

**Internal Migration through Buyouts after Natural Disasters:
Hurricane Floyd in Eastern North Carolina (1999)**

Paper for the
Population Association of America 2007 Annual Meeting
New York, March 29 to March 31

Friday, September 22, 2006

Danny de Vries, M.A.
Carolina Population Center and Department of Anthropology
University of North Carolina at Chapel Hill

James Fraser, Phd
Center for Urban and Regional Studies and Department of Geography
University of North Carolina at Chapel Hill

Funding for this research was provided by the National Science Foundation and
the Federal Emergency Management Agency.

Abstract

The U.S. Federal Emergency Management Agency (FEMA) has sponsored buyouts (acquisition and relocation programs) in order to relocate disadvantaged property owners out of flood prone areas. This paper describes obstacles and difficulties of relocation as they were experienced by flooded property owners from socially disadvantaged neighborhoods and local buyout managers in two comparable, eastern North Carolina cities (Kinston and Greenville). Both cities conducted buyout programs after the devastating flooding caused by Hurricanes Dennis, Floyd, and Irene in the fall of 1999. Based on a survey among buyout participants (n=152) and in-depth interviews with program managers (n=12), the results show that the major variables increasing the difficulty of making the decision to participate among property owners included the extent to which property owners owed money on their mortgage and a number of variables dealing with issues of inequity and mistrust. The paper provides suggestions how equity and trust building could be integrated in buyout management.

INTRODUCTION

Buyouts in urban eastern North Carolina after Hurricane Floyd

In their reviews on migration and environmental change, Bates (2002) and Hunter (2005) both typify human migrations caused by environmental change on a continuum. On the one side we find the environmental refugee who is involuntary forced out of their home without any control. Moving to the middle are people with more control over the decision to migrate, and at the other end of the continuum are voluntary migrants to maintain control over every decision in the migration process (Bates, 2002). In this paper we describe a case of homeowners caught in the middle. After major devastation of their historical neighborhoods due to flooding in the fall of 1999, these homeowners were offered a “buyout,” or acquisition and relocation of their homes. In her recent review paper on natural hazards and migration, Hunter (2005) describes buyout as one of three ways in which communities respond to natural disasters¹. Such buyouts generally refer to the acquisition of property (land and/or buildings) using federal and local funds, including in some cases additional financial assistance for relocation to complementary housing in a less hazardous site. When it concerns risk mitigation, buyouts remains a popular mitigation strategy in the USA: since 1993, participating communities have purchased more than 20,000 properties as part of this program².

This paper will review difficulties encountered by property owners and mitigation managers in two eastern North Carolina urban floodplain buyout programs (Cities of

¹ Next to buyouts, Hunter also mentions a response which include restoration and rebuilding efforts whereby pre-disaster culture is restored and a response which includes partial reorganization, taking into account variation of risk by means of for example flexible land use zoning regulations. In the latter cases, alternative mitigation strategies such as elevation or flood proofing of floodplain homes are common.

² Since the early 1970s, buyout programs have been implemented through FEMA grants in hundreds of communities across the United States, including the purchase of 1,400 parcels in Rapid City, South Dakota following the 1972 flood and relocation of 80 families from the Salt Creek floodplain in DuPage County, Illinois (Burby et al. 1988). It was not until the devastating midwestern flood of 1993, however, that public acquisition of flood-prone property really took off. Since that record-breaking flood, voluntary buyouts, which include purchase of vacant property in floodplains, purchase and relocation of existing structures, and purchase and demolition of flood-damaged structures, have become a major new focus in FEMA's overall strategy to mitigate flood losses (FEMA 1998). Since 1993, FEMA has purchased more than 20,000 properties in 36 states and one territory and acquired easements on approximately 400,000 acres of flood prone farmland in 14 states (National Wildlife Federation 1998). Property owners were paid pre-flood fair market value for their homes. As a result of the buyouts that followed the 1993 Midwest floods, FEMA claimed that an estimated \$30 million in potential flood losses was avoided during the floods in 1995 because so much less property was vulnerable to flooding (Godschalk et al. 1999).

Kinston and Greenville) following disastrous flooding as a result of events surrounding Hurricane Floyd (1999). Three sequential and major rainfall events including Hurricanes Dennis and Floyd followed closely by Tropical Storm Irene in the fall of 1999 motivated the State of North Carolina and the U.S. Federal Emergency Management Agency (FEMA) to fund one of the largest buyout programs in the pre-Katrina history of the federally sponsored National Floodplain Insurance Program (NFIP). For the heavily flooded property owners living in the affected areas, the choice presented was to either stay put and risk another major flood, or accept “free” government money to acquire their home at pre-flood market rates. In addition, relocation money would be provided to subsidize purchase of a comparable home at current market rates in a nearby location, but within the political jurisdiction. To many outsiders, planners and policy makers, these buyout programs were certainly seen as good deals. In fact, from a flood mitigation perspective the programs were very successful in relocating residents out of the floodplains.

In this paper we will show that the trade-off for this effectiveness might have come with a substantial, long-term social cost. While a large proportion of flooded residents were grateful to accept the buyout offer, almost 1/3rd of the participants indicated to have wanted to rebuild if given a change, while 1/4th of the participants indicated to have experienced pressure to participate in the program. Apparently, the decision making context which was created on the ground was not received as unambiguous nor entirely voluntary by a substantial part of the flooded property owners. How did this happen? What made the decision to participate in the buyout programs more difficult for the residents? What obstacles did manager of these urban, eastern North Carolina buyout programs report?

Considering the disadvantaged (minority, low income, elderly) status of the neighborhoods studied, this case study appears particularly pertinent to post-Katrina environmental justice context of disaster recovery³. Hunter (2005) argues that there has been a limited amount of scholarly work undertaken on the association between

³ The U.S. Environmental Protection Agency defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies.” (EPA, 1994).

migration and hazards. In this case study, the North Carolina buyout context after Hurricane Floyd removed the financial burden of relocation (low floodplain property values and relatively high market prices outside of flood risk areas), allowing for other (more social) aspects crucial to the migration decision to be played out and better understood. We will present qualitative information expressed in interviews with mitigation managers and quantitative data from a telephone survey with urban property owners who participated in a buyout program after their in eastern North Carolina neighborhoods were severely flooded in the fall of 1999. The data are based on a buyout evaluation study conducted by Fraser et al. (2003). In doing so, the case study will not only be of pragmatic use to planners and policy makers managing floodplain or other risk landscapes, it will also shed light on key social and cultural aspects that influence the decision to relocate or migrate out of risk areas.

Buyout and relocation decision making

When considering relocating from a hazard area, it is likely that factors influential in the decision making process include a combination of economic, risk perception, and social factors. Unfortunately, very few studies have directly addressed this issue in a buyout context. Hunter (2005) points to the work on risk assessment by the psychologist Slovic (2000, 1974). Based on this, she outlines several reasons as to why residents might not migrate from hazard-prone areas. Residents may:

1. not be aware of hazard;
2. be aware, but do not expect a disaster;
3. expect a disaster, but do not anticipate loss;
4. expect loss, but not serious loss;
5. expect serious loss and have undertaken, or are planning to undertake, loss reduction actions;
6. expect loss, but have accepted as costs of gaining locational benefits;
7. have no choice in location.

Smith and Handmer (1985) reported that Australian residents will support acquisition when: (1) they are well aware of the flood risk; (2) they believe they will benefit personally; and, (3) they have a low attachment to the community. Other factors include the acquisition price, availability of equivalently priced houses out of the

floodplain, severity of the flood, and flood frequency (Smith and Handmer 1986, Handmer 1985). The finding that attachment to community matters is supported by other studies dealing with relocation decision making. Price-Spratlen and Barrett (1994) employed a large sample of respondents from a metropolitan area and found that relocation decisions are predicted by residential satisfaction and neighborhood social ties. Another study conducted in a “high-risk” area of Israel finds that two significant sets of predictors of moving out of an area are neighborhood social networks and degree of support provided by neighbors, and the level of belief of potential harm to oneself or one’s children and belief in potential economic loss (Kirschenbaum 1992, 1996).

Another major factor influencing the decision to relocate is economic status. Peacock & Girard (1997) show that socio-economic status is associated with hurricane mitigation in southern Florida, since low-income households are more likely to live in highly vulnerable mobile homes, are less likely to have insurance, and appeared to not have invested in disaster mitigation such as hurricane-resistant windows and roofing. Similarly, and using the American Housing Survey, Morrow-Jones & Morrow-Jones (1991) conclude that in developed regions more advantaged households tend to remain in hazardous areas, and rebuild in the face of disaster (e.g.), perhaps because they expected loss but accepted these losses as costs of gaining locational benefits.

Based on this review, we hypothesize that difficulties in relocation out of risk areas are dependent on a combination of factors which include a lack of perceived risk of the hazard or a willingness to accept costs, a strong community attachment, and higher socio-economic status.

METHOD

Data were obtained through a survey among participating property owners and interviews with officials and managers involved in buyout process. Survey data were obtained through a telephone interview with a representative sample of households that were eligible to participate in the buyout in both cities. The population was determined by the geographical boundaries employed by each locality to determine household eligibility (i.e., 100-year floodplain maps), and we obtained complete lists of all the households that fell within this area. From these lists we selected households randomly,

and the selection of respondents from within each household was the adult, over the age of eighteen, who actually made the decision of whether or not the household would participate in the buyout program or not. The total sample size was 152 (89 in Greenville and 63 in Kinston 63) with a response rate of just over seventy percent.

The survey included a series of questions that asked respondents about: their attachment to their neighborhood prior to the flood, including household characteristics; the amount and type of flood damage that they experienced during the most recent flood; their perceptions of future risk of flooding; the complexity of their decision-making as it related to seeking input from potential significant other including neighbors, family, government officials, city planners, faith-based organizations, and other community-based groups; their experiences with staff operating the buyout programs; and, demographic information on the individual household respondents. Quantitative results were analyzed using ordinary least square multiple regression.

The study design also included site visits where local officials and buyout stakeholders were interviewed in the two sites about the buyout programs (n=12). People interviewed and analyzed in this paper included Greenville, Kinston, and Pitt County buyout managers, several community development corporations staff members, a regional Interfaith council manager, and a staff member of Habitat for Humanity. Governmental buyout managers often coordinated everything in the buyout after the initial follow-up intakes and qualifications, including appraisals, notices of eligibility, damage assessments, and the initial response organizational structure. In addition to government, the State of North Carolina decided to involve Local Community Development Corporations (CDCs) who were historically involved with housing counseling to provide flood assistance to residents. Their role was to be a middle-person between the flooded property owner and the local government buying their homes. Although they were suggested to be the hands-on liaison working with families, CDCs had no decision making power. In addition to these two groups, disaster response in terms of relocation programs also came from the faith community, which was generally organized through a regional Interfaith board. Habitat for Humanity was involved to the extent that they had homeowners which were affected by the flooding and who considered buyout participation.

The interviews were transcribed and coded for content using qualitative coding software. In the following sections, we will provide a post-flood context of the studied field sites (the Cities of Kinston and Greenville), a brief description of the population characteristics of the surveyed neighborhoods, difficulties to participation according to the property owner survey, obstacles to participation expressed in interviews with buyout managers, and a final conclusion.

RESULTS

I. The Cities of Greenville and Kinston after the 1999 floods

After peaks of major floods in the 1920 and 1950s, relative little disastrous flooding occurred in economically depressed eastern North Carolina until two major hurricane flood events in the late 1990s: hurricane Fran in 1996, and the combination of rainfall from tropical storm Dennis, and hurricanes Floyd and Irene in the fall of 1999. After Hurricane Floyd made landfall in September 1999 and was followed by Tropical Storm Irene in October, flood levels in the lower Neuse and Tar Rivers were exceeded for more than a month, with flood levels in some of these areas reaching almost double what was previously recorded as record highs. Region wide the consequences were disastrous. Throughout the 66 North Carolina counties which were declared disaster areas, damages included an estimated \$6 billion in insured and uninsured losses by more than 87,500 people who registered with FEMA as victims of the storm, including more than 67,000 damaged and 8,000 destroyed homes. Many of these damages impacted those North Carolinians who could afford it the least; many of the flood victims were disadvantaged elderly and minority African-American populations who historically inhabited land subject to flood inundation (Freedman 2000, De Vries 2002).

For the two Cities studied in this research—Greenville and Kinston—the damage was tremendous, while the social-political context was very similar. In both cases, flooding occurred in areas that had historically been considered out of the reach of floodwaters. The most severe damage was felt in areas with lower property values and a

higher percentages of residents below the poverty level⁴. Recovery in both cities was slowed by damage to infrastructure including roads and bridges. Because of the low income populations affected and the sudden needs for relocation housing, the blow dealt to the cities affordable housing stock was particularly harsh. As noted by an official in the Greenville Housing Authority, the agency's waiting list doubled after the fall of 1999⁵.

The buyout programs included a cross section of local, county, state, and federal agencies in the private and public sectors. Among the non-profits involved in the relocation efforts were the Housing Council, Habitat for Humanity, the North Carolina Recovery Assistance Center, and several local Community Development Corporations. Staff from these organizations worked with the City of Greenville, Pitt County, the State of North Carolina, and FEMA to implement multiple recovery programs designed to address both short term and long term needs of flood victims.

Overall the buyout programs in both cities proceeded by prioritizing acquisitions of those parcels in the 100-year floodplain and with the greatest history of flooding. According to the final 2003 data from the North Carolina Emergency Management Hazard Mitigation Division, both buyout programs are generally seen as successes in terms of the number of households which actually relocated out of the floodplain areas. In the City of Greenville 828 properties were acquired and relocated, which is close to five percent of the total number of households in the City, while only 7% withdrew participation. In Kinston, 410 properties were acquired and relocated, close to 4% of the total number of households in the City, while only 4% of the participants withdrew. In total, these two programs bought out and relocated 1,238 homes out of the total of 5,692 homes acquired and relocated after the fall flooding in North Carolina.

⁴ After the flood waters had subsided, Greenville city inspectors inventoried 1,893 damaged structures suffered at least 12 inches of water above floor space, including 404 single family homes, 642 mobile homes, 501 multi-family, 206 duplex, and 140 commercial structures. Fifty-five percent of these structures were condemned or deemed uninhabitable, and 45% were evaluated to be in need of repair. In Kinston, City officials declared 400 homes and 200 businesses substantially damaged.

⁵ In Kinston, officials secured federal tax credits for a private developer to add 44 apartments to an existing complex; a former high school was turned into apartments for the elderly; a 50-acre mobile home park was created to accommodate 110 homes; a program was expanded to identify vacant lots and empty buildings that could be used for new housing; and the city created a pilot program that built homes on vacant lots using volunteer and prison labor.

II. Characteristics of the survey sample

Of the total survey sample of 152 property owners who participated in the buyout, 89 residents were surveyed in the City of Kinston and 63 in the City of Greenville. About 68% was African-American and 32% Caucasian, equal to the 72% African-American and 26% Caucasian as measured by the U.S. 2000 census block level data⁶. The mean age of the sample was relatively high: 67 years, as shown also in the age distribution in Figure 1. This is much higher than the census 2000 block data which shows a mean of 46 years, providing a first indication of the role of age in buyout participation.

Insert Figure 1 about here

The mean of the level of education attained was 12 years of schooling (sd=3). Household income averaged from \$21,000 - \$30,000 per year. Almost half (47%) of the sample was unemployed or retired at the time of the decision to participate in the buyout program. Before the flood, sampled property owners had lived on average 21 years in their neighborhood (sd=14) and 19 years in their homes (sd=13). More than 93% of the homeowners indicated to be satisfied to very satisfied with the neighborhood they lived in previously to the floods. When directly asked how attached they felt to their neighborhood, 94% indicated a strong sense of attachment. Average household size was 2.3 (sd=1.4) (1.7 adults and 0.6 children). 84% of the homes were detached single family homes, 15% mobile or manufactured homes, and 1% duplex. Of these homes almost half of the respondents had paid off their mortgages, while of the ones who still had payments left the average number of years was 5.5 (sd=8.4 years, maximum 35 years left). Before the 1999 flood, 25 (16.4%) property owners indicated to have been flooded before, with only 3 property owners more than once. 82% of the sample mentioned to have had very extensive damage to their homes due to the 1999 flooding, with only 4.7% mentioning damage was not very extensive. The average reported number of inches of water in the house was 66 (sd=32). Only 16.5% of the property owners mentioned to be able to make

⁶ The census 2000 was taken after the flooding; although no buyouts had taken place, a possible undercount may bias these data although special efforts were made by the U.S. Census to take the flood into account.

repairs and live in their homes after the flood. 74% of the homes were condemned after the 1999 flooding. Indeed, the impact of the 1999 floods on these neighborhoods was extensive.

Using a ArcGIS we geocoded and mapped the location of the flooded and relocated households, shown in Figure 2 below. It can be seen that most of the households were located in relatively dense clusters. The relocation policies did not motivate households to move outside of the political jurisdiction (although some non-sampled property owners did). It can be seen that in some cases property owners relocated again close to the floodplain, and sometimes even inside (the latter may be the result of occasional errors in the relocation addresses). Generally, the relocation seems to have spread property owners all over the Cities, transforming dense historical neighborhoods into new sprawling City dwellers.

Insert Figure 2 about here

In conclusion, the property owners flooded and surveyed in this study were generally disadvantaged socio-economically and vulnerable, in particular due to the high mean age of the population which participated in the buyout relative to the average age of the census block group in which their properties resided. The experience of the neighborhood by these elderly populations was generally positive and included a strong sense of community. This shared sense of place likely disappeared after relocation distributed this population all over the City.

III. Difficulties to participation according to the buyout manager interviews

Obstacles to participation identified through the buyout manager interviews were grouped by cultural, organizational, and structural factors. Cultural factors are seen as influences on decision making that reflect regional or historically shared norms and values which shape the identities for the populations and groups involved. These include sense of place and mistrust of government. Organizational factors reflect the buyout process, including program confusion, trust, delays, and ownership issues. Finally, structural factors are

larger macro-type influences which affected all residents similarly, even though their responses to such variables can differ. These factors include flood risk perception, lack of alternative housing, and economics.

Cultural factors

When asked about buyout decision making among property owners, the issue to which buyout managers referred to frequently during personal interviews were instances of what is commonly called “*sense of place.*” Generally, sense of place refers to the ways in which people feel about a locality, and, many times, it can be a shared frame from which people base their identities and actions (Rose 2000; Martin 2003). Some buyout managers recognized that this sense of place translated into a conservatism that caused buyout offers to initially be received by property owners with some hostility and tension:

This is my family home, it was the only home I have known, that kind of thing, that emotional attachment that no amount of money can break.I guess it is that feeling of belonging, the need to belong somewhere. And they belong there, they have always been there, this is where they grew up, they just have a connection with this area, that house or that community. That connection, that makes me, you know, who I am. (CDC staff)

This spatial identity or belonging appeared not a mere passive emotional barrier. In a Greenville neighborhood called West Meadow Brook, a strong sense of place combined with a local powerful property owner. Building upon strong historical ties, this organized effort proved successful in resisting buyout participation:

Well, I think they were a somewhat of a compact neighborhood. West Meadow Brook was the neighborhood that everybody knew, ‘I live in West Meadow Brook.’ If they were to leave, they would likely have to scatter to all different areas and they would lose that sense of community.(City officials)

According to a Greenville CDC representative, this sense of community expressed itself in how people shared information, which was shaped through a sense of trust that existed between community members⁷.

While a sense of mutual trust can keep a community's identity together, buyout managers also emphasized *mistrust of the outsider*, the "other," and in particular the government as a buyout actor and funder of mitigation efforts, as a major obstacle:

I think sometimes people set themselves up as adversaries. I mean, like they felt like their job was to protect themselves against the big bad local government. Instead of finding out what the programs were. (CDC staff)

Perhaps related to the mistrust of outsiders is a cultural attitude of *pride and self-reliance*, illustrated by statements such as "well, I've always taken care of myself." Being able to get through hard times on your own appears to be an attitude influencing unwillingness to accept buyout dollars:

...one of the saddest things I've experienced as an interfaith director, is that too many times we're ready to lead and our resources are getting depleted, and there's this trail of a few people coming in who are determined to make it on their own. And of the sudden, they realize they can't. [...] (Interfaith manager)

Organizational factors

Several interviewed officials emphasized that a major obstacle to participation was caused by *program confusion*, likely due to an intransient and overly complex relief network:

One of the things that came from this is realizing that people are not getting their needs met many times because they get tired of being sent from organization to organization, not knowing who really is going to help them. And they have so many forms, they're just tired. And they are already traumatized and they just can't keep dealing with it. (Interfaith official)

⁷ Still, in the case of West Meadow Brook, the environmental context appeared to have factored in as well. Both the CDC representative and City officials independently mentioned that because the land in this neighborhood is a little bit higher not all residents got flooded, which meant that many did not get offered a buyout.

Making matters worse, a persistent tension between CDC's and local governments—the two major providers of information—appeared to have affected the *trust* people had in the buyout team at large:

I think they lost trust because they had gone to something... they really didn't know that the CDC wasn't with the city. They thought that was a government...(?)...or something. 'I'm going to the official place I'm suppose to go to. So, once I go there and talked to them they should take me through the system'. It wasn't happening so they did lose trust and we had angry people come in and say, 'Hey, I went and did what I was suppose to do'... (City official).

Building trust was a strategy noted by several officials. In Kinston, City officials mentioned that although trust was an issue initially, the team was committed to have people not leave the room until potential participants trusted them. They mention taking the time to listen to people's stories as essential, but above all, historical connection to the area and a sense of humor appeared to make a difference:

I'm a known quantity. My family is a known quantity. And I will find something about most of them that I know. So we can relate to one another. And I do an awful lot of joking. (City official).

Buyout managers further noted that *timing and possible delays* were main concerns in the mind of many property owners, particularly because many homeowners were still living in alternative temporary housing. Some Kinston officials noted that delays that had programmatic origins, in particular the huge volume of appraisals to be done after a massive flood, were obstacles to participation. A CDC manager noted that in some cases such delays might have compromised the quality of the buyout process. With impatient residents on their doorstep, buyout managers under pressure were suggested to sometimes have chosen for a quick fix rather than working out issues at a needed pace. Partly, this need to get things done appeared to be motivated by larger organizational pressures, such as money allocations from the State. Indeed, continuous State scrutiny of

unspent portions of relief money continued to be an ongoing controversy for state-wide news media.⁸

Structural factors

Delays were also experienced due to complex *issues surrounding heir properties*:

I mean there is so much heir property in these little communities...that has created real problems holding up the process because you have to go around the country to get people to sign it. And if some families don't want to sign off on it, then the local Interfaiths can't touch the properties. That's one, ah, actually a big issue in buyouts. (Interfaith official)

Beyond delays in terms of the bureaucratic process, heritage of land also confronted buyout managers with property owners who had a strong emotional attachment to their land. The unwillingness to sell resulting from such heritage resembles the historical memory involved in issues of sense of place⁹.

In some cases, complex family dynamics hindered participation, for example when one of the nine children in the family did not want to sign. Further exacerbating the problem of complex heritage issues and conflicts between owners were difficulties in legal help and advocacy. With many of the buyout population poor, elderly, and relatively less educated, complex legal issues often caused further delays and possible participation drop-outs.

A lot of these properties were heir properties and crazy stuff associated with that and just almost anything you can think off is going anyways. But the disaster exacerbated it. So, there were just these terrible backlogs and so many people who needed so much legal help (City official).

⁸ For example, in a May 7, 2001 issue of the regional newspaper (Raleigh News & Observer 2001), an article entitled "Floyd funds go unspent, as storm victims wait" stated that North Carolina legislators were eying hundreds of millions of dollars in unspent Hurricane Floyd relief funds to help cover the state's budget shortfall but stress that they won't cut aid to flood victims. According to the NC General Assembly, unspent Floyd relief money would be recalled and then reallocated: "It's just a matter of sound money management," one representative said.

⁹ The fact that people did not actually live on such properties, appeared to actually hinder, and not facilitate, participation in buyouts.

Some suggestions were made by managers that one of the issues influencing decision making included the *lack of alternative housing*. In Kinston, CDC representatives argued that much of the housing stock that was made available as relocation housing did not really fit the population served.

Cause, I don't know the developer realized that their clients are low to moderate income. When you have a house with a subdivision price of \$100,000, they are not going to be able to afford it. [...] They don't realize. Even though they are low to moderate income people they still have some standards (CDC staff).

Because of the relative lack of flooding in the previous generation, another obstacle to participation had to do with the notion that this flood was just a freak of nature and won't happen again. On the other hand, the dramatic impact of the 1999 floods did motivate many to accept buyout offers. As one buyout manager said: "we didn't have to sell Floyd it sold itself, plus Fran."

Finally, there are *economics*. Although the State of North Carolina and FEMA provided full funding and additional funds for comparable housing, this did not resolve financial issues. Buyout managers mentioned particularly bad credit issues and discussions of how fair the pre-flood market price offered for the flooded house was¹⁰. Further and particularly in the College environment of Greenville a strong rental economy and the possibility for flood insurance mutually reinforcing a drive to repair as opposed to engage in buyouts. Rental issue also caused some concern among Greenville officials with regards to "prospectors" who would come in and buy homes cheaply from money-losing landlords after the disaster in order to refurbish them and then rent them out themselves. This was particularly a problem because of the scale and duration of the floods. Finally, some properties did not make the cost-benefit analysis required by FEMA to make a project cost-effective. Most of these homeowners decided to stay and repair.

¹⁰ One particular problem faced in North Carolina dealt with the problem of flood insurance payments. Although not all property owners had flood insurance, those buyout participants who did were required to deduct flood insurance payments from the pre-flood buyout market price. To many property owners this was unfair, since they believed they had a rightful claim to the insurance money since they had been paying claims.

II. Difficulties to participation according to the property owner survey

Bivariate associations

Having reviewed the perceptions and observation of buyout managers, we will now show that the property owner survey provides additional and somewhat controversial support for some, but not all, of the issues mentioned by managers. We wanted to know what factors were influential in determining the difficulty property owners experienced when making the decision to relocate out of the impacted floodplains. To answer this question using survey data, we computed bivariate correlations between the question “How difficult was it for you to make the decision to participate/not participate in the buyout program” and all other survey questions. Significant correlations are shown in Table 1. The results show that when translated into survey questions, some of the factors suggested to be obstacles to participation by mitigation managers appear to have no significant influence on the difficulty of making the decision to participate among property owners. These include trust in outsiders, confusion, lack of alternative housing, and lack of perceived risk.

Instead, what appears to make the decision to participate more difficult seems to relate to four somewhat separate issues. First, the degree to which a mortgage is paid off. Property owners indicated that having paid off a mortgage increased their perceived difficulty of making the decision to participate. Bivariate correlations suggest that this relationship might be related to a significantly reduced perception that the price given for ones’ home was fair. Second, property owners indicated that the higher perceived pressure and opposition, the more difficult their decision. Here the suggested importance of sense of place or neighborhood culture as a way in which opposition against participation is organized is expressed. At the same time, the results suggest that more opposition coincides with a higher sense of pressure. Third, difficulty appeared increased when homeowners attributed more importance to the opinion of government officials, housing counselors, and city planners. Considering the tenuous relation between the CDC’s and the local governments, this is perhaps no surprise. In fact, program managers alluded to this issue by means of talking about program confusion. Fourth, those homeowners who had been at a job only for a short time experienced more difficulty in

making the decision. This finding can be interpreted as suggesting that either new homeowners or those with unstable jobs experienced more difficulty evaluating if the buyout was an appropriate step to take.

Insert Table 1 about here

Linear regression model

Based on these associations and exploration of additional variables which showed trends towards significance, we created a linear regression model with the dependent variable “How difficult was it for you to make the decision to participate/not participate in the buyout program.”(1=not at all, 4=very difficult). A significant model was found which explained a reasonable deal of the variation, about 40% ($R^2 = .40$, $F(1, 152) = 16.1$, $p = .000$). Table 2 below shows the results:

Insert Table 2 about here

The results emphasize that decision making was more difficult:

- 1) If mortgages were not paid off;
- 2) When pressure to participate was experienced;
- 3) If there was increasing opposition in the neighborhood against the way in which the buyout was handled;
- 4) If a person’s home had been flooded before; and
- 5) If there had been lack of trust and perceived fairness during the process.

It is interesting that difficulty in decision making was not predicted by people’s estimations of the likelihood of future flooding, and that instead experience with a previous flood event (most likely Hurricane Fran three years earlier in 1996) increased (and not decreased) the difficulty of making the decision.

DISCUSSION

This paper described obstacles and difficulties to the participation of property owners in a buyout program relocating residents out of a historically segregated floodplain area. Buyouts, or home acquisition and household relocation programs, are forms of internal migration that have been popular in the United States since the early 1970s. The two eastern North Carolina buyout programs described here have been one of the largest buyouts in the pre-Katrina history of the NFIP program, totaling a relocation of 1238 households and about 4.5% of the households in the two cities combined. The programs included full financial compensation of acquisition and relocation to comparable houses. In addition, they occurred in areas that were historically disadvantaged, including a history of racial segregation and gender separation (see for example Reed 1982 for an introduction on southern culture at large), producing a context which can generally be described as an environmental justice context (EPA, 1994; De Vries 2002).

The results show both the perspective of property owners, by means of survey data indicating how difficult it was for them to make the decision to participate, and the perspective of buyout managers, through personal interviews wherein obstacles to participation were documented. We had hypothesized that increased difficulties in making the decision to relocate out of risk areas included a lack of perceived risk of the hazard (or a willingness to accept costs), a strong community attachment, and higher socio-economic status.

With respect to lack of perceived risk (or willingness to accept costs) it is striking that there was no direct statistical association between the measured concern about the likelihood of future flooding and the difficulty of making the decision to participate, even though interviews suggest such connection as a result of the idea among some property owners that the flood might have been a freak event. However, results do indicate that previous experience with a flood event (Hurricane Fran three years earlier in 1996) made the decision *more* difficult (and not less). This finding could suggest that property owners who flooded in 1996 might have had a negative experience with buyout managers trying to relocate them. As a result, these property owners might have become more resistant to accepting a buyout offer the second time (in 1999). Alternatively, it could be that

experience with previous flooding increased emergency preparedness and reduced the surprise shock of the 1999 event to a point where it was more difficult for property owners to see the flooding as a reason for relocation.

Interviews indicate that neighborhood attachment is an important obstacle to participation. Yet, the property owner survey findings do not show neighborhood attachment alone to be a factor predicting the difficulty of making the decision to participate. The explanation for this could be that buyout process managers aimed at relocating entire neighborhoods, thereby partially nullifying the possibility for property owners to actually “leave” the neighborhood behind: everybody left. In fact, in this case the disappearance of the entire neighborhood directly played into fears of “staying behind alone.” This argument appeared intentionally used by governmental managers as a strategy to motivate people to participate, particularly at the later end of the buyout process when it became increasingly apparent that indeed everybody was leaving. Managers often used State funds to “fill in the gaps” left by property owners participating at the last second for this reason. What the survey results do indicate is that opposition voiced by residents regarding how the buyout program was handled was a major factor making the decision to participate more difficult. This in fact is similar to what buyout managers indicated; that neighborhood movement organizing against participation can be strong obstacles to participation.

When it concerns socio-economic considerations, the interviews suggest that the college rental economy in the City of Greenville provided an obstacle to participation, and that in some cases credit issues made the buyout process more complex for lower income property owners. Further, some concern was mentioned with the lack of affordable housing in both cities. However, what stands out in the survey responses is the importance of mortgages. It appears that not having completed a mortgage increased the difficulty of making the decision to participate. This finding emphasizes that the “good deal” through which the buyout programs were sold were not perceived beneficial perse among property owners who still had mortgage debt. This finding is further contextualized by the positive influence which perceived unfairness of the price offered for the pre-flood house has in explaining the difficulty of making a decision. While the “free money” was good, we argue that the buyout programs might have been seen to be

cutting corners when it concerned how much “free money” was offered in the acquisition price, in particularly for owners in debt. Alternatively, it is possible that this result (partly) reflects an influence of age, wherein the most aged were least likely to be able to stay and cope with another disaster, and thus felt it easier to make the decision to relocate. However, no significant influence of age itself was found.

Having found only partial support for lack of perceived risk, no support for neighborhood attachment (but support for neighborhood opposition), and only indirect support the role of socio-economic class (through mortgage issues), it seems that the main, complementary finding of this study is that the decision to participate in the buyout program became more difficult among flooded property owners as a result of organizational, or process related, variables. In particular, these included: distrust in the people running the buyout; lack of confidence that government officials had the best interest of neighborhoods in mind; lack of input in the buyout process; perceived unfairness of the price offered for the pre-flood home; and the experience of pressure to participate. These organizational concerns point to the significant pressure of buyout managers in “getting the job done,” and perhaps a lack of adequate pre-flood planning. One of the interviews illustrates how city officials imposed pressure by strategically putting flooded property owners in situations where it would be difficult for them to not be convinced of the logic of participation:

We were able to meet them at the center on the edge of the floodplain when they wanted to get to their house. We took them back in boats, deuce and halves, whatever it took to get medicine and clothes...to whatever it took to them whatever they needed out of their flooded house to where they could use it in a temporary location. At the same time we demonstrated to them how bad it was. We tried to impress the vision of what they were seeing in riding in a boat back to their house and get them to project that out a few years. Are you going to be able or are you going to want to deal with this again?. We were able to talk to them. We were able to sell HMGP. We were able to sell our buyout program. We were able to give them confidence in us that we knew...that we felt like we had a program that in the long run was going to be beneficial to them. We just convinced them that it made sense and again we had the experience of Fran. So, it wasn't that hard in a lot of cases but in a few it was. We also had the determination and the resolve that we were not going to let them go back in there. (City officials)

Significant in this quote is the last sentence, which suggests that at least these buyout managers were not open to the possibility that people might have wanted to stay. Indeed, some Greenville residents mentioned feeling coerced into participating in the buyout, noting that the city would not issue permits to clear land or rebuild, would threaten to foreclose on a property, or that utilities would be turned off if they remained on the land. In addition, they noted that the city could always rely on eminent domain to seize properties. Some Greenville city leaders had publicly noted the weakness of voluntary buyouts as a means of preventing development in the floodplain and identified the use of eminent domain as an alternate strategy they would have preferred. Most likely, this pressure was motivated by larger political necessities of land-use planning.

Among buyout managers, awareness of the problems inherent to these organizational process issues are referred to under the notion that some property owners became victims of program confusion and mistrust due to a conflict between Community Development Corporations and City officials. The State of North Carolina had funded housing counselors through local Community Development Corporations (CDCs) that had existing—and historically adversarial—relationships with city and county agencies. According to those running the buyout in Greenville and Kinston, the housing counselors were frequently incompetent, did not share information, and were not accountable to anyone: “You hire a third party who is responsible only to themselves, who provides part of the information, and then leaves the scene.” (County official). CDC and some nonprofit staff in Greenville and Kinston countered that housing counselors were in the best position to advocate for residents because they were from the same racial background, could gain trust among residents more easily, were more easily trusted by residents because they were not employed by the city, and that they could provide impartial information on all options, including the buyout. Housing counselors in North Carolina also commented that they made repeated efforts to contact staff administering the buyout, but that they were turned away and completely shut out of the process. One housing counselor noted that whenever they implemented a project or tried to work with the city, the city “took them over” and that buyout staff were “not comfortable with a partnership” with counselors. One CDC staff member involved in the process noted that

there was a shared sense that local government officials did not have the best interest of the community at heart, and that some officials were trying to keep residents down.

CONCLUSION

In the past decade, social scientists have increasingly argued that it is not probabilities in risk which concern people, but fairness, competence, and responsibility (Clarke & Short, 1993). Rather than technical issues, people worry most about how risky decisions are made with respect to fairness, political interests, equity, and authority. In this context, Freudenberg (1993) argued that because of the increasing interconnectedness and interdependency of our society there has also been an increasing failure of institutional actors to carry out their responsibilities with the degree of vigor necessary to merit the societal trust they enjoy. Analyzing survey data from several studies on nuclear waste and public risk perception, Freudenberg found that this “recreancy” perspective explained roughly three times as much variance in levels of concern as did socio-demographic or ideological variables combined.

Our results echo these sentiments. In the urban cases of Greenville and Kinston it is not lack of perceived risk which determined difficulties in choosing to participate, but issues dealing with mistrust. These issues appears to have been motivated by factors including program confusions and delays, ill defined program responsibilities and local power struggles, neighborhood oppositions, possible unfairness for the acquisition price offered, and pressures to participate. We conclude that in environmental justice contexts special efforts should be made by mitigation planners and other stakeholders to finds ways of preventing mistrust to develop between program managers and affected populations. The results provide some suggestions that could be used to build trust. These include the provision of more mitigation alternatives, input in the way the buyout program is run, providing unified communication channels, and making sure owners feel that the price given for their home is fair. We argue that the tight connection between mitigation planning and community health potentially redefines mitigation as more than a hazard reduction tool, and instead providing opportunities for community development through public participation. We believe that in the case of eastern North Carolina, the overwhelming magnitude and surprise of the fall 1999 flood disaster complicated efforts

towards public participation, excluding alternative mitigation measures such as elevation, levees, or better drainage. Policy makers are therefore urged to keep mitigation a policy domain guided by proactive, participatory planning able to foster program ownership among those historically living in at risk areas.

REFERENCES

- Bates, Diane 2002. Environmental Refugees? Classifying Human Migrations Caused by Environmental Change. *Population and Environment*, 23(5):465-477.
- Burby, R., Bollens, S., Holloway, J., Kaiser, E., Mullan, D., and John Sheaffer. 1988. *Cities Under Water: A Comparative Evaluation of Ten Cities' Efforts to Manage Floodplain Land Use*. Institute of Behavioral Science, Monograph # 47, University of Colorado, Boulder, Colorado.
- Clarke Lee, Short James F. 1993 Social organization and risk: some current controversies. *Annual Review of Sociology*. 19:375-99.
- De Vries, D.H. 2002. *Place and crisis: cultural memory in the eastern North Carolinian floodplains*. Paper presented at the American Anthropological Association annual meetings, New Orleans, November 2002.
- Environmental Protection Agency 1994. Executive Order 12898 on Environmental Justice.
- Federal Emergency Management Agency 1998. *Property Acquisition Handbook for Local Communities*. FEMA, Washington, D.C.
- Fraser, J, Rohe, W., and D. Godshalk. 2003. *Implementing Floodplain Land Acquisition Programs in Urban Localities*. Washington, D.C.: Federal Emergency Management Agency.
- Freedman, S. 2000. Flooding from Hurricane Floyd: What's poverty and race got to do with it?. Masters paper, Department of Epidemiology.
- Freudenberg, William 1993. Risk and Recreancy: Weber, the Division of Labor, and the Rationality of Risk Perceptions. *Social Forces*, Vol. 71, No.4, 909-932.
- Godschalk, D., T. Beatley, P. Berke, D. Brower, and E. Kaiser. 1999. *Natural Hazard Mitigation: Recasting Disaster Policy and Planning*. Island Press: Washington, D.C.

- Handmer, J. 1985. *Acquisition and Relocation: The Australian Experience*. Center for Resource and Environmental Studies, Australian National University, Canberra.
- Hunter, Lori M. 2005. Migration and Environmental Hazards. *Population and Environment*, 26(4):273-302
- Kirschenbaum, A. 1996. "Residential Ambiguity and Relocation Decisions: Population and Area At Risk." *International Journal of Mass Emergencies and Disasters* 14(1):79-96.
- Kirschenbaum, A. 1992. "Warning and Evacuation during a Mass Disaster: A Multivariate Decision Making Model." *International Journal of Mass Emergencies and Disasters* 10(1):91-114.
- Missouri State Emergency Management Agency. 1995. *Out of Harm's Way: The Missouri Buyout Program*. MSEMA, Springfield, Missouri.
- Mileti, D. S., & Passerini, E. (1996). A social explanation of urban relocation after earthquakes. *International Journal of Mass Emergencies and Disasters*, 14(1), 97–110.
- Morrow-Jones, Hazel A. and Charles R. Morrow-Jones. 1991. "Mobility Due to Natural Disaster: Theoretical Considerations and Preliminary Analyses." *Disasters*. 15(2):126-132.
- National Wildlife Federation. 1998. *Higher Ground: A Report on Voluntary Property Buyouts in the Nation's Floodplains*. NWF, Washington, DC.
- Peacock, W. G., & Girard, C 1997. Ethnic and racial inequalities in hurricane damage and insurance settlements. Chapter 9. In W.G. Peacock, B. H. Morrow & H. Gladwin (Eds.), *Hurricane Andrew: Ethnicity, Gender and the Sociology of Disasters* New York, NY: Routledge pp. 171–205.
- Price-Spratlen, T., and L. Barrett. 1994. "Neighborhood Social Ties Influence Residential Mobility." *American Sociological Association Meeting Paper*.
- Smith, D., and J. Handmer. 1986. *Flood Warning in Australia: Policies, Institutions and Technology*. Centre for Resource and Environmental Studies, Canberra, Australia.
- Slovic P. 2000 *The perception of risk*. Earthscan Publications, London.

- Slovic, P., Kunreuther, H., and White, G. 1974 "Decision processes, rationality and adjustments to natural hazards." In: White, G. (ed.) *Natural Hazards*. Oxford University Press: New York.
- Weichselgartner, J. 2001. "Disaster mitigation: the concept of vulnerability revisited." *Disaster Prevention and Management*, Vol. 10, Number 2. 85-94.
- Wisner, B. 1993. "Disaster vulnerability: scale, power and daily life." *Geojournal* 30(32), 127-140.

Figure 1.

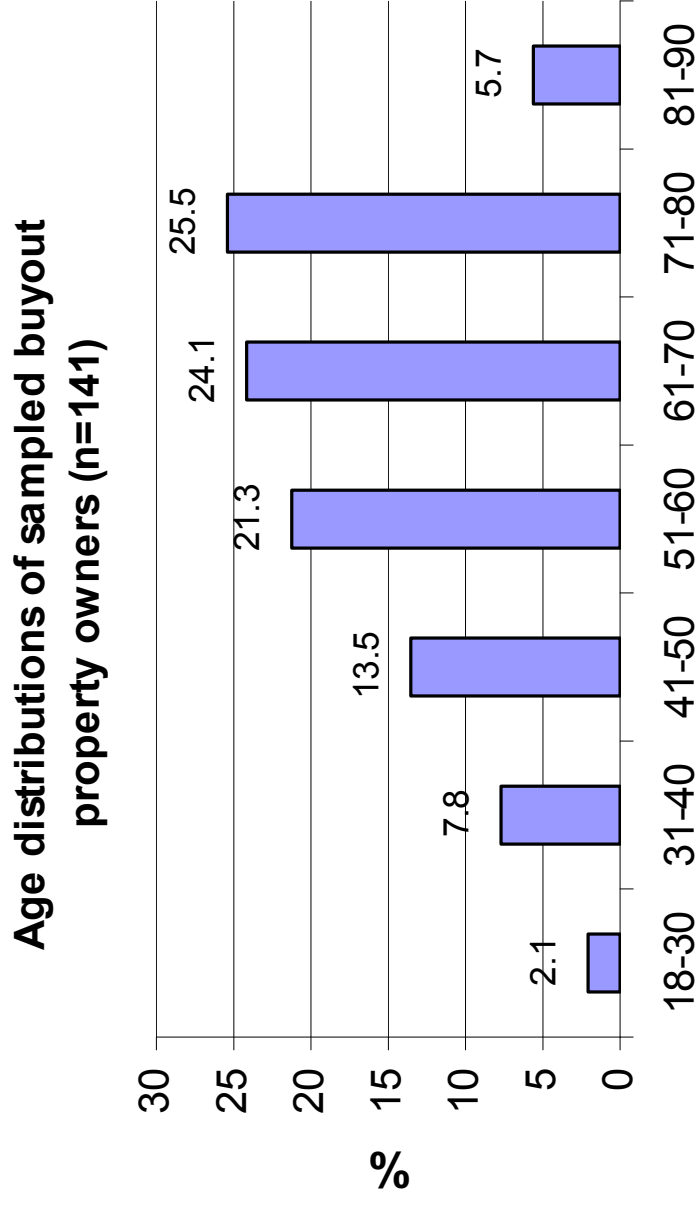
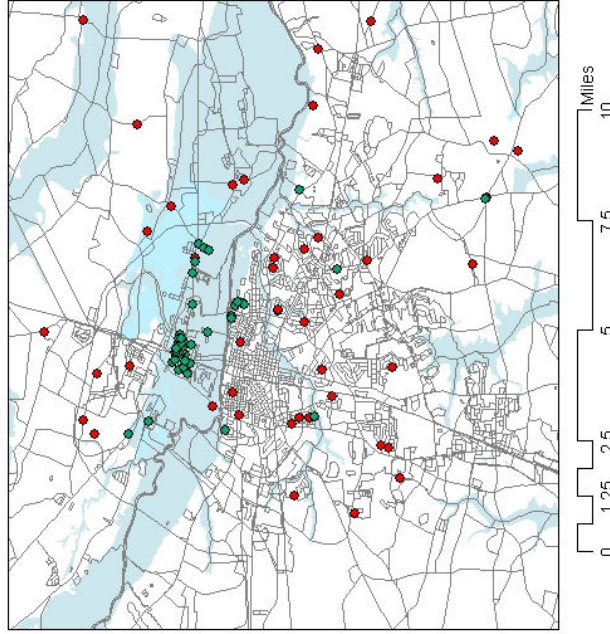


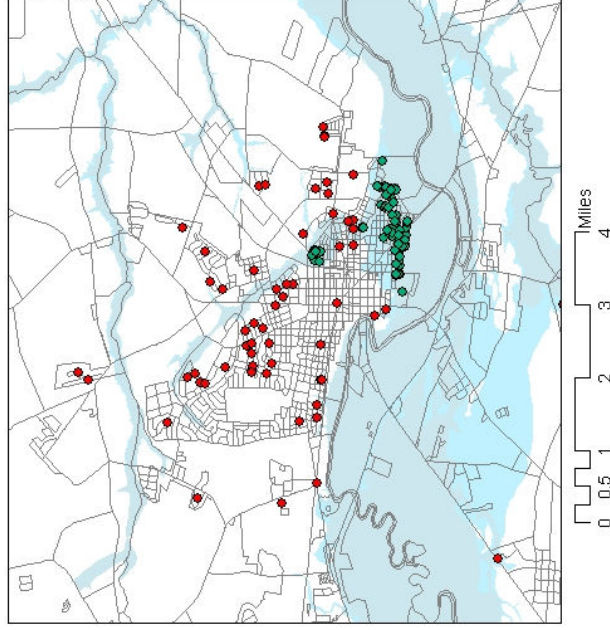
Figure 2.

Flooded (green) and relocated (red) addresses of surveyed homeowners after Hurricane Floyd buyout (1999) in the Cities of Kinston and Greenville (North Carolina, USA)

City of Greenville



City of Kinston



Flood Insurance Rate Map



Table 1: Significant Bivariate Associations among Dependent and Independent Variables¹

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) How difficult was it for you to make your decision to participate/not-participate in the buyout?	1	.233(**)	.199(*)	.172(*)	.214(*)	.198(*)	.413(**)	.321(**)	0.16	.266(**)	-.209(*)	-.242(*)
(2) At the time of the flood, was your home completely paid off, or did you owe money on your mortgage? (1=paid off, 2=owe)		1	0.109	0.133	0.167	-0.118	.167(*)	-0.101	-.277(**)	0.091	-.173(*)	-.501(**)
(3) How important were the opinions of your local government officials in making your decision about participating in the buyout?			1	.708(**)	.694(**)	-0.16	0.077	0.132	0.052	-0.027	-0.127	-0.17
(4) How important were the opinions of your housing counselors in making your decision about participating in the buyout?				1	.690(**)	.173(*)	0.091	0.095	0.06	-0.008	-0.037	-.286(*)
(5) How important were the opinions of your city planners in making your decision about participating in the buyout?					1	-0.085	0.031	0.032	0.132	-0.058	-0.057	-0.08
(6) Did you feel that participation in the buyout program was voluntary?						1	-.215(**)	-0.055	0.102	-0.108	0.116	.270(*)
(7) How much pressure, if any, did you feel to participate in the buyout program?							1	0.096	-0.124	0.147	-0.038	-.291(*)
(8) How much opposition, if any, was voiced by residents regarding how the buyout program was handled?								1	0.141	0.028	-.186(*)	-0.014
(9) In your opinion, how fair was the price offered for your home?									1	-0.056	.351(**)	.289(*)
(10) From the time you heard about the buyout, how long did it take for you to make a decision?										1	-0.138	-0.185
(11) How satisfied were you with how the buyout went overall?											1	0.13
(12) How long had you been at your job at the time of the flood?												1

¹Variable scales range from 1 (not much) to 4 (a lot), (*) Correlation significant at the 0.05 level, (**) Correlation significant at the 0.01 level.

Table 2. Regression results (unstandardized coefficient in parentheses) for the effect of various survey variables on the difficult to participate in the buyout

(Constant)	(-1.3)
At the time of the flood, was your home completely paid off, or did you owe money on your mortgage? (1=not paid off, 2=owed money)	0.28 (0.55)**
How much pressure, if any, did you feel to participate in the buyout program? (1=not much, 4=a lot)	0.41 (0.44)**
Trust & Fairness scale*** (1=not fair, 4=very fair)	0.21 (0.08)**
How much opposition, if any, was voiced by residents regarding how the buyout program was handled? (1=not much, 4=very much)	0.24 (0.27)**
Had your home been flooded before? (1=no, 2=yes)	0.17 (0.44)*

(*) Correlation significant at the 0.05 level, (**) Correlation significant at the 0.01 level.

(***) A "trust and fairness" scale was computed based on the questions "How much input did you feel flooded residents had in the way the city's buyout program was run?"; "How much did you trust the people running the buyout program?"; "How confident were you that local government officials had the best interest of your neighborhood in mind?"; and "In your opinion, how fair was the price offered for your home?" (Cronbach's Alpha=.838).