for minority groups strengthens the argument of institutional barriers faced by them in the recovery process, even if no direct causal relationships were evident. The fact that Anglos were receiving help for permanent housing restoration from so many sources, as compared to other minorities, was contrary to expectation and even local impressions provided by key informants. Even after controlling for variables such as damage, age, income, and so on, ethnicity was still found to be a statistically significant variable in whether a household received aid from their social network. African-Americans were still significantly less likely to receive aid from their social networks than other ethnic groups. Indeed, an Anglo household's odds of receiving aid from the social network was nearly five times that of African-Americans, and an Hispanic household's odds were over three times that of African-Americans.

In the end, 95% of all flood victims from each ethnic group received some type of housing restoration aid (this includes temporary housing and replacing belongings). Less than 5%, from each ethnic group, reported not receiving any aid, from any source. However, when supplementing the qualitative data, and local, social dynamics of the recovery process into context, one can better understand the ethnic variations in significant differences for access to permanent housing aid. Many of the ethnic differences in aid acquisition, and particularly permanent housing assistance, were obfuscated by a lack of previous research, knowledge of the complex federal system, funding complexities, and local socio-cultural challenges in housing reconstruction, which resulted in poor data categorization inhibiting a more parsed statistical analysis of the housing recovery processes. Since all ethnic groups broke with "culturally documented patterns" for their ethnicity, it shows that disasters can nullify the effect of ethnic cultural trends in the aid acquisition process. This is especially true in situations where the ethnic groups are somewhat isolated from others with the same cultural patterns, and/or there are few if any internal horizontal ties between groups (Wenger 1978).

Conclusions

The pervasive local culture in south central Texas, which is common of many rural communities (Rubin 1985; Briffett 1998), has always been one of self-reliance and independence. In the USA, which ranks high on Hofstede's (1994) dimension of individualism vs. collectivism. Wealth creation is particularly seen as an individualistic endeavor, and one the Federal government is loath to support at individualistic

levels. This attitude is strengthened in the South, and rural communities through religious and national cultures that emphasize aspects of the Protestant Work Ethic and associated beliefs (Osthaus 2004; Smith 1978). Throughout the USA, permanent housing is often viewed as the ultimate measures of wealth, or success, and often represents the single greatest investment any individual makes. The same value system permeates, and structures disaster assistance at the Federal level as is evidenced by the types of aid provided: insurance and loans (FEMA 2017). Both types of aid are subsidized by Federal tax dollars, and require considerable wealth creation and buy-in into the system before they can be accessed, but which also requires an intermediary: banker or broker. Thus, essentially only benefiting those that have already proven themselves "worthy."

Cultural research literature sheds light on the ethnic dynamics within the community by providing different ways of interpreting coping actions to the housing recovery process, that emphasize the importance of environmental assessments within transactional stress theory, and show how vulnerabilities are increased when power is concentrated within the purview of one ethnic group (Germain 1991). It appears this was the case in Switchback. Polletta (1999) emphasizes the importance of culture in disaster recovery by highlighting previous experiences and how these would affect victims as they seek aid in the recovery process. As people attempt to rebuild, they first seek assistance in those places where they had found it before, such as with family, friends, etc. Once familiar sources of support have been exhausted, survivors will extend outward to attempt to discover new avenues of resources if needed. Respectively, if they had not previously found aid from a certain sector, or if they associate negative experiences with a certain sector, people will actively eschew those interactions. It is in this context that the distinction between individualistic and collectivistic cultures becomes seminal. Polletta (1999) adds to this analysis her insight into culture and how culture may affect one's perception of the role that government plays in the recovery process. She stresses that expectations of government involvement in the recovery process are based on previous experiences and the trust developed between the various groups and governmental institutions. If political participation has not been a successful venue for social change in the past, residents may be adverse to engage in that type of activity, especially at a time of heightened vulnerability, such as after a disaster. Other disaster research has emphasized that cultural norms or patterns tend to remain stable and not adapt easily to sudden changes, even in the face of calamitous environmental events. Data from Switchback provide a layered interpretation of culture. When the unit of analysis was at the household level, cultural norms or patterns of aid acquisition

did not hold up under the stresses of housing recovery in the wake of a natural disaster. This can be seen in the examples of both Anglos and Hispanics which deviated from their “traditional modes” of aid acquisition. Both these groups exemplified transactional stress theory, which emphasizes the use of logical means to overcome unexpected obstacles and encourage people to act in self-benefiting ways (Lazarus and Folkman 1987). An intriguing problem then becomes why African-Americans did not also access all sources of available aid. In reality, as can be seen by the number of FEMA application, African-Americans, like their neighbors, tried to apply for recovery assistance, but were not able to obtain it, due to their lower household incomes and other environmental factors. When federal help was of little avail to them, they were left with virtually no assistance.

When the unit of analysis is the community, cultural patterns remained constant. The African-American community in Switchback was not well integrated among itself, as was evidenced by the numerous churches within the town that served relatively small congregations, and less so with its neighbors. There seemed to be no attempt to organize among themselves, and the lack of a galvanizing leader, who could articulate the needs of the African-American community and advocate for them, made it that much easier for Anglos to ignore their ethnic neighbors. During the data acquisition process, references were often made to “those folk” as a way of indicating that while they lived in the town, they were not considered constructive or productive members of the community. There were definite efforts to paint minorities, and African-Americans in particular, as lazy and just there to take advantage of the system and reap all the benefits of recovery assistance, which it was insinuated they did not deserve (KI98–32 1999; KI98–03 1999; KI98–05 1999). It is not clear from this study whether the denigration expressed toward African-Americans has been so impressed on the population that they have internalized the knowledge and learned never to press for assistance from local Anglo sources; or if, the negative attitude toward African-Americans, either consciously or subconsciously, thwarted Anglo power holders from breaking with cultural patterns and providing assistance to this group.

The group most consistently affected negatively by its ethnicity was the African-Americans. Significant negative differences were found in the aid received between African-Americans and both Anglos and Hispanics, even after controlling for demographic and damage differences. Indeed, these findings reaffirm the ethnic segregation evident in the local power structures that disseminated aid, and an attitude which was often expressed to researchers showing a resentment or negative judgment toward the dissemination of recovery aid to those who were perceived as not “deserving” it, or simply using this event as another

opportunity to benefit at the taxpayers’ expense. Media depictions of African-Americans as lazy and leeches to “white America” only serve to reaffirm and ingrain this, often, unconscious and virulent form of segregation (Horton et al. 1999). On occasion, references were made about specific individuals, qualifying the person as “one of the good ones”. Such qualifiers affirm Horton et al.’s (1999) assertion that most Whites still believe that the majority of Blacks fit the negative stereotypes perpetuated through media.

Interestingly, this derisive attitude was always focused toward minority groups, and African-Americans in particular, but the evidence shows they were the group that received the least amount of help and had the greatest need. Meanwhile, Anglos, as a group, had the least need and received the greatest amount of help. The Anglos’ negative assessment of the minority groups is probably highly colored by their own cultural norms, which tend to emphasize an individualist-centered social unit and an attitude that promotes finding solutions to problems by affect one’s external environment (change the situation, not one’s perception of it). What was painfully obvious during data collection was the additional vulnerability the African-American population faced in a rural town. The lack of social networks, within the town itself, served to weaken individual households in their recovery process, and the lack of social networks external to the town meant that there were no additional resources, which could be brought in to highlight their plight. Rural towns are notorious for their conservatism and often fight change whenever possible (Chun et al. 2006; Miller and Simile 1992). Cultural dynamics and power differentials need to be addressed and brought to the forefront so political and economic inequities, such as those found in Switchback, can be identified in local mitigation plans, and plans include extra efforts that should be targeted for outreach to minority communities by States and national non-profit groups.

The Anglo population in Switchback is deeply rooted in its ethnocentric evaluation of the other minorities and their coping strategies, and since they almost exclusively dominate the power structures of the town, it sets-up a negative, self-perpetuating feedback loop. Minority groups become more entrenched among themselves, feeling less and less capable of making substantial differences in their lives, and Anglos subsequently continuing to blame the victims for not changing their fortunes, while neither group is realizing that they are using different value systems and cultures to assess each other. However, this research showed that under the severe environmental stress produced by natural disasters, immediate cultural behavior is not a limiting factor driving non-institutionalized recovery processes.

All ethnic groups broke with “culturally documented” and expected patterns of aid acquisition for their

respective groups, but social inequalities in assistance and recovery persisted, essentially creating ever higher levels of vulnerability. The biggest problem lies within the power differentials that are established along ethnic and cultural lines creating a de facto caste system and institutionalizing cultural cleavages. These problems and barriers to aid acquisition and community solidarity foretold similar social dynamics found during the Hurricane Katrina recovery processes that related directly to implicit and explicit occurrences of institutional discrimination (Henkel et al. 2006; Cutter et al. 2006; Tootle 2007). These power differentials deter multifaceted relationship between groups, which would allow trust to grow (Lindell and Perry 2004). Wenger (1978) noted that one of the key determinants to community resiliency was the establishment and nurturing of horizontal ties or relationship with other groups at similar organizational levels. The truism of “strength in numbers” that can be applied to any level of social analysis, including households. The human tendency to seek similar and like-minded others can increase vulnerabilities if one’s group is too small, or too isolated.

In an age of climate change, and increased incidences of natural disasters, Switchback serves as an example of the heightened need to create institutional venues for community integration. Disaster recovery plans should include ways to facilitate ongoing community integration and develop “nodes” or community centers that serve multiple purposes and attract an array of community residents as part of their mitigation efforts. Ample research shows that community resilience is heightened and reinforced by strengthening both vertical and horizontal ties (Wenger 1978). Socio-linguists have popularized the concept of echo chambers to describe social behavior that seeks out or qualitatively engages almost exclusively with others of the same opinions, interests, and values (Passe et al. 2018). It is the manifestation of a human trait called homophily which Stafford and his team have suggested is an evolutionary adaptation (Holroyd et al. 2017). The phenomena of echo chambers has become a central issue in modern life due to technological advances that allow one to virtually and physically construct one’s own echo chamber, and essentially self-isolate, with little or no awareness of the increased vulnerabilities brought about by such behavior. Emergency managers, mitigation planners, ethnic enclaves, and community leaders need to be aware of the increasing levels of vulnerability being created by the fragmentation of the social fabric. One of the greatest lessons learned by the first generation of disaster researchers was that community resiliency increases through the creation and support of horizontal and vertical ties within and between cities. That lesson has been borne out again, and again, in disaster recovery. However,

awareness of increased vulnerability and ways to create resilience are often lost in day-to-day transactions. Urban planners and politicians know the challenges of creating sustainable linkages between groups, but these challenges need to be undertaken by everyone, especially during times of low stress when learning and capacity development can take place in an environment that downplays a competition for resources. In light of the quickened pace of globalization, and exponential increases in complexity, it is tempting to seek solace and comfort in homophily, but that just underscores the urgency for finding cultural, political, and institutional responses to balance ideals of integration with respect for cultural differences, and creation of greater resilience.

Acknowledgements

Not applicable.

Funding

Not Applicable.

Availability of data and materials

Please contact author for data requests.

Authors’ contributions

KG carried out the data acquisition, analysis, and synthesis and drafted the manuscript. ZE carried out and assisted with the organization of the manuscript, design of the presentation of the different sections, and literature review. HB coordination and helped to draft the manuscript. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

Publisher’s Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Received: 25 May 2018 Accepted: 11 October 2018

Published online: 06 November 2018

References

- Anderson MB (1994) Understanding the disaster-development continuum: gender analysis is the essential tool. *Gen Dev* 2:7–10. <https://doi.org/10.1080/09682869308519989>
- Barrios R (2016) Resilience: a commentary from the vantage point of anthropology. *Ann Anthropol Pract* 40:28–38. <https://doi.org/10.1111/napa.12085>
- Berke P, Wenger D (1991) Linking hurricane disaster recovery to sustainable development strategies: Antigua, West Indies Tx. Hazard reduction and recovery center, Texas A&M University, College Station
- Binder S, Greer A (2016) The devil is in the details: linking home buyout policy, practice, and experience after hurricane sandy. *Politics Gov* 4:97. <https://doi.org/10.17645/pag.v4i4.738>
- Bolin R (1985) Disasters and long-term recovery policy: a focus on housing and families. *Pol Stud Rev* 4:709–715
- Bolin R (1986) Disaster impact and recovery: a comparison of black and white victims. *Int J Mass Emerg Disasters* 4:35–51
- Bolin R (2006) Race, class, ethnicity, and disaster vulnerability. In: Quarantelli H, Dynes R (eds) *Handbook for disaster research*. Springer Press, New York, NY
- Bolin R, Bolton P (1986) Race, religion, and ethnicity in disaster recovery. Institute of Behavioral Sciences University of Colorado, Boulder
- Briffett B (1998) Disaster summary outline. Office of DeWitt County, Cuero
- Brody SD, Highfield WE, Kang JE (2011) *Rising waters*. Cambridge University Press, New York. <https://doi.org/10.1017/CBO9780511921568>

- Caran SC, Baker VR (1986) Flooding along the Balcones escarpment, Central Texas. In: Abbott P, Woodruff C (eds) *The Balcones escarpment: geology, hydrology, ecology and social development in Central Texas*. Geological Society of America, Austin, pp 1–14
- Caruson K, MacManus S (2008) Disaster vulnerabilities. *Am Rev Public Adm* 38: 286–306. <https://doi.org/10.1177/0275074007309152>
- Chamber of Commerce (1999) Community profile. Chamber of commerce, Cuero.
- Chun C-A, Moos RH, Cronkite R (2006) Culture: a fundamental context for the stress and coping paradigm. In: Wong P, Lilian C (eds) *Handbook of multicultural perspectives on stress and coping*. Springer International Publishing AG Part of Springer Nature. <https://doi.org/10.1007/b137168>
- Comerio MC (1998) Disaster hits home: new policy for urban housing recovery. University of California Press, Berkeley
- Coon H, Kimmelmeier M (2001) Cultural orientations in the United States. *J Cross-Cult Psychol* 32:348–364. <https://doi.org/10.1177/0022022101032003006>
- Cutter S, Boruff B, Shirley W (2003) Social vulnerability to environmental hazards. *Soc Sci Q* 84:242–261. <https://doi.org/10.1111/1540-6237.8402002>
- Cutter S, Emrich C, Mitchell J et al (2006) The long road home: race, class, and recovery from hurricane Katrina. *Environ: Sci Pol Sustain Dev* 48:8–20. <https://doi.org/10.3200/envt.48.2.8-20>
- D'Souza F (1982) Recovery following the south Italian earthquake: two contrasting examples. *Disasters* 6:101–109
- Dash N, Peacock W, Morrow B (1997) And the poor get poorer: a neglected black community. In: Peacock W, Morrow B, Gladwin H (eds) *Hurricane Andrew: ethnicity, gender and the sociology of disasters*. Routledge, New York
- Drotet J, Dominelli L, Alston M, Erising R, Mathbor G, Wu H (2015) Women rebuilding lives post-disaster: innovative community practices for building resilience and promoting sustainable development. *Gen Dev* 23(3). <https://doi.org/10.1080/13552074.2015.1096040>
- Enarson, E. (2012). Gender and disaster risk reduction consolidated recommendations. 1996–2009.
- FEMA (1998) President declares major disaster for Texas. <https://www.fema.gov/news-release/1998/10/21/president-declares-major-disaster-texas>. Accessed June 2018.
- FEMA (2007) Flood Insurance Manual: Effective October 1, 2007. <https://www.fema.gov/flood-insurance-manual-effective-october-1-2007>.
- FEMA (2017) Hurricane Season FEMA After-Action Report. <https://www.fema.gov/media-library/assets/documents/167249>.
- Flanagan B, Gregory E, Hallisey E et al (2011) A social vulnerability index for disaster management. *J Homel Secur Emerg Manag*. <https://doi.org/10.2202/1547-7355.1792>
- Fothergill A, Peek L (2004) Poverty and disasters in the United States: a review of recent sociological findings. *Nat Hazards* 32:89–110. <https://doi.org/10.1023/b:nhaz.0000026792.76181.d9>
- Ganapati N (2012) In good company: why social capital matters for women during disaster recovery. *Public Adm Rev* 72:419–427. <https://doi.org/10.1111/j.1540-6210.2011.02526.x>
- Germain CB (1991) *Human behavior in the social environment: an ecological view*. Columbia University Press, New York
- Girard, Chris and Walter Gillis Peacock (1997) *Ethnicity and segregation*. In Peacock W, Morrow B, Gladwin H. *Hurricane Andrew: ethnicity, Gender and the sociology of disasters*, New York: Routledge.
- Green T, Olshansky R (2012) Rebuilding housing in New Orleans: the road home program after the hurricane Katrina disaster. *Hous Pol Debate* 22:75–99. <https://doi.org/10.1080/10511482.2011.624530>
- Hawkins R, Maurer K (2009) Bonding, bridging and linking: how social capital operated in New Orleans following hurricane Katrina. *Br J Soc Work* 40: 1777–1793. <https://doi.org/10.1093/bjsw/bcp087>
- Hemachandra K, Amaratunga D, Haigh R (2018) Role of women in disaster risk governance. In: *Procedia Engineering* 212: 1187–1194, Paper presented at the 7th international conference on building resilience; using scientific knowledge to inform policy and practice in disaster risk reduction. ICBR, Bangkok November 27–29, 2017
- Henkel KE, Dovidio JF, Gaertner SL (2006) Institutional discrimination, individual racism, and hurricane Katrina. *Anal Soc Issues Public Pol* 6(1):99–124
- Hofstede G (1994) *Uncommon sense about organizations cases, studies, and field observations*. Sage publications, Inc, Thousand oaks
- Holroyd J, Scaife R, Stafford T (2017) What is implicit bias? *Philos Compass*: 12e12437 <https://doi.org/10.1111/phc3.12437>
- Horton Y, Price R, Brown E (1999) Portrayal of minorities in the film, media, and entertainment industries. *Poverty & prejudice: media and race*, June 1.
- Kamel N, Loukaitou-Sideris A (2004) Residential assistance and recovery following the Northridge earthquake. *Urban Stud* 41:533–562. <https://doi.org/10.1080/0042098042000178672>
- Kessler R, Galea S, Gruber M et al (2008) Trends in mental illness and suicidality after Hurricane Katrina. *Mol Psychiatry* 13:374–384. <https://doi.org/10.1038/sj.mp.4002119>
- KI98-01 (1999) In: Starr-Cole P, Wenger D (eds) *Local Government Official*. Personal Interview, Switchback
- KI98-03 (1999) In: Starr-Cole P, Wenger D (eds) *Local Government Official*. Personal Interview, Switchback
- KI98-05 (1999) In: Starr-Cole P, Wenger D (eds) *Local Business*. Personal Interview, Switchback
- KI98-06 (1999) In: Starr-Cole P, Wenger D (eds) *Local Government Official*. Personal Interview, Switchback
- KI98-09 (1999) In: Starr-Cole P (ed) *Local Business*. Personal Interview, Switchback
- KI98-32 (1999) In: Cuero S-CP (ed) *Local Business* Personal Interview
- KI98-39 (1999) In: Cuero S-CP (ed) *Local Business* Personal Interview
- Kulatunga U (2010) Impact of culture towards disaster risk reduction. *Int J Strateg Prop Manag* 14:304–313
- Lazarus R, Folkman S (1987) Transactional theory and research on emotions and coping. *Eur J Personal* 1(3):141–169
- Lindell M, Perry R (2004) *Communicating environmental risk in multiethnic communities*. Sage, Thousand Oaks
- Martinez-Brawley EE (1990) Perspectives on the small community humanistic views for practitioners. National Association of Social Workers, Inc, Silver Spring
- Miller K, Simile C (1992) "They could see stars from their beds": the plight of the rural poor in the aftermath of hurricane Hugo. Disaster Research Center, Department of sociology, Memphis
- Mirowsky J, Ross C (1984) Mexican culture and its emotional contradictions. *J Health Soc Behav* 25:2–13
- Morrow B (1997) Stretching the bonds, the families of Andrew. In: Peacock W, Morrow B, Gladwin H (eds) *Hurricane Andrew: ethnicity, gender and the sociology of disasters*. Routledge, New York, pp 141–170
- O'Donnell J, Giovannoni J (1999) Ethnic differences in service use, preferences, and service delivery aspects among consumers and potential consumers of family resource centers. *J Multicult Soc Work* 7:1–18
- Oliver-Smith A (1990) Post-disaster housing reconstruction and social inequality: a challenge to policy and practice. *Disasters* 14:7–19
- Osthaus C (2004) The work ethic of the plain folk: labor and religion in the old south', the. *J South Hist* 70(4):745–782. <https://doi.org/10.2307/27648560>
- Oyserman D, Lee S (2008) Does culture influence what and how we think? Effects of priming individualism and collectivism. *Psychol Bull* 134:311–342. <https://doi.org/10.1037/0033-2909.134.2.311>
- Passe J, Drake C, Mayger L (2018) Homophily, echo chambers, & selective exposure in social networks: what should civic educators do? *J Soc Stud Res* 42:261–271. <https://doi.org/10.1016/j.jssr.2017.08.001>
- Peacock W, Girard C (1997) Ethnic and racial inequalities in hurricane damage and insurance settlements. In: Peacock W, Morrow B, Gladwin H (eds) *Hurricane Andrew: ethnicity, gender, and the sociology of disasters*. Routledge, New York, pp 171–190
- Peacock W, Van Zandt S, Zhang Y, Highfield W (2014) Inequities in long-term housing recovery after disasters. *J Am Plan Assoc* 80(4). <https://doi.org/10.1080/01944363.2014.980440>
- Pendall R (2000) Local land use regulation and the chain of exclusion. *J Am Plan Assoc* 66(2):125–142. <https://doi.org/10.1080/01944360008976094>
- Perry R, Mushkatel A (1986) *Minority citizens in disasters*. The University of Georgia Press, Athens
- Perry R, Nelson L (1991) Ethnicity and hazard information dissemination. *Environ Manag* 15(4):581–587
- Phillips B (1993) Cultural diversity in disasters: sheltering, housing, and long-term recovery. *Int J Mass Emerg Disasters* 11:99–110
- Polletta F (1999) Snarls, quacks, and quarrels: culture and structure in political process theory. *Sociol Forum* 14:63–70
- Quarantelli E (1991) Patterns of sheltering and housing in American disasters. Disaster Research Center, Wilmington
- Raelin JA (1980) A mandated basis of inter-organizational relations: the legal-political network. *Hum Relat* 33:57–68
- Rivera J, Miller D (2007) Continually neglected: situation natural disasters in the African American experience. *J Black Stud* 37(4):502–522
- Rogers, George O (1995) Environmental racism or inequality: comparative study of four ethnic groups. In: Thomas G, *Race and ethnicity in America: meeting the challenge in the 21st century*, Taylor and Francis: Washington, DC: 187–204.

- Rossé W (1993) Volunteers and post-disaster recovery: a call for community self-sufficiency. *J Soc Behav Pers* 8:261–266
- Rubin C (1985) The community recovery process in the United States after a major natural disaster. *Int J Mass Emerg Disasters* 3:9–28
- Saenz R, Thomas J (1991) Minority poverty in nonmetropolitan Texas. *Rural Sociol* 56:204–223
- Sanders S, Bowie S, Bowie Y (2003) Lessons learned on forced relocation of older adults. *J Gerontol Soc Work* 40(4):23–35
- Scanlon J (1992) Convergence revisited: a new perspective on a little studied topic. Natural Hazard research and applications information center, Boulder
- Singelis T, Triandis H, Bhawuk D, Gelfand M (1995) Horizontal and vertical dimensions of individualism and collectivism: a theoretical and measurement refinement. *Cross-cultural research, the journal of comparative. Soc Sci* 29(3):240–275
- Smith M (1978) American religious organizations in disaster: a study of congregational response to disaster. *Mass Emerg* 3:133–142
- Sonnichsen C (2001) The Handbook of Texas Online, vol 2005. Texas state historical association and the general libraries at the University of Texas, Austin
- Starr-Cole P (2003) An empirical examination of the housing recovery process following disaster. Dissertation, Urban and Regional Science, Texas A&M University, College Station
- Tierney K, Lindell M, Perry R (2001) Facing the unexpected: disaster preparedness and response in the United States. Joseph Henry Press, Washington D.C
- Tootle DM (2007) Disaster recovery in rural communities: a case study of Southwest Louisiana. *South Rural Sociol* 22(2):6–27
- US Census Bureau (2000) 2000 Population Summaries. <https://www.census.gov/main/www/cen2000.html>. Accessed June, 2018.
- Van Zandt S, Peacock W, Henry D, Grover H, Highfield W, Brody S (2012) Mapping social vulnerability to enhance housing and neighborhood resilience. *Hous Pol Debate* 22(1):29–55. <https://doi.org/10.1080/10511482.2011.624528>
- Wang Y, Zhu Y, Qi S (2017) Ethnic groups differences in domestic recovery after the catastrophe: a case study of the 2008 magnitude 7.9 earthquake in China. *Int J Environ Res Public Health* 14:590. <https://doi.org/10.3390/ijerph14060590>
- Wenger D (1978) Community response to disaster: functional and structural alterations. In: Quarantelli EL (ed) *Disasters: theory and research*. Sage, London, pp 17–47
- Wisner B, Blaikie P, Cannon T, Davis I (1994) *At risk natural hazards, people's vulnerability and disasters*. Routledge, New York
- Yamamura E (2010) Effects of interactions among social capital, income and learning from experiences of natural disasters: a case study from Japan. *Reg Stud*. <https://doi.org/10.1080/00343400903365144>
- Zahrán S, Brody S, Peacock W, Grover H, Vedlitz A (2008) Social vulnerability and the natural and build environment: a model of flood casualties in Texas. *Disasters* 32(4):537–560. <https://doi.org/10.1111/j.1467-7717.2008.01054>
- Zhang Y (2012) Will natural disasters accelerate neighborhood decline? *Environ Plan* 39(6):1084–1104. <https://doi.org/10.1068/b37121>.

Submit your manuscript to a SpringerOpen[®] journal and benefit from:

- ▶ Convenient online submission
- ▶ Rigorous peer review
- ▶ Open access: articles freely available online
- ▶ High visibility within the field
- ▶ Retaining the copyright to your article

Submit your next manuscript at ▶ [springeropen.com](https://www.springeropen.com)
