

International Journal of Mass Emergencies and Disasters  
March 2012, Vol. 30, No. 1, pp. 1–33.

**Citizenship Rights and Voluntary Decision Making  
in Post-Disaster U.S. Floodplain Buyout Mitigation Programs**

**Daniel H. de Vries**

Department of Sociology and Anthropology  
University of Amsterdam

and

**James C. Fraser**

Department of Human and Organizational Development  
Vanderbilt University

**Email:** d.h.devries@uva.nl

*Since the 1990s, the United States Federal Emergency Management Agency (FEMA) has promoted voluntary “buyout” programs to relocate property owners out of floodplains. In this paper we evaluate perceived voluntariness of these initiatives. We use local mitigation official interviews and property owner surveys conducted in four post-disaster buyout program sites. We show that there is considerable variability in property-owner’s experience of buyout programs and their sense of voluntariness, despite high buyout acceptance rates. We find that the paradox facing program managers is that buyout participants perceive the process to be less voluntary compared to those who did not accept the offer. Because local mitigation officials simultaneously act in the interest of the government while working with flooded property owners, voluntariness is not guaranteed. Low social capital of flood victims tends to lead to situations where buyouts are successfully expedited during post-crisis, temporal “windows of opportunity” and local perceptions of voluntariness are compromised.*

**Keywords:** disaster; mitigation; buyouts; rights; voluntariness

**Introduction**

In light of the anticipated impact of seawater rise and increasing intensity of natural hazards impacting many, mostly urban, coastal and riverine communities, the potential government intervention scenario of purchasing property in these hazard-prone areas (Mustafa 2005) and relocating homeowners out of harm’s way is of increasing interest

(Perry and Lindell 1997; Fraser, Rohe and Gotschalk 2003; Bates 2002; Hunter 2005; Fraser, Doyle and Young 2006). From a policy perspective, “buyouts”, or home acquisition and homeowner relocation programs, are a preferred mitigation method when it concerns hazards that are not solvable using structural mitigation measures or where forewarning is insufficient for evacuation. Since the 1990s, FEMA has promoted floodplain buyout programs under its Hazard Mitigation Grant Program (HMGP) with the aim of preventing future death or injury (Schneider and Klise 1995). Buyout programs also obtain future monetary saving because emergency response costs are lowered and/or government-subsidized hazard insurance programs need not pay for repeated insurance losses (Perry and Lindell 1997). The popularization of buyout programs by FEMA and within the hazard mitigation field overall also includes the political framework of devolution of decision making power from the federal government—in this case FEMA—through regional and state levels of government to localities that experience flooding (Burby et al. 1988; FEMA 1998; Conrad, McNitt and Stout 1998; Gotschalk et al. 1999; U.S. House of Representatives 1994).

In compliance with federal legislation, property rights within devolved buyout programs are expressly protected through a mandate that preserves a citizen’s right to refuse a mitigation offer, thus rendering the program voluntary. For this reason, FEMA has mandated that all buyouts remain voluntary on the part of the property owner and has established requirements to be met before a community qualifies for FEMA buyout grants. One of the three basic requirements is that the local community must inform qualifying property owners interested in the acquisition grant program that the community will *not* use its condemnation authority to purchase their property and that participation in the program is *strictly voluntary*. This is guaranteed in the “Statement of Voluntary Participation for Acquisition of Property of Open Space” (FEMA 2007). In the context of devolution, successful buyout programs deal with a careful weighing of administrative goals relative to social contexts of the populations affected. But here lies a contradiction. While at the local government level buyouts achieve risk and cost reductions, at a community level risk reductions have to be weighed against long-term social and economic impacts that are potentially severe.

Dissolving entire neighborhoods via acquisition and relocation programs is the most socially dramatic and permanent solution to floodplain de-population compared to alternative measures including structural mitigation (e.g., levees), home elevation, second-story conversion (i.e. the homeowner moves upward within his house), or flood proofing. Social impacts can include disruption of community relationships, ecological stress, crowding in new environments, and psychological anxiety (Riad and Norris 1996). Particularly vulnerable to these impacts are elderly and minorities who, when uprooted from key support systems such as families, social services, and health care facilities, are increasingly isolated (Rohe and Mouw 1991; Najarian et al. 2001; Sanders, Bowie and Bowie 2003). Elderly minority adults in urban areas in particular are often the victims of

forced relocation (Skinner 1992). Many such adults have been “aging in place” without having choices concerning where they will move in the future. Buyouts can severely impact the extent to which a community stays intact and impact participants’ quality of life by increasing the distance from their customary places of work, shopping, worship and medical care (Perry and Lindell 1997). Further, relocation becomes politically less feasible as the historical and geographic uniqueness of a site increases (Riad and Norris 1996; Menoni and Pesaro 2008).

Working within the social community context, buyout managers are faced with the difficult task of evaluating alternative mitigation options, taking into consideration local planning agendas, and respecting citizens’ property rights. If there is sufficient support within the locality for a buyout program, municipal officials submit an application for HMGP funds demonstrating that a buyout program has been determined to be the most cost-effective mitigation strategy. The state then reviews the applications, prioritizes projects, and forwards the applications to FEMA, usually the regional office. FEMA reviews applications to ensure they meet the eligibility criteria (e.g. the project is environmentally sound, cost-effective, and reduces future risks from natural hazards). Typically the acquisition of substantially damaged homes—where the cost to repair the home is more than 50 percent of its value before the flood—is deemed cost-effective.

Once the application has been approved, the state—working through the local government—orchestrates the buyout process. FEMA contributes 75 percent of the total cost of a buyout, while some combination of state, county, municipal government support provides the remaining 25 percent match—which can be cash or in-kind contributions. Through individual buyout offer negotiations, homeowners are offered pre-flood fair market value for their homes as determined by a licensed appraiser, including payment of closing and real estate transaction costs. Under the best of circumstances, the process takes an average of at least 7-18 months to complete (FEMA 1998; Fraser et al. 2003). Homes purchased with HMGP funds are mandated for demolition or moved out of the floodplain. By law, any property purchased under the program must remain as open space in perpetuity. The locality has the option to use these lands to create public parks, wildlife refuges, camping areas, etc., but not to develop the land or sell it to private individuals, and restrictions on future uses are included in all land deeds.

A true voluntary mitigation program is a process in which a population—including marginal groups—meets with authorities to share, negotiate and control decisions in the development of a project affecting their livelihood and in its subsequent implementation (Menoni and Pesaro 2008). In a devolved policy context, this implies both an increase in access to models of participation and an increase in credence given by governments to the views and opinions of citizens. Based on the policy-intended practice of informed consent and the need to protect citizen rights, one of the key questions that rises in the context of buyout mitigation offers is the extent to which homeowners in fact are able to

make informed decisions and participate on a voluntary basis. What does voluntary choice mean in a post-disaster context? Is this an achievable goal?

In this paper, we describe data collected from four floodplain buyout mitigation programs across the United States to evaluate the extent to which these buyout programs were implemented in a truly voluntary manner. All four programs were highly successful interventions through which nearly 90 percent of the homeowners who received an offer of mitigation were bought out. Several papers have circulated that have applauded these successes, in particular those looking at the program in the City of Kinston, North Carolina (NCDEM 1999; FEMA 2003; Olivera 2006). Yet the success rate was not without reluctance, resistance, or remorse among a sizable proportion—about one third—of the property owners who reported having felt forced into participation and would have preferred to have had the opportunity to rebuild (repair) their property if given a chance (Fraser et al. 2003). *The question we explore is why property owners participated in the buyout program despite their opposition. More specifically, to what extent did homeowners who decided to accept buyout offers perceive their choice as voluntary?* This important dimension of mitigation programs is based upon the legal-judicial requirement of voluntary participation, and takes on even more significance in light of the fact that lower socioeconomic status property owners are more likely to be offered buyouts because they tend, more so than higher socioeconomic populations, to live in areas prone to flooding (Peacock and Look 1997; Bolin and Bolton 1986; Tobin et al. 2006). Further, lower socioeconomic populations typically have a weaker relationship with governmental support structures and can therefore experience difficulty when exercising their democratic rights (Čapek 1993; EPA 1994). In such social and environmental (in-)justice contexts, our research question takes on an ethical dimension, that is, *to what extent are buyouts programs characterized by fair treatment and public participation?*

Few studies of FEMA mitigation efforts have examined the influence of social relationships between program participants and buyout mitigation planners in mitigation decision-making contexts (Kick et al. 2011). In a descriptive study concerning an African-American community in the United States where a buyout program was organized after the community was designated a contaminated “superfund” site, Čapek (1993) shows how dismay at the low prices offered was matched by a strongly negative reaction to perceived coercion and to breaches of some of legal requirements. The result was a split in the community over the buyout proposal, which as Čapek argues, was not adequately funded or organized. But this study is an exception. The vast majority of studies tend to conceptualize decision making as an individualized process. In one of the few models created to account for buyout decision making in a floodplain context, Smith and Handmer (1986) emphasize hydrological (e.g., flood frequency and intensity), economic (e.g., buyout acquisition price and availability of equivalently priced houses out of the floodplain), and social psychological factors such as risk perception, perceived

personal benefits of relocation, and attachment to community (Smith and Handmer 1986; Handmer 1985). Kirschenbaum (1996) finds that residential density, educational level, and income (measured by proxy of car ownership) and fears and emotions that directly touch residents and immediate family members—particularly children—and typically include a sense of helplessness, are significant predictors of relocation intent after disaster. In regards to the elderly, perceived decision-making control appears to reduce their anxiety over relocation, especially when complemented by certainty of outcomes, family support, and feelings of not being rushed (Reinardy 1995). Several other studies have similarly emphasized such a psychological perspective. Residents might decide not to relocate out of hazard-prone areas because the "familiar" is better than the "unknown," relative unawareness of past hazard impacts, lack of concern regarding rare events, or disbelief of impacts motivated by the perceived benefits of living in relatively affordable place (Slovic, Kunreuther and White 1974; Kirschenbaum 1992; Lupton, 1999; Slovic 2000). Menoni and Pesaro (2008) suggest that as residents are far less concerned with rare events—no matter how potentially disastrous these might be—investment in flood prevention happens mostly only after residents frequently experience hazards. Other theorists have focused on socio-demographic dimensions such as lower motivation for relocation among residents without children or who are longer-term residents with greater community attachment (Shriver and Kennedy 2005).

What we can infer from this review is that knowledge about buyout decision making in a floodplain context has yet to focus on the social relationships between residents and mitigation/city officials and the power dynamics between these actors. Sociologists of risk have increasingly focused on the notion of social capital as indicative of the level to which a community is able to be resilient in the face of adversity (Freudenberg and Jones 1999; Shriver and Kennedy 2005). Conceptualizations of social capital are concerned with levels of trust, associations, and norms of reciprocity among groups and individuals (Ritchie and Gill 2007). Applied to the buyout context, social capital can be an important influence as it fosters networks of support built on shared histories of place and community identities (Waldram 1987; Oliver-Smith 1996). The quality of social capital found in a given community can influence the fairness and equity of buyout processes carried out by external actors coordinating and managing relocation efforts (Clarke and Short 1993; Freudenberg 1993; Perry and Lindell 1997). In a devolved decision-making context where low-income groups with relatively little social capital negotiate programmatic input with buyout managers, the risk that expert knowledge overrides true participatory planning programs has been documented in prior studies (Lupton 1999; McCann 2002). "Experts" managing buyout processes carry responsibilities to the government or organization for whom they work, which is often both their employer and a stakeholder in the decision being made. This situation may result in a process in which community involvement is muted and outcomes are more heavily determined by institutions that organize and manage the process (Raco 2000). Because citizen

participants are volunteers in the process with their own jobs and responsibilities, their level of involvement is impacted by such factors as the advertising, scheduling, and location of meetings. The influence of such process factors on the ethics of buyout participation has been referred to by Freudenberg (1993) as a “recreancy perspective”, which focuses on the extent to which institutional actors are able to carry out their responsibilities with the degree of vigor necessary to merit the societal trust they enjoy. He finds that in the case of locating facilities for handling nuclear waste, recreancy explained three times as much variance in levels of concern as did socio-demographic or ideological variables combined.

Following this overview of existing literature, we expect that voluntary participation in buyouts is associated with homeowners who have the following characteristics:

- Relatively high risk awareness resulting from regular flood experience, relatively low familiarity with the community, relatively few financial housing benefits for remaining, and self-efficacy of process (particularly among elderly);
- Relatively high family size (in particular, the presence of children), high income and education, and younger age (or shorter duration of living in the neighborhood);
- Relatively high perceived price fairness of the buyout acquisition and higher perceived sufficiency of equivalently priced alternative housing; and
- Relatively high social capital to influence the fairness and equity of buyout processes and higher trust in experts and institutional actors carrying out the buyout program.

In the remainder of this paper, we will explore why property owners participated voluntarily and what the relative contribution of perceived voluntariness was in buyout programs studied.

## **Method**

### **Sample**

The study was conducted in four North American urban floodplains in the cities of Grand Forks, North Dakota; San Antonio, Texas; and Kinston and Greenville, North Carolina (Fraser et al. 2003). In each locality, key informant interviews were conducted with buyout officials followed by a telephone survey of property owners who had been offered a buyout. Each site studied had experienced a major flood within a couple of years preceding the survey and subsequently participated in a FEMA-sponsored buyout program. Sites chosen represented various geographical regions of the country, differed in size, had large buyout programs (over 300) still in operation, and began within two years of each other. Table 1 shows selected characteristics of all four sites.

Data collection occurred in two phases. First, a team of trained researchers spent a week conducting semi-structured interviews with key informants at each of the four sites. The research team consisted mostly of senior sociologists (males) who were familiar with issues of urban and regional planning and were assisted by a female research associate. Interviews were conducted with typically two team members present, in all cases including one senior researcher. The interview sample included municipal officials, nonprofit staff from a range of organizations, as well as Community Development Corporation (CDC) staff involved as housing counselors. In all, 60 interviews were conducted, that each averaged 1.5 hours in length. The interviews included questions about the people and organizations involved in conducting each buyout program, perceptions about how the buyout process worked in their city, and recommended improvements for buyout program participation.

**Table 1: Size of Buyout Program in Study Localities**

| Site                       | Disaster, Year                | Characteristics   | Properties mitigated | Properties Sampled |
|----------------------------|-------------------------------|---|----------------------|--------------------|
| Greenville, North Carolina | Hurricane Floyd, 1999         | <ul style="list-style-type: none"> <li>• High demand for rental units due to University rental economy challenging buyout</li> <li>• Difficulties finding affordable housing</li> <li>• Conflicts between housing counselors/local government</li> </ul>  | N=450                | n=63               |
| Kinston, North Carolina    | Hurricane Floyd, 1999         | <ul style="list-style-type: none"> <li>• Minority, low-income neighborhoods</li> <li>• Second buyout attempt within three years</li> <li>• High rate of participation</li> <li>• Conflicts between housing counselors/local government</li> </ul>   | N=700                | n=89               |
| Grand Forks, North Dakota  | Great Flood of 1997           | <ul style="list-style-type: none"> <li>• Contested negotiation over dike line placement</li> <li>• Replacement subdivision housing contested</li> <li>• Communication and trust building seen as success factors</li> </ul>   | N=800                | n=106              |
| San Antonio, Texas         | San Antonio river flood, 1998 | <ul style="list-style-type: none"> <li>• Difficulties City in justifying delayed FEMA commitment of financial support</li> <li>• Low-income neighborhoods</li> <li>• Difficulties coordinating among agencies</li> <li>• Mistrust among residents but effective use of housing counselors key to success</li> </ul> | N=400                | n=58               |

In the second phase, the project team conducted a telephone survey of households in each site who were eligible to participate in their city's buyout program (see sample size in Table 1). The sampling population was determined by the geographical boundaries of each of the four localities to determine household eligibility (i.e., those that fall within 100-year floodplain areas). A complete list of all eligible households was obtained from local officials and used for random sampling of telephone respondents. 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. Because more households typically express *desire* to relocate as a result of hazard events than actually do eventually relocate (Hunter 2005), only those households who were given a formal offer of participation and had made a decision to relocate or not were eligible for study participation. Selected households were first sent a letter explaining the study and inviting respondents to participate, after which they were approached by telephone. The average duration of telephone conversations was 30 minutes, and participation followed standard informed consent procedures, including confidentiality of responses.

The total sample size from all cities was 316 respondents, with a response rate of just over 70%. Of this total, 89% participated in the buyout and 11% did not. Before the flood, sampled property owners had lived on average 17.5 years in their neighborhood ( $SD = 0.8$ ) and 16 years in their homes ( $SD = 0.75$ ). Almost all of the homes involved (89%) were detached, single family homes, of which 38% of the respondents had paid off their mortgages.

### **Quantitative Measures**

Results from qualitative interviews were used to construct the quantitative telephone questionnaires. After verifying buyout status and program participation, the telephone survey started with a pre-flood neighborhood satisfaction assessment, including questions regarding the length of residence, type of dwelling, number of people living in the household, status of mortgage (paid off/not paid off, as well as number of years), and attitudinal questions measuring neighborhood satisfaction across four-point Likert-scale response categories (“Strongly Agree” through “Strongly Disagree”). Afterward, information was obtained about the relative levels of damage: perceived damage in the neighborhood and to the home, inches of water inside the home, ability to live inside the home, condemnation status, and if repairs were made after the event. Questions also asked how long it took after the event until respondents were approached to participate in the buyout (less than one month through over six months) and how many months it took from the time respondents signed up for the buyout program until they received a check for their home. Next, the telephone survey asked about the complexity of decision making, including the importance of the opinion of external stakeholders on their decision-making process. This question used Likert-scale responses to address the influence of neighbors, family members/relatives/kin, local government officials, housing counselors, city planners, staff from churches or religious organizations, and other neighborhood or community staff. Questions about decision-making influences were followed by factors respondents took into consideration when deciding whether to participate in the buyout program. These included Likert-scale measures of the likelihood of future flooding, as well as concerns about being able to find affordable housing, leaving the neighborhood, and going into greater debt after participation. Residents

provided binary responses about whether they were provided alternative choices to the buyout, if they would have stayed and rebuilt their homes if given the chance to do so, and if they felt that participation in the buyout program was voluntary. Further Likert-scale attitudinal questions included questions regarding perceived clarity of information, pressure (if any) felt to participate, levels of input in the way the city's buyout program was managed, trust towards the people managing the buyout program, confidence that local government officials had the best interests of the neighborhood in mind, perceived opposition by residents to the buyout (if any), perceived fairness of the price offered for the acquired home, perceived difficulty of making the decision to participate in the buyout (including length of time), and finally how satisfied they felt with the overall buyout program.

The demographic variables comprised questions about each respondent's age (using categories 18-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 90 and over), gender, number of people living in the buyout offer property at the time of the flood (including the number of adults and children), ethnic identity (Multiracial, Native American, Asian, African-American, Caucasian, or Hispanic), education level (the number of years a respondent had been in formal schooling), employment at the time of the event (employed/not-employed), and finally, yearly household income prior to taxes right after the flooding. Table 2 provides household characteristics of the respondents.

### **Data Analysis**

Interviews were transcribed and coded for content using a qualitative software analysis program, whereby meaningful classifications were obtained in which to categorize responses. Quantitative results were analyzed using a basic descriptive statistics and correlation analysis. Table 3 shows descriptive statistics for variables in the survey used in this paper.

Analysis of variance and  $\chi^2$ -square tests were employed to explore significant patterns between the attitudinal and sociodemographic variables of the group of respondents who perceived the buyout as voluntary and those who perceived it as involuntary (a binary variable). A number of qualitative responses included in the telephone survey were analyzed and classified in meaningful categories using Excel. Table 4 shows the intercorrelations among the measures included in the study. A number of variables expectedly are highly associated as they cover similar general meanings, such as damages (#6 through #10), relative importance of opinions various others (#12 through #15), and perception of social inclusion and trust (#16 and 21 through 24). A few site differences can be discerned from the correlations. Property owners in Kinston appeared more inclined to be influenced by the opinions of others relative to the other sites. In Greenville, there appeared to be a higher association between perceptions of voluntariness relative to the other sites. In Grand Forks where household income is relatively higher and others' opinions were noted to be relatively less important, more

opposition occurred. San Antonio distinguished itself by relatively lower damage perceptions, less trust, more years left on the mortgages, and a larger Hispanic population. It can be concluded from this that the four sites are historically different in their social-demographic orientations and that while the statistical conclusions made in this paper have to be seen as averages *across* sites denoting general tendencies that are, in no way, intended to undermine the historical specificity of local conditions.

**Table 2. Sample Socio-demographic Characteristics**

| <b>Variables</b>      | <b>Frequency</b> | <b>Percent</b> | <b>Variables</b>                       | <b>Frequency</b> | <b>Percent</b> |
|-----------------------|------------------|----------------|--|------------------|----------------|
| <i>Household Size</i> |                  |                | <i>Education in years</i>              |                  |                |
| 1.00                  | 76               | 24.1           | 4.00                                   | 1                | .3             |
| 2.00                  | 106              | 33.5           | 5.00                                   | 1                | .3             |
| 3.00                  | 40               | 12.7           | 7.00                                   | 4                | 1.3            |
| 4.00                  | 43               | 13.6           | 8.00                                   | 6                | 1.9            |
| 5.00                  | 21               | 6.6            | 9.00                                   | 11               | 3.5            |
| 6.00                  | 9                | 2.8            | 10.00                                  | 13               | 4.1            |
| 7.00                  | 6                | 1.9            | 11.00                                  | 8                | 2.5            |
| 8.00                  | 3                | .9             | 12.00                                  | 93               | 29.4           |
| Missing               | 12               | 3.8            | 13.00                                  | 15               | 4.7            |
| <i>Ethnicity</i>      |                  |                | 14.00                                  | 42               | 13.3           |
| African-American      | 110              | 34.8           | 14.50                                  | 1                | .3             |
| Caucasian             | 177              | 56.0           | 15.00                                  | 10               | 3.2            |
| Hispanic              | 19               | 6.0            | 16.00                                  | 72               | 22.8           |
| Missing               | 10               | 3.2            | 17.00                                  | 2                | .6             |
| <i>Age</i>            |                  |                | 18.00                                  | 15               | 4.7            |
| 18-30                 | 7                | 2.2            | 20.00                                  | 4                | 1.3            |
| 31-40                 | 52               | 16.5           | 22.00                                  | 2                | .6             |
| 41-50                 | 68               | 21.5           | Missing                                | 16               | 5.1            |
| 51-60                 | 58               | 18.4           | <i>Household Income prior to taxes</i> |                  |                |
| 61-70                 | 52               | 16.5           | Under 10K                              | 16               | 5.1            |
| 71-80                 | 52               | 16.5           | 11K-20K                                | 40               | 12.7           |
| 81-90                 | 10               | 3.2            | 21K-30K                                | 70               | 22.2           |
| 91 or over            | 1                | .3             | 31K-40K                                | 55               | 17.4           |
| Missing               | 16               | 5.1            | 41K-50K                                | 41               | 13.0           |
| <i>Employment</i>     |                  |                | 51K-60K                                | 27               | 8.5            |
| Not Employed          | 98               | 31.0           | 61K-70K                                | 7                | 2.2            |
| Employed              | 206              | 65.2           | 71K and up                             | 12               | 3.8            |
| Missing               | 12               | 3.8            | missing                                | 35               | 11.1           |

**Table 3: Descriptive Statistics Telephone Survey Results**

| #  | Variable  | M   | SD  | N   |
|----|---|-----|-----|-----|
| 1  | Buyout Status (1 = participated, 2 = not participated)  | 1.1 | .3  | 316 |
| 2  | Kinston (dummy)   |     |     | 316 |
| 3  | Greenville (dummy)  |     |     | 316 |
| 4  | Grand Forks (dummy)   |     |     | 316 |
| 5  | San Antonio (dummy)   |     |     | 316 |
| 6  | How extensive was the damage to your neighborhood due to the flooding? (1 = not at all – 4 = very)  | 3.8 | .4  | 313 |
| 7  | How extensive was the damage to your home due to the flooding? (1 = not at all – 4 = very)  | 3.8 | .5  | 313 |
| 8  | Were you able to live in your home after the flood? (1 = no, 2 = yes)   | 1.1 | .3  | 314 |
| 9  | Was your home condemned after the flood? (1 = no, 2 = yes)  | 1.7 | .4  | 303 |
| 10 | Did you make any repairs to your home after the flood? (1 = no, 2 = yes)  | 1.1 | .3  | 314 |
| 11 | I felt I was an accepted part of the neighborhood (1 = strongly disagree – 4 = strongly agree)  | 3.6 | .5  | 293 |
| 12 | How important were the opinions of your neighbors in making your decision about participating in the buyout? (1 = not at all – 4 = very)                                | 1.9 | 1.1 | 306 |
| 13 | How important were the opinions of your family members in making your decision about participating in the buyout? (1 = not at all – 4 = very)                           | 2.1 | 1.3 | 307 |
| 14 | How important were the opinions of your housing counselors in making your decision about participating in the buyout? (1 = not at all – 4 = very)                       | 1.7 | 1.1 | 299 |
| 15 | How important were the opinions of your city planners in making your decision about participating in the buyout? (1 = not at all – 4 = very)                            | 1.8 | 1.1 | 302 |
| 16 | How important was the likelihood of future flooding in making your decision about participating in the buyout? (1 = not at all – 4 = very)                              | 2.6 | 1.3 | 313 |
| 17 | How clear was the information presented to you about the buyout? (1 = not at all – 4 = very)  | 3.0 | 1.0 | 310 |
| 18 | How long did it take after the flood until you were approached to participate in the buyout? (1 = less than a month, 2 = 1-3 months, 3 = 4-6 months, 4 = over 6 months) | 2.4 | 1.1 | 302 |
| 19 | Did you feel that participation in the buyout program was voluntary? (1 = no, 2 = yes)  | 1.7 | .5  | 312 |
| 20 | Were you provided with alternative choices to the buyout? (1 = no, 2 = yes)   | 1.2 | .4  | 309 |
| 21 | How much pressure, if any, did you feel to participate in the buyout program? (1 = no, 2 = not a lot, 3 = some, 4 = a great deal)                                       | 1.9 | 1.1 | 313 |
| 22 | How much did you trust the people running the buyout program? (1 = not at all – 4 = very)   | 2.7 | 1.1 | 310 |
| 23 | How confident were you that local government officials had the best interest of your neighborhood in mind? (1 = not at all – 4 = very)                                  | 2.6 | 1.1 | 304 |
| 24 | How much input did you feel flooded residents had in the way the city's buyout program was run? (1 = not at all – 4 = very)   | 2.1 | .9  | 291 |
| 25 | In your opinion, how fair was the price offered for your home? (1 = not at all – 4 = very)  | 2.7 | 1.0 | 309 |
| 26 | How much opposition, if any, was voiced by residents regarding how the buyout program was handled? (1 = not at all – 4 = very)  | 2.4 | 1.0 | 293 |

**Table 3: Descriptive Statistics Telephone Survey Results (Continued)**

|    |   |      |      |     |
|----|---|------|------|-----|
| 27 | Would you have stayed and rebuilt if you had been given a chance to? (1 = no, 2 = yes)  | 1.4  | .5   | 305 |
| 28 | How difficult was it for you to make your decision to participate/not-participate in the buyout? (1 = not at all – 4 = very)              | 1.9  | 1.0  | 312 |
| 29 | Now I'd like to know your age (10 year increments: 1 = 18–30, 2 = 31–40, 3 = 41–50,... 8 = 91+)   | 4.0  | 1.5  | 300 |
| 30 | Including yourself, how many people lived in your household at the time of the flood? (number)  | 2.6  | 1.6  | 307 |
| 31 | How many years left on mortgage? (number)   | 9.1  | 10.8 | 254 |
| 32 | At the time of your decision to participate/not participate in the buyout program, were you employed or not employed? (1 = no, 2 = yes)   | 1.7  | .5   | 304 |
| 33 | How long had you been at your job at the time of the flood? (1 = less than 1 year, 2 = 1-5 years, 3 = 6-10, 4 = 11-15, 5 = over 15 years) | 3.2  | 1.3  | 203 |
| 34 | What is the highest level of education you have completed?  | 13.5 | 2.8  | 300 |
| 35 | Household Income prior to taxes right after flood. (increments of \$10K, 1 ≤ \$10K – 8 ≥ \$71K)   | 3.9  | 1.7  | 268 |
| 36 | Hispanics (dummy)   |      |      | 305 |
| 37 | African/Americans (dummy)   |      |      | 316 |
| 38 | Caucasians (dummy)  |      |      | 316 |

To evaluate the relative contribution of voluntariness to decision making, we conducted a logistic regression analysis using the choice to participate in the buyout program as the dependent variable. For the selection of variables we used a purposeful selection process (Bursac et al. 2008). In addition to selecting significant covariates, this algorithm retains important confounding variables—resulting in a possibly slightly richer model. Further, as the model works well for samples in the range of 240–600, it is suitable for this survey. Dummy-coded variables were included in the logistic regression analysis to take into account the influence of location on the results. The purposeful selection process begins by a univariate analysis of each variable as a candidate for the multivariate analysis. Bursac et al. (2008) suggest using a *p*-value cut-off point of 0.25, as more traditional levels such as 0.05 can fail in identifying variables known to be important. Building the multivariate model, an iterative process of variable selection is used in which covariates are removed from the model if they are non-significant and not a confounder, with significance evaluated at the 0.1 alpha level and confounding as a change in any remaining parameter estimate greater than 15% as compared to the full model. At the end of this iterative process of deleting, refitting, and verifying, the model contains significant covariates and confounders. At this point we added any variable not selected for the original multivariate model back one at a time, with significant covariates and confounders retained earlier. Any that are significant at the 0.1 or 0.15 level are put in the model, and the model is iteratively reduced as before but only for the variables that were additionally added.

## De Vries & Fraser: Floodplain Buyout

**Table 4: Correlations Among Variables\***

| Variable | 1            | 2            | 3            | 4            | 5            | 6            | 7            | 8            | 9            | 10           | 11           | 12           | 13           | 14           | 15           | 16           | 17           | 18           | 19           | 20    | 21           | 22           | 23           | 24           | 25           | 26         | 27           | 28    | 29           | 30         | 31           | 32           | 33           | 34           | 35           | 36           | 37           | 38  |  |  |  |
|----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------|--------------|--------------|--------------|--------------|--------------|------------|--------------|-------|--------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----|--|--|--|
| 1        | 1.0          |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 2        | <b>-0.11</b> | 1.0          |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 3        | .10          | <b>-0.31</b> | 1.0          |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 4        | <b>-0.21</b> | <b>-0.44</b> | <b>-0.35</b> | 1.0          |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 5        | <b>.28</b>   | <b>-0.30</b> | <b>-0.24</b> | <b>-0.34</b> | 1.0          |              |              |              |              |              |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 6        | -0.07        | -0.10        | .05          | <b>.24</b>   | <b>-0.24</b> | 1.0          |              |              |              |              |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 7        | -0.06        | -0.10        | .05          | <b>.25</b>   | <b>-0.24</b> | <b>.82</b>   | 1.0          |              |              |              |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 8        | <b>.13</b>   | <b>.17</b>   | -0.08        | <b>-0.20</b> | <b>.13</b>   | <b>-0.34</b> | <b>-0.49</b> | 1.0          |              |              |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 9        | <b>-0.10</b> | -0.07        | .06          | <b>.18</b>   | <b>-0.20</b> | <b>.53</b>   | <b>.53</b>   | <b>-0.50</b> | 1.0          |              |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 10       | <b>.15</b>   | <b>.12</b>   | .06          | <b>-0.20</b> | .05          | <b>-0.24</b> | <b>-0.30</b> | <b>.63</b>   | <b>-0.41</b> | 1.0          |              |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 11       | .03          | -0.05        | <b>-0.12</b> | <b>.15</b>   | .00          | <b>.32</b>   | <b>.28</b>   | -0.03        | <b>.16</b>   | .05          | 1.0          |              |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 12       | -0.02        | <b>.22</b>   | -0.09        | <b>-0.16</b> | .03          | <b>-0.17</b> | <b>-0.14</b> | .06          | -0.09        | .09          | -0.07        | 1.0          |              |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 13       | -0.09        | <b>.16</b>   | -0.03        | -0.10        | -0.03        | -0.09        | -0.03        | .02          | -0.06        | .02          | .00          | <b>.74</b>   | 1.0          |              |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 14       | -0.02        | <b>.22</b>   | -0.06        | <b>-0.16</b> | .00          | <b>-0.24</b> | <b>-0.21</b> | .05          | <b>-0.15</b> | .07          | -0.09        | <b>.62</b>   | <b>.59</b>   | 1.0          |              |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 15       | -0.06        | <b>.26</b>   | .02          | <b>-0.24</b> | -0.03        | <b>-0.20</b> | <b>-0.12</b> | .02          | -0.10        | .10          | <b>-0.15</b> | <b>.70</b>   | <b>.60</b>   | <b>.76</b>   | 1.0          |              |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 16       | .00          | <b>.24</b>   | .01          | <b>-0.29</b> | .06          | <b>-0.11</b> | -0.08        | <b>.14</b>   | -0.10        | .09          | -0.06        | <b>.35</b>   | <b>.32</b>   | <b>.32</b>   | <b>.43</b>   | 1.0          |              |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 17       | <b>-0.22</b> | .04          | .01          | .10          | <b>-0.18</b> | <b>.13</b>   | .05          | -0.06        | <b>.16</b>   | -0.06        | -0.04        | <b>-0.17</b> | -0.06        | <b>-0.19</b> | -0.10        | -0.01        | 1.0          |              |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 18       | .10          | -0.05        | .04          | <b>-0.12</b> | <b>.15</b>   | <b>-0.14</b> | <b>-0.18</b> | <b>.13</b>   | <b>-0.21</b> | <b>.15</b>   | .06          | .03          | .03          | .04          | -0.02        | -0.07        | <b>-0.14</b> | 1.0          |              |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 19       | <b>.14</b>   | -0.02        | <b>.15</b>   | -0.09        | -0.02        | .04          | .01          | .04          | .04          | .07          | .00          | -0.07        | -0.03        | -0.05        | .00          | .05          | <b>.12</b>   | -0.01        | 1.0          |       |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 20       | .07          | -0.06        | <b>.19</b>   | <b>-0.12</b> | .01          | .04          | .02          | .07          | .04          | .10          | .03          | -0.07        | -0.11        | -0.04        | .03          | -0.01        | .05          | .04          | .07          | 1.0   |              |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 21       | .02          | <b>-0.12</b> | -0.06        | <b>.13</b>   | .04          | -0.09        | -0.02        | -0.02        | -0.07        | -0.03        | .02          | -0.05        | -0.04        | -0.04        | -0.06        | -0.09        | -0.06        | -0.08        | <b>-0.29</b> | -0.03 | 1.0          |              |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 22       | <b>-0.32</b> | <b>.20</b>   | .04          | .07          | <b>-0.35</b> | <b>.16</b>   | .11          | -0.01        | <b>.21</b>   | -0.01        | -0.03        | -0.06        | .04          | -0.09        | -0.02        | .05          | <b>.47</b>   | <b>-0.21</b> | <b>.17</b>   | .00   | <b>-0.14</b> | 1.0          |              |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 23       | <b>-0.23</b> | <b>.14</b>   | -0.03        | <b>.14</b>   | <b>-0.29</b> | <b>.14</b>   | .11          | -0.03        | <b>.16</b>   | -0.02        | -0.01        | -0.08        | .02          | -0.07        | -0.02        | .08          | <b>.36</b>   | <b>-0.17</b> | <b>.17</b>   | -0.04 | <b>-0.13</b> | <b>.82</b>   | 1.0          |              |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 24       | <b>-0.12</b> | .10          | .03          | .03          | <b>-0.18</b> | .04          | .02          | .07          | .08          | .05          | .00          | .08          | .10          | .01          | .04          | .10          | <b>.24</b>   | <b>-0.16</b> | .05          | .03   | -0.05        | <b>.55</b>   | <b>.51</b>   | 1.0          |              |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 25       | <b>-0.25</b> | .06          | .04          | .08          | <b>-0.21</b> | <b>.17</b>   | .10          | -0.08        | <b>.23</b>   | -0.05        | -0.04        | -0.09        | -0.03        | -0.10        | -0.03        | .01          | <b>.32</b>   | <b>-0.16</b> | .07          | .04   | -0.08        | <b>.57</b>   | <b>.62</b>   | <b>.38</b>   | 1.0          |            |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 26       | <b>-0.15</b> | -0.06        | -0.05        | <b>.24</b>   | <b>-0.17</b> | .11          | .09          | -0.02        | .09          | -0.05        | -0.01        | <b>-0.12</b> | -0.05        | <b>-0.12</b> | -0.11        | -0.10        | .05          | <b>-0.13</b> | -0.10        | .09   | <b>.20</b>   | <b>.17</b>   | <b>.25</b>   | <b>.23</b>   | <b>.35</b>   | 1.0        |              |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 27       | -0.03        | -0.09        | -0.03        | .09          | .02          | .01          | -0.02        | .02          | -0.03        | -0.01        | .04          | .02          | -0.02        | .03          | -0.03        | -0.09        | -0.06        | -0.06        | <b>-0.14</b> | -0.08 | <b>.11</b>   | -0.05        | -0.05        | -0.03        | -0.05        | <b>.13</b> | 1.0          |       |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 28       | -0.03        | .07          | .04          | <b>-0.18</b> | .09          | -0.10        | -0.07        | .04          | -0.05        | <b>.11</b>   | .04          | <b>.21</b>   | <b>.19</b>   | <b>.13</b>   | <b>.19</b>   | .05          | <b>-0.15</b> | .02          | <b>-0.16</b> | .04   | <b>.29</b>   | .03          | .04          | <b>.21</b>   | <b>.15</b>   | <b>.30</b> | <b>.14</b>   | 1.0   |              |            |              |              |              |              |              |              |              |     |  |  |  |
| 29       | .00          | <b>.22</b>   | <b>.19</b>   | <b>-0.19</b> | <b>-0.23</b> | <b>.17</b>   | .06          | .02          | .11          | -0.05        | .07          | .02          | .08          | -0.02        | .01          | <b>.13</b>   | .07          | -0.10        | <b>.16</b>   | .02   | <b>-0.12</b> | <b>.29</b>   | <b>.27</b>   | <b>.18</b>   | <b>.16</b>   | -0.02      | <b>-0.12</b> | -0.02 | 1.0          |            |              |              |              |              |              |              |              |     |  |  |  |
| 30       | -0.04        | -0.06        | <b>-0.13</b> | <b>.17</b>   | .00          | .06          | .10          | -0.09        | -0.03        | -0.02        | .06          | <b>.14</b>   | <b>.13</b>   | .06          | .10          | .02          | -0.01        | -0.01        | -0.04        | -0.02 | .08          | -0.04        | -0.09        | -0.03        | -0.08        | .03        | .04          | -0.04 | <b>-0.18</b> | 1.0        |              |              |              |              |              |              |              |     |  |  |  |
| 31       | .09          | <b>-0.20</b> | <b>-0.17</b> | .11          | <b>.31</b>   | <b>-0.23</b> | <b>-0.12</b> | .07          | <b>-0.19</b> | <b>.12</b>   | -0.11        | .07          | .02          | .05          | .05          | -0.05        | <b>-0.21</b> | .09          | <b>-0.21</b> | -0.01 | <b>.14</b>   | <b>-0.23</b> | <b>-0.21</b> | -0.12        | <b>-0.18</b> | .01        | .07          | .11   | <b>-0.50</b> | <b>.16</b> | 1.0          |              |              |              |              |              |              |     |  |  |  |
| 32       | .01          | <b>-0.19</b> | <b>-0.16</b> | .10          | <b>.26</b>   | <b>-0.12</b> | -0.04        | .00          | -0.05        | -0.03        | -0.05        | .01          | -0.08        | -0.04        | -0.06        | -0.08        | -0.09        | .11          | <b>-0.11</b> | .01   | .06          | <b>-0.26</b> | <b>-0.23</b> | <b>-0.12</b> | -0.09        | .03        | .07          | -0.01 | <b>-0.66</b> | <b>.16</b> | <b>.29</b>   | 1.0          |              |              |              |              |              |     |  |  |  |
| 33       | .03          | .03          | <b>.22</b>   | -0.02        | <b>-0.18</b> | <b>.19</b>   | <b>.14</b>   | -0.01        | <b>.22</b>   | -0.01        | -0.01        | -0.08        | -0.05        | -0.11        | -0.02        | .06          | <b>.21</b>   | <b>-0.22</b> | <b>.25</b>   | .02   | -0.13        | <b>.28</b>   | <b>.17</b>   | <b>.16</b>   | <b>.20</b>   | .10        | .06          | -0.10 | <b>.52</b>   | -0.10      | <b>-0.42</b> | <b>.12</b>   | 1.0          |              |              |              |              |     |  |  |  |
| 34       | -0.10        | <b>-0.20</b> | <b>-0.15</b> | <b>.27</b>   | .04          | .00          | .03          | <b>-0.13</b> | .04          | -0.08        | .06          | -0.04        | -0.10        | .02          | -0.01        | -0.05        | .04          | -0.02        | <b>-0.13</b> | .01   | .00          | -0.01        | -0.04        | .00          | .02          | .08        | .06          | -0.02 | <b>-0.28</b> | .06        | <b>.15</b>   | <b>.25</b>   | -0.04        | 1.0          |              |              |              |     |  |  |  |
| 35       | -0.09        | <b>-0.29</b> | -0.06        | <b>.27</b>   | .05          | .01          | .00          | -0.09        | -0.05        | -0.07        | -0.01        | -0.09        | -0.10        | -0.06        | -0.08        | -0.10        | .07          | -0.05        | -0.04        | -0.01 | .04          | -0.03        | -0.11        | -0.05        | .06          | .12        | .01          | -0.04 | <b>-0.24</b> | <b>.22</b> | <b>.22</b>   | <b>.43</b>   | <b>.25</b>   | <b>.48</b>   | 1.0          |              |              |     |  |  |  |
| 36       | <b>.30</b>   | <b>-0.16</b> | <b>-0.13</b> | <b>-0.19</b> | <b>.55</b>   | -0.07        | -0.05        | .03          | -0.02        | -0.01        | .11          | -0.04        | -0.06        | -0.02        | -0.06        | -0.06        | <b>-0.11</b> | <b>.13</b>   | .07          | .11   | .03          | <b>-0.26</b> | <b>-0.20</b> | <b>-0.15</b> | <b>-0.13</b> | -0.09      | -0.11        | .04   | <b>-0.17</b> | -0.07      | <b>.20</b>   | <b>.18</b>   | <b>-0.17</b> | -0.09        | .00          | 1.0          |              |     |  |  |  |
| 37       | -0.05        | <b>.72</b>   | -0.05        | <b>-0.52</b> | <b>-0.16</b> | <b>-0.13</b> | <b>-0.11</b> | <b>.20</b>   | -0.10        | <b>.12</b>   | <b>-0.19</b> | <b>.24</b>   | <b>.22</b>   | <b>.24</b>   | <b>.31</b>   | <b>.28</b>   | -0.06        | -0.03        | .03          | -0.06 | <b>-0.12</b> | <b>.13</b>   | .07          | .09          | -0.02        | -0.05      | -0.05        | .07   | <b>.26</b>   | -0.07      | <b>-0.18</b> | <b>-0.30</b> | .03          | <b>-0.31</b> | <b>-0.41</b> | <b>-0.19</b> | 1.0          |     |  |  |  |
| 38       | -0.09        | <b>-0.62</b> | .08          | <b>.63</b>   | <b>-0.12</b> | <b>.20</b>   | <b>.17</b>   | <b>-0.24</b> | <b>.15</b>   | <b>-0.13</b> | <b>.13</b>   | <b>-0.19</b> | <b>-0.15</b> | <b>-0.20</b> | <b>-0.25</b> | <b>-0.25</b> | <b>.13</b>   | -0.04        | -0.06        | .01   | .08          | .03          | .06          | -0.01        | .09          | <b>.13</b> | .11          | -0.08 | <b>-0.16</b> | <b>.13</b> | .05          | <b>.20</b>   | .09          | <b>.35</b>   | <b>.40</b>   | <b>-0.30</b> | <b>-0.82</b> | 1.0 |  |  |  |

\***Bold** = significant at 0.05 level

## Findings

### Perspectives from Buyout Managers

At our level, it was just moving real swiftly. So, things were happening so fast, I just remember every day seemed like a huge event, because decisions were being made and we're out there talking to these folks and just doing our very best to get as much information and find out what they wanted. Now I do remember that folks were not, initially...., well I don't know if people are ever really pleased about it, people didn't want to leave. People did not want to leave. People did not want to move. People just wanted, and rightfully so because it was a very traumatic event, they really just wanted their life back the way it was before. The whole thing disrupted their lives in so many ways, and so a lot of folks were angry, obviously. And so we did a lot of listening. And we would walk through some people's homes, and you know the water line was up nine feet high. And their stuff had been damaged, and you know. So they were really just in shock at that point, very much in shock. And in some ways they were being asked to make huge decisions that they really weren't ready to make. But again, we were just operating under the assumption of just trying to make things better, fast. (Buyout Manager, San Antonio).

This quote from a buyout manager from San Antonio suggests that *both* buyout managers and property owners were overwhelmed by the emotional and infrastructural impact of their flood. It summarizes the notion that as a consequence of this short-term shock, property owner readiness to deliberate and take their time to plan and evaluate the merits of accepting (or not) the buyout offer or instead plan for alternative mitigation appeared compromised. The quote also illustrates the well-intended attitude of the buyout manager of "just trying to make things better, fast" in this same temporally constrained decision-making space. This section focuses on the context of the buyout manager. Local officials managing post-disaster buyout programs reported concerns with "just trying to make things better, fast," which sometimes compromised the mandate to provide sufficient opportunities for meaningful public participation in deciding if implementing a buyout program was the best option. This, we find, was indicative of the lowering standards applied to assuring the buyout process was voluntary.

While this was seemingly the case, our interviews with officials managing buyout programs indicated that they valued public participation and that the high rate of buyout offer acceptance by property owners was *prima facie* evidence of the voluntary nature of

the process. This perception is not surprising when success is measured in terms of number of property owners participating: across the four cities, nearly 90% of the homeowners accepted the buyout offer. In all cases the programs followed a severe flood—an average of 147 cm (58 in) of floodwater in homes in Kinston, 178 cm (70 in) in San Antonio, 193 cm (76 in) in Greenville, and 366 cm (144 in) in Grand Forks. Buyout managers noted that these impacts of nature (or “God” as it was attributed in several instances) motivated participation. As one North Carolina buyout manager said about the post Hurricane Floyd mitigation buyout program: “We didn’t have to sell Floyd; it sold itself.” To buyout managers, this dramatic flood context led to the shared perception that participation in the buyout program was rational and self-evident. In some cases, officials appeared to have trouble understanding how property owners could decide *not* to accept the “free-money” given to them, as they at times—and mostly informally—expressed that these holdouts were “the problem,” “stupid,” or “abusing the system”. Less acknowledged but implicit in the interviews was that buyout manager perceptions were typically part of a historical planning reality originating before the disasters themselves. This is illustrated by a quote from a North Dakota buyout manager, who in the case of one neighborhood seemed to indicate that not rebuilding and a buyout program had been a done deal for property owners before the event took place:

I think we took the position that FEMA dollars were here to acquire these areas. For example, the Lincoln Park area was not likely to be rebuilt. It stuck out as a horn into the river. It was the lowest lying area. It was not easily protectable. So, that was just a given that it was not going to be rebuilt. Central Park was more difficult because there are some slight changes in elevations and there are some areas that can be protected. So, the bulk of our acquisitions were in Lincoln Park. (Buyout Manager, Grand Forks.)

Within this context of preconceived notions of directions for future housing development and risk mitigation, one shared perception that played a role shaping the at-times irritated or forceful attitude of the buyout managers was the notion that *all* homeowners needed to participate if the buyout program was to be successful. As FEMA required acquired property to effectively be able to return floodplain landscapes and required open-space, non-participating hold-outs in this scenario were particularly costly as city infrastructure would have to be continued despite high costs, for the few homeowners who choose to stay put.

Despite such apparent preconceived notions and at times frustrated expressions of managers, the perception that participation had remained voluntary was generally maintained. A binding element here appeared to be a discourse suggesting that “eminent

domain” (or condemnation, a state action seizing a citizen's private property without the owner's consent) was not a legally allowed tool under FEMA regulations. When asked about the voluntary character of the program, buyout managers typically stressed that they kept to this determination, citing their commitment to not make things worse for the flood victims and keep the process voluntary.

As a Texas buyout manager noted: “Because it was a voluntary program... never did we mention using condemnation processes. Of course FEMA would not allow you to do that, but we didn’t want to do that either. And so the other motivation was timely action and reasonable price.” Although there was a clear shared sense that eminent domain would have been useful to achieve their goals, managers were careful to avoid the public impression of eminent domain or condemnation (if only to avoid legal ramifications of being sued under the Uniform Relocation Act). However, though eminent domain was not allowed, a close approximation of this tool of force was available under FEMA’s HMGP program, namely the substantially damaged declaration. Substantial damage determinations would result if the cost of repair would be over 50% of the homes’ pre-flood value, suggesting a positive cost-benefit ratio favoring buyout mitigation. Based on this economic calculation, property owners whose house had been deemed substantially damaged were not legally allowed to rebuild *unless* they could flood-proof their home (e.g., elevation) or relocate their house out of the flood plain. Although not forcing participation—property owners could still chose to stay under those conditions—the substantially damaged declaration essentially closed off alternative mitigation options or discussions. To most, the personal and emotional costs of rebuilding and flood-proofing their substantially damaged home was precluded by their relative lower economic status and, further, had to be weighed against the “rational” choice of accepting free government buyout money. Aware of the value of these declarations in pushing property owners to participate, planning officials noted the extent to which it was seen as a priority to swiftly move into post-flood areas to survey damage in order to develop substantial damage declarations before residents were able to clean up, rebuild, or ask questions. This was particularly made explicit in North Carolina:

Planner 1: “...as the water receded, the building inspectors were in hip-boots going down and doing their damage assessments. Just a foot or two ahead of the water because we could do it unimpeded by the resident and they were not allowed access. We could do our job and get out of there without doing a lot of explaining. So, we were able to inspect about seven hundred houses over the course of a week or two.” Planner 2: “And that has paid off tremendously during the buyout process because we were able to document our substantial damage determinations with confidence, evidence, and conviction” (Planners, Kinston).

North Carolina planners indicated that, in their region, certain cultures of substantial damage practices existed. As they explained: “In the high valued but flood-prone coastal areas, officials obviously would not want the substantial damage assessment to be strictly enforced.” Yet, they certainly did in Kinston “because we saw that as a tool to get people out of the floodplain and, at least in our area of Eastern North Carolina, the people in the floodplain were least able to deal with it and they lived in lower valued housing.” The price of housing was a motivating determinant here, as repairs made to low valued homes quickly would exceed costs of the homes and more easily allowed the substantial damage declaration to be made. In higher priced markets, substantial damage declaration appeared less useful and less desired, because repairs would be lower than the pre-flood value of the home. In other words, the socio-economic vulnerability of the local population appeared to have influenced the motivation for planners to seek substantial damage declarations. Where applied, the declaration proved highly effective in the buyout programs studied, as only few homeowners decided not to participate despite the declaration. In North Dakota, interview data revealed that about 30 homeowners disputed the declaration but failed to win the legal battle as they were required to show that either the pre-flood price was greater than stated or the costs of repairs were lower. However, these efforts would have to be done using independent contractors able to make assessments in a post-flood disaster context, and the homeowners would have to pay for these assessments. In the post-disaster context, this appeared an insurmountable barrier.

If property owners were willing to stay and rebuild, notwithstanding the extra flood-proofing norms imposed by substantial damage declarations, complementary moves were made by both buyout managers and decision makers to further constrain this possibility. Significant in this instance was the possibility for governments to impose a temporary moratorium on rebuilding. Moratoria are temporary holds on building permits; land-use applications or other permits; and entitlements related to the use, development, redevelopment, repair, and occupancy of private property in the interest of protection of life and property. During disaster recovery such moratoria are explicitly used to support the prevailing sentiment that it is wise to prevent people from “acting quickly” and replicating inappropriate pre-disaster building patterns. According to a report by the American Planning Association, “it may be necessary for a city to interrupt and forestall repair and rebuilding long enough to assess rebuilding options and/or to determine effective means of mitigation” (APA 2005:159). In the City of Kinston, this instrument however appeared ironically to have been used not from the standpoint of enlightening public policy and evaluate the diversity of mitigation options, but to accomplish the opposite: to increase the odds of property owners accepting buyout offers for a preconceived mitigation strategy. In the interviews, local Kinston planners themselves argued that the City’s building moratorium greatly assisted effective mitigation because it prevented repairs from being made:

Once your gates are back open it is hard to get people out once they get in. The HMGP is a voluntary program and as time goes on the more comfortable they get back in that house, back in the floodplain. And somehow they think that it's not going to come for another hundred years. It's hard to convince them otherwise, unless you have the moratorium. Which, we were fortunate in this case to have. So, that's why we have practically a one hundred percent participation rate out of our floodplain after Hurricane Floyd (Buyout Planners, Kinston).

This Hurricane Floyd moratorium had not been without precedent. Already three years earlier, following Hurricane Fran, the City placed a moratorium on future development in the same floodplain areas. This was due, in part, to a state-imposed moratorium on future sewer connections to the primary waste water treatment plant, which was regularly releasing waste into the Neuse River. After Floyd, the swift action by the City council to place a moratorium on rebuilding only furthered this preconceived strategy of getting people out of the floodplains.

Another way to legally constrain the decision-making arena was, in spite of the rhetoric, eminent domain. Although not a common strategy, buyout managers remarked occasionally that properties belonging to holdouts could still be acquired through eminent domain, simply by using state funds unrelated to the HGMP. For example, in Grand Forks, a number of property owners declined participation in the FEMA-sponsored buyout. However, because the city government decided to build a dike where some of those homes stood, they were able to use their power of eminent domain to oblige residents to move despite their opposition. In response, a number of residents hired a law firm to challenge legitimacy of the buyout program, but the challenge was not upheld in Fargo District Court. In North Carolina, in some instances homes were torn down as they were deemed "public health threats", in combination with substantial damage designations. After Hurricane Floyd, the city of Kinston swiftly adopted an ordinance to remove a number of homes from the floodplain on epidemiological grounds of contamination by raw sewage. There was little opportunity for the public to come to agreement and understanding or even to litigate in the case of disagreement. Finally, in some cases, properties that had not been classified substantially damaged were condemned because residents did not move back into them in a timely manner. A North Dakota buyout manager noted: "Sometimes we could work with the people in terms of buying them out and helping them deal with it, but some were so elderly and said, 'I just can't deal with clean-up...I'm going to stay at my lake... just can't deal with it.'"

Complementary to legal pressures, buyout managers noted a number of socially oriented tactics that helped persuade property owners to accept a buyout offer. Most important, and in line with the overall sentiment of buyout managers that the program

was voluntary and had the best interest of the people in mind, buyout managers spent much time building trust through what essentially was a counseling strategy. Buyout teams in many cases realized that clients were both traumatized and distrustful of government intentions and mentioned their responsiveness to the need of their clients to vent and tell their stories. Several buyout managers mentioned that they got emotionally involved as many of the flood victims shared a historical connection to the landscape and neighborhoods affected. Some rural county managers described building trust as a process that combined counseling skills with a concerted outreach effort. In many cases, housing counselors played a crucial role in mediating the buyout process between government and property owners. Generally, it seems government officials expected housing counselors to provide diplomatic pressure needed for the programs to reach their goals. As a San Antonio buyout manager explained, this sometimes worked very well, as in the case of a particular housing counselor who was hired for his excellent community relationships. “Everyone loved him. So, when I had to pick, I picked him because collectively, people connected to him best. And that he listened well and that he explained things well – he didn’t lie to people, he wasn’t coercive, but he was persuasive.” However, in North Carolina, where the role of the housing counselor was state mandated, historical and ongoing racial and class-based antagonisms between floodplain neighborhood and local government escalated when housing counselors based in Community Development Corporations chose to advocate for the rights of the socially vulnerable neighborhoods and essentially created an additional barrier to the buyout success aimed for by officials. Local officials spoke disparagingly about the fact that these housing counselors were beginning to advocate for residents, attacked them for lacking professionalism, and being “uppity”. This local infighting between the local government officials and the CDCs increased programmatic confusion and stress for flooded residents.

Aside from building trust, another social tactic utilized by buyout managers was to emphasize the potential risk participants faced when they chose “to stay behind alone”. The following example from Texas illustrates this scenario:

And eventually I guess we also convinced folks there won’t be another buyout out there ... there had been enough notice to the neighbors, to the communities about the flooding in these areas that there probably wouldn’t be anyone else interested in buying their houses, so if they stayed they’re taking a risk. Number one, there won’t be any money a year from now or two years from now to buy your house. Then there might not be any buyers because if your house is in a flood plain it’s going to be a negative for people coming along later. So some of them understood that ultimately and went ahead and sold. We didn’t try to use that as a threat,

but that was just kind of to tell them reality about these kinds of real estate matters (Buyout Manager, San Antonio).

Buyout managers also applied indirect peer pressure on reluctant residents. As one North Carolina manager put it, “That was the last house left on the block, but those folks weren’t interested. We’d go back to them and say, ‘Look you’re going to be here on this entire block by yourself.’”

These tactics and legal pressures confronted populations existing in extremely vulnerable states. This vulnerability not only dealt with the historically lower socio-economic status of floodplain property owners, but also with the temporal context of a population recovering from a major natural disaster. Awareness of this social and temporal population vulnerability was something the managers all had in common. Buyout managers in North Carolina indicated that in the aftermath of the disasters, homeowners of flooded houses were extremely vulnerable and gullible to persuasion. As one manager put it:

I don’t know if mistrust is the word ... I think many of the people were so confused, dazed, and uncertain that they didn’t know who to trust. And so weren’t making a judgment as to... they did or didn’t trust anyone. They were really looking for help. I mean it was kind of like the wondering. Particularly, those whose homes were destroyed (Buyout Manager, Greenville).

Buyout managers in interviews revealed how, in this context of temporally vulnerable post-flood trauma, conditions could be created in which flooded property owners were put in situations where it would be difficult for them to refute the logic of participation. The following quote exemplifies this point:

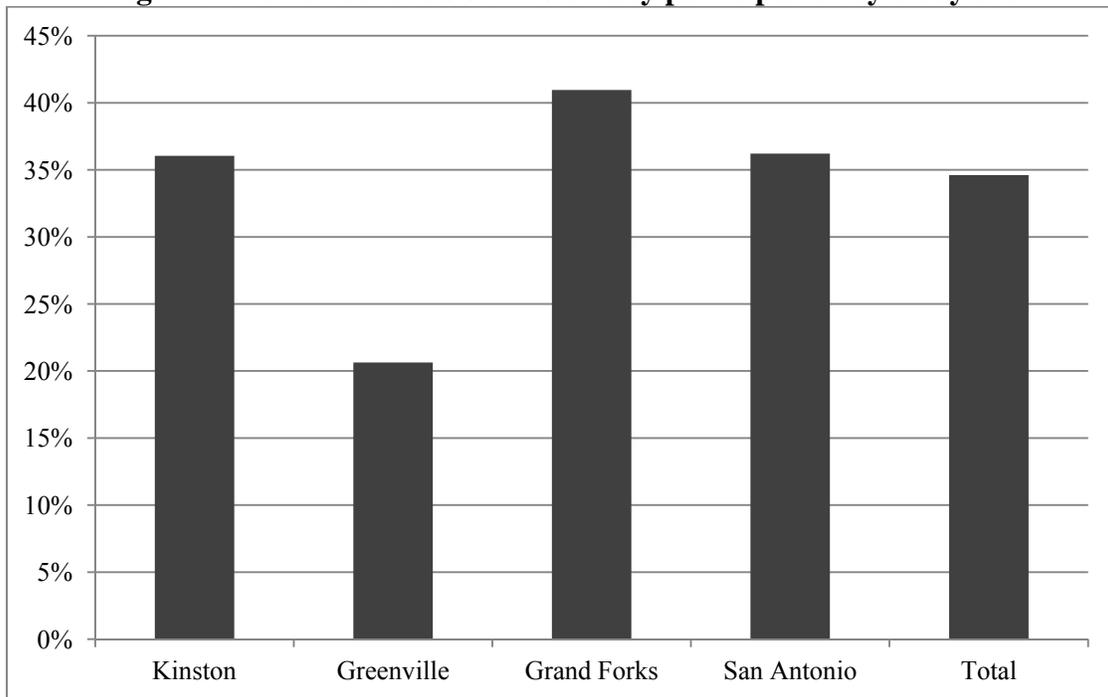
We tried to impress the vision of what they were seeing in riding in a boat back to their house and get them to project that out a few years. Are you going to be able or are you going to want to deal with this again. We were able to talk to them. We were able to sell HMGP [Hazard Mitigation Grant Program]. 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 [Hurricane] 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 weren’t going to let them go back in there (City Official, Kinston).

In conclusion, the buyout manager’s intention to “make things better, fast” appears to have been backed by some serious legal tools and social pressure tactics that altogether created a formidable means to pressure citizens into participation. Preconceived notions of “the right way” to protect residents from harm seemed to have combined with a relative inability to see alternative mitigation futures. As files were closed and success was celebrated, the notion that programs had failed to consider citizens’ rights was probably not deemed salient, relevant, or even noticed by the central, FEMA funder. Devolution had done its job.

**Community Perceptions of Involuntariness**

Despite intentions and requirements to make the buyout program voluntary, a sizable 35% of the homeowners (108 out of 312) across the four buyout programs indicated in the telephone survey that their participation was *not* voluntary, as shown in Figure 1.

**Figure 1: Perceived levels of involuntary participation by study site**



Of these 108 cases, about half indicated to would have wanted to stay and rebuilt if given a chance to (n=57). There were nonsignificant differences across the four sites in the proportions of homeowners surveyed who perceived the buyout to be voluntary were not significant—  $\chi^2$  (N = 312) = 7.45,  $p > 0.05$ . Across all sites, a sense of involuntariness appeared related to respondents who claimed “somewhat extensive” damage to their

neighborhood— $\chi^2$  (N=312) = 8.54,  $p < 0.01$ —and homes— $\chi^2$  (N=312) = 11.42,  $p < 0.001$ ) compared to those who indicated “extensive damage” or “very little.” Respondents, however, did not seem to make significantly different buyout choices which, regardless of damage levels, ranged from 80%-90% participation. Perceived level of voluntariness was not significantly related to whether property owners were able to live in their homes, the property was condemned (a proxy for eminent domain or substantial damage declarations as respondents did not make the distinction), or property owners had made repairs to their homes. However, for these variables, buyout choices did differ significantly. The percentage participating was significantly ( $\chi^2 = 5.18$ ,  $p = 0.02$ ) lower (79%) for those able to live in their homes after the flood compared to those who could not live in their homes (90%). The same was true for levels of repair ( $\chi^2 = 6.86$ ,  $p = 0.01$ ); participation was 76% for those who made repairs, and 91% for those who did not. What this suggests is a confirmation of the buyout manager’s notion that allowing property owners back in their homes after flooding leads to an increased likelihood of these property owners consequently refusing buyout offers. As this was not the case relative to actual physical levels of damage, it suggests a distinction between the levels of physical damage and the social and political coping responses to them—the latter signified by residents’ ability to control their property. The notion of involuntariness across sites was more related to socio-political responses to the flooding than to actual damage impacts, in particular for those property owners with medium levels of damage. In other words, it was not “Nature” or “God” pushing for involuntary participation, but a buyout management process. Qualitative follow-up questions for respondents who claimed involuntary participation were posed, and their responses back up this notion. For example, 46 of the 106 cases emphasized that there simply was “no choice.” With few exceptions, other rationalizations seem closely related to the sentiment that government pressured them strategically. Frequent responses suggested included “buyout or get nothing,” “been told to leave”, “too much damage”, “did not want to be left behind”, “the only smart choice”, or “could flood again”. A closer look at examples given by the homeowners who *did* mention they had received an alternative choice to the buyout mitigation option shows that only one third of these choices were real mitigation alternatives, such as rebuilding, elevation, SBA loans, or moving a house. The majority of the choices given were non-solutions, including “eminent domain”, “leave anyway”, “not participate”, “no money”, “find another house”, “sue the City”, or “lose city services”.

Results further indicate, as expected, that pressure was perceived to be significantly higher among the involuntary group than the voluntary group ( $F_{1, 311} = 28.63$ ,  $p < 0.001$ ). Furthermore, the involuntary group trusted the people managing the buyout program less ( $F_{1, 308} = 9.98$ ,  $p < 0.001$ ) and were less confident that local government officials had the best interest of their neighborhood in mind ( $F_{1, 302} = 10.55$ ,  $p = 0.00$ ). Information

presented about the buyout was deemed less clear among the involuntary group ( $F_{1, 307} = 4.81, p = 0.03$ ) and they indicated having had more difficulty making the decision to participate or not in the buyout ( $F_{1, 309} = 8.46, p < 0.001$ ). This group was also more interested in rebuilding if they had been given a chance ( $F_{1, 302} = 5.69, p = 0.02$ ). All of these results further support the notion that the process and relationships between managers and property owners were influential in creating the sense of involuntariness.

Finally, the average age of the involuntary group was significantly ( $F_{1, 297} = 8.18, p = 0.01$ ) lower (in the 41-50 age category) than the group who voluntarily participated (in the 51-60 group). This age difference also expresses itself in several financial implications. For example, there were significantly ( $F_{1, 251} = 4.73, p = 0.03$ ) longer mortgage terms remaining (12 years) among the involuntary groups and than among the voluntary group (7.5 years). Further, the involuntary group was significantly ( $F_{1, 301} = 3.82, p = 0.05$ ) more likely to be employed at the time of the buyout program, but had significantly ( $F_{1, 201} = 12.84, p < 0.001$ ) fewer years at their job at the time of the flood (2.8 years for in involuntary group versus 3.5 years for the voluntary group). Further, the involuntary group significantly ( $F_{1, 298} = 4.91, p = 0.03$ ) better educated (14 years versus 13 years). An expectation that would emerge based on these results is that the level of perceived involuntariness would be predicted not so much by physical damage levels, but moreover by property owners making repairs and being back in their house, perceived pressure and lack of trust in government intentions, lack of clarity concerning information about the buyout, higher education levels, relatively younger age, consequently more years left before mortgages were paid off, and fewer years being employed.

### **Involuntariness and Buyout Participation**

Based on these findings of relatively consistent perceptions of involuntariness for approximately 1/3rd of the sample and the suggestive relationships of this perception to buyout processes, a question that emerges is to what extent perceived involuntariness influenced flood victims to refuse participation. Or, notwithstanding the legal and moral obligation to protect citizens' rights in devolved contexts, to what extent is it in the best interest of buyout managers and planners to make the program more voluntary in order to comply with federal regulations? To answer this question, we analyzed how the 35 property owners who declined mitigation offers differed from those who accepted ( $N = 281$ ) to determine the relative role of voluntariness in decision making. A counter-intuitive result found here was that the group participating in the buyout actually felt that buyout participation was less voluntary compared to the group who did not participate, who felt that the buyout was more voluntary ( $\chi^2 (N = 312) = 6.18, p < .01$ ). This statistically indicates that some form of pressure—regardless of attribution to buyout

managers, nature, or otherwise—was an experiential element for those participating, challenging the meaning of “voluntary participation”. One can argue that the non-participating group in fact voluntarily chose not to do so and therefore experienced more freedom when enacting this choice. Supporting this pattern, the participating group similarly felt that there was more perceived opposition against the buyout compared to the group who did not participate ( $t_{291} = 2.55, p = 0.01$ ). At the same time, the non-participating group scored significantly lower on the level of trust regarding the people managing the buyout program— $\chi^2_3 (N = 312) = 36.02, p < .01$ —and indicated to have a lower confidence that government officials had the best interest of their neighborhoods in mind— $\chi^2_3 (N = 304) = 22.96, p < .01$ . A further variable which appeared to be informative in this context is that the non-participating group in the buyout was significantly more likely to feel that they had not provided any input in the way the buyout was managed relative to the group participating— $t_{289} = 2.07, p = 0.04$ . As participatory planning generates the trust needed between groups with different discourses, this likely contributed to the shared sense of mistrust.

Generally community attachment variables did not strongly differ between the participating and non-participating groups. The exception was “I felt I was an accepted part of the neighborhood,” on which those who did not participate tended to say they agreed with relatively higher frequency— $\chi^2_3 (N = 293) = 7.62, p = 0.05$ . From this perspective, it is not surprising that the importance of the opinion of neighbors in decision making was significantly higher among those deciding not to participate— $\chi^2_3 (N = 306) = 7.56, p = 0.05$ . However, housing counselors, city planners, church staff, and government officials were less influential than neighbors. The group who did not participate in the survey was of a significantly higher percentage Hispanic or Latino than the group who did, but no other ethnic differences were found— $\chi^2_1 (N = 305) = 26.84, p < .01$ . Perhaps related to the previous, the importance of the opinion of family members in decision making was more important among non-participants relative to buyout participants— $\chi^2_3 (N = 307) = 8.97, p = 0.03$ . The size and composition of the household however did not seem to make a difference. Also perhaps related to this ethnic pattern is that information presented to potential participants about the buyout was perceived to be less clear by those not participating compared to those who did— $\chi^2_3 (N = 310) = 17.75, p < .01$ . Finally, With respect to financial matters, non-participants more frequently felt that the price offered for their house had not been fair— $\chi^2_4 (N = 310) = 20.21, p = < .01$ . Results further suggest that the non-participating group appears to be less likely to have paid off their mortgage— $\chi^2_1 (N = 309) = 3.93, p = .05$ —and were employed longer— $\chi^2_5 (N = 203) = 21.89, p < .01$ , suggesting some role of economic dependence to place as an obstacle to participation.

We created a logistical model with the buyout offer acceptance as dependent variable in order to test to what extent perceived voluntariness may play a causal role for the choice of flood victims surveyed to accept (or refuse) participation. As described in the method section, for selection of independent covariates, we used the purposeful selection process (Bursac et al. 2008). The final model is shown in Table 5.

**Table 5: Logistical Regression of Odds Accepting the Buyout Offer**

|   | B      | SE    | Wald     | df | Sig. | Exp(B) |
|---|--------|-------|----------|----|------|--------|
| 1. Extent of damage to neighborhood             | 1.64   | 1.23  | 1.77     | 1  | .18  | 5.16   |
| 8. Able to live in the home after the flood     | 2.39   | 2.01  | 1.41     | 1  | .24  | 10.86  |
| 10. Made repairs to the home after the flood    | -2.20  | 1.79  | 1.51     | 1  | .22  | .11    |
| 13. Importance of family members                | 1.62   | .65   | 6.30     | 1  | .01  | 5.05   |
| 17. Clarity of information                      | .95    | .58   | 2.66     | 1  | .10  | 2.57   |
| 18. Length of time until approached             | .49    | .49   | 1.00     | 1  | .32  | 1.64   |
| 19. Participation in the buyout felt voluntary  | -2.54  | 1.34  | 3.59     | 1  | .06  | .08    |
| 20. Alternative choices were provided           | 2.82   | 1.38  | 4.16     | 1  | .04  | 16.71  |
| 21. Pressured felt to participate in the buyout | -.60   | .53   | 1.27     | 1  | .26  | .55    |
| 22. Trust in the people running the buyout      | 4.12   | 1.93  | 4.55     | 1  | .03  | 61.57  |
| 24. Input flooded residents had                 | -3.24  | 1.89  | 2.96     | 1  | .09  | .04    |
| 26. Opposition voiced by residents              | -.57   | .69   | .69      | 1  | .41  | .56    |
| 27. Would have stayed and rebuilt               | 1.43   | 1.02  | 1.98     | 1  | .16  | 4.17   |
| 29. Age in ten year increments                  | -.79   | .53   | 2.26     | 1  | .13  | .45    |
| 31. Number of years left on mortgage            | -.01   | .05   | .02      | 1  | .89  | .99    |
| 34. Highest level of education completed        | .15    | .34   | .19      | 1  | .66  | 1.16   |
| 35. Household income                            | .84    | .41   | 4.21     | 1  | .04  | 2.32   |
| Site San Antonio (reference)                    |        |       | 3.65     | 3  | .30  |        |
| Kinston   | 1.95   | 2.05  | .91      | 1  | .34  | 7.05   |
| Greenville                                      | 2.64   | 1.39  | 3.62     | 1  | .06  | 14.07  |
| Grand Forks                                     | 26.42  | 3k    | .00      | 1  | 1.00 | .00    |
| Race Hispanic (reference)                       |        |       | 4.67     | 2  | .10  |        |
| African American                                | 2.23   | 1.90  | 1.37     | 1  | .24  | 9.25   |
| Caucasian                                       | -1.64  | 1.81  | .82      | 1  | .36  | .19    |
| Constant  | -16.04 | 10.12 | 2.51     | 1  | .12  | .00    |
| Model Fit                                       |        |       | $\chi^2$ | df | Sig. |        |
| Likelihood Ratio Test                           |        |       | 83.4     | 22 | .000 |        |
| Hosmer and Lemeshow                             |        |       | 1.72     | 6  | .943 |        |

Note: Cox and Snell  $R^2 = .37$ . Nagelkerke  $R^2 = .73$

What can be seen is that the measures with significant regression coefficients for buyout acceptance are foremost related to one process related variable: trust in the people running the buyout (OR = 4.12). Changing perceived trust remarkably influences the odds of participation. Another related process variable that increases the odds of participation is the provision of alternative choices (OR = 2.82). Finally, two demographic variables stand out. First, more importance of the opinion of family members raises the odds (OR = 1.61), and higher household income (OR = 0.84) in fact *lowers* the odds of participation, reflecting the previously mentioned possibility of more economic dependence to place as obstacle to participation. These results seem not unexpected as they suggesting that building trust and providing alternative choices are

good remedies to improve buyout success. It also suggests that placing importance on the opinion of family members helps to increase acceptance rates; perhaps this is because family members may not live in the same areas as flood victims; their heightened influence for safety may avoid both economic and emotional place-based attachments to home and neighborhood. Last but not least, while voluntariness did not make a significant impact in the odd of accepting a buyout offer ( $p = 0.058$ , OR = 5.05) compared to other variables in the model, we did find that the group participating in the buyout actually felt that buyout participation was *less* voluntary compared to the group who did *not* participate ( $\chi^2$  (N = 312) = 6.18,  $p < .01$ ).

### Discussion

In part, the literature that supports the devolution of federal decision-making and the movement of responsibility from a top-down approach towards ‘proximate’ stakeholders has a particular political-geographical imagination that has not been critically evaluated. Central to this vision is a locale, with all of its different stakeholder groups (for example politicians, planners, and citizens) operating more effectively, efficiently, and democratically than would be possible among more geographically distanced agencies. In the context of post-disaster mitigation and recovery, FEMA’s HMGP has provided funds for states and municipalities to support mitigation efforts under such devolved authority with the explicit premise that participation of residents in mitigation programs remains explicitly voluntary. In compliance with federal legislation, property rights are expressly protected through a mandate that preserves a citizen’s right to refuse a mitigation offer, thus, rendering the program voluntary.

The results of this study raise the question to what extent flood mitigation programs (i.e. local buyout managers fulfilling local mitigation agendas) *can* truly commit to making their programs voluntary with fair treatment and public participation adhering to citizens’ right to choose, if they want to be perceived as successful. The contradiction observed in the studied localities is between high participation rates—90% overall—and a sizable and stable one-third minority indicating that participation was *involuntary*. A literature review suggests that in buyout mitigation programs the decision by property owners to participate is influenced by psychological, demographic and economic factors. No empirical evidence exists suggesting that participation might be strongly related to processes of programmatic power dealing with the relationship between the public and experts. There is no reference to how habitual practices and technologies of power operate and how they influence buyout outcomes. Aside from pointing at the key role of community relationship and expert knowledge—covered under the general notion of social capital—this issue brings forward the ethical question of the extent to which

citizens are in fact more empowered by purported reconfiguration of devolved governance highlighting responsibility and authority at local levels.

While the idea of devolution to the municipal level is supposed to engender democracy and greater responsibility, ultimately, on the part of individuals, for themselves and the larger community, results of this study do not find evidence for this in the four buyout programs studied. The programs described here were the largest buyout programs funded with federal support in the pre-Hurricane Katrina era, resulting in a total relocation of 2,350 households in four heavily flooded landscapes. The programs included full financial compensation of acquisition of the home at pre-flood prices and relocation to comparable homes. Results re-emphasize the notion that buyouts involve the collision of at least two logics of responsibility (Fraser et al. 2003). On the one hand there is mitigation responsibility among governing bodies to protect citizens from harm and to develop and plan communities such that physical decline (“dilapidation”) and infrastructure costs are minimized. On the other hand, there is a responsibility of community leaders to protect and preserve the cultural heritage and social cohesiveness of their members and protect residents against undue government pressure to participate in a program that is meant to be voluntary. It is within this context that buyout decision-making takes place where forces of interest might be seen to be in competition, rather than in harmony. Our findings suggest that in this competition, the government pressure, tactics, and strategies to pressure participation appear largely insurmountable for the minority of flood victims interested in staying put and rebuilding.

The high participation rate of the buyout programs studied in spite of noticeable opposition appears to have partly been obtained due a mitigation logic that sees “window of opportunities” when potential buyout participants experience trauma and distress and are consequently ill prepared to make big life altering decision. This “temporal vulnerability” of residents (De Vries 2011), we suggest, was exploited by mitigation officials in some cases as they had a great deal of latitude in deciding if, and when, to declare that a property was substantially damaged. Buyout managers reported a high level of commitment to act swiftly during the mitigation process in order to avoid community opposition to their mission. We found no reasonable explanation as to why alternative mitigation measures, such as home elevation or the building of levees, could not have been brought forward for public discussion, particularly in light of the fact that 81% of property owners indicated that they had never been flooded since occupying their homes (with a mean level of tenure being 17 years). While this is relatively short compared to flood cycles, it appears that despite housing counselors advocating for their needs, low social capital of floodplain populations undermined political ability for concrete public participation in mitigation planning.

In the face of pressure to participate, this goal was achieved as a result of both high temporal and social population vulnerabilities, but not in a strictly voluntary fashion.

Three different population responses can be distinguished. First, a little more than half of the respondents accepted the buyout offer without hesitation or negative connotations, and appeared satisfied with their choice. Arguably, this is the true success rate of the buyout programs. Second, a sizable minority of around 35% of the buyout population indicated that their participation was involuntary. As marginalization and lack of power to direct the public discourse and program in their favor appears central to this sub-population, a social capital and environmental injustice perspective appears the best explanatory model for this group's behavior. The third and very small sample of property owners—about 10%—is a population who in spite of all pressures and financial temptations declined to participate. The overriding sentiment of this group was a mistrust in the people running the buyout.

The qualitative and quantitative results are suggestive that buyout managers' activities were guided by the belief that the more "voluntary" floodplain mitigation programs are made, the higher the odds are that homeowners will *not* participate in buyouts. Our findings also point toward the centrality of trust between homeowners and buyout managers as a route to mediate feelings of anxiety and pressure to participate in a buyout program. The interplay between homeowner trust of mitigation officials to balance out any pressure homeowners may have felt takes on greater significance because, as one buyout manager unequivocally stated, they "were just operating under the assumption of just trying to make things better, fast." This situation shows how the temporality of a post-disaster response is complex. While citizens may need time to make buyout participation decisions, local mitigation officials feel pressure to "get the job done" due to the negative media attention FEMA receives for relief programs taking too long to implement. In addition, local politicians put pressure on buyout managers to seize opportunities to implement an already formed planning agenda that can be legitimated and funded, in part, in the name of post-disaster relief. In this context, mitigation culture is driven by the logic of "windows of opportunity" for multiple stakeholders while being publicly framed as being "in the best interest of the residents."

### **Conclusion**

As federal eligibility requirements for FEMA post-disaster acquisition grants require that participation in the program is "strictly voluntary," we can conclude that this temporal decision-making arena is one in which the public interest is in direct opposition with citizen's rights. In the face of the overwhelming power of local governments enacting the needs of the "public," our findings question the assumption that devolution in these types of environmental and social justice contexts is a sensible policy approach. The presupposition that devolving programmatic responsibility and decision-making is likely to foster participatory processes and have empowering effects upon citizens cannot

be shown for at least one third of the study population. Instead, findings support the sociological recreancy and social capital perspectives wherein dynamics of governance and social relationships of trust between programmatic managers and potential program participants are seen as influential in mitigation decision making. We can further conclude that the aspiration of voluntary decision making in buyout program requires avoidance of decision making during compromised temporal windows of vulnerability. This can be achieved by allowing sufficient pre-disaster time for planning processes that include and review community desires and develop alternative mitigation options in the case of disaster. In addition, it seems significant that the special social and environmental justice context of hazard mitigation is acknowledged and considered. This means special management and communication efforts should be made to compensate for the lowered social capital of groups living in hazard-prone areas. This should include careful consideration of the role of housing counselors to motivate neutrality and motivate the building of trust and rapport with community authorities, such as buyout managers. In order to be able to manage more ethically just and federally compliant programs that are indeed truly voluntary, examination of the scalar power relations that give rise to certain groups accessing power to impose their will, albeit incompletely, is necessary in order to understand how some groups achieve efficacy and others less so.

This leads us to a final conclusion, namely federal level programmatic monitoring and evaluation of voluntariness in devolved program contexts remains critical to an ethical planning process. In the context of land acquisition programs, an analysis of these issues has rarely been engaged. The field of hazard mitigation needs to critically examine its own assumptions regarding power relationships in devolved contexts and evaluate to what extent engaging property owners during times of temporal vulnerability is ethical.

### **Acknowledgements**

Funding for this study was partially provided through Federal Emergency Management Agency grant number EMW-2002-GR-0037 and National Science Foundation grant number NSF-2001-0109423. The authors wish to thank staff at the University of North Carolina Chapel Hill Center for Urban and Regional Studies, Ms. Cara M. Crisler, and study participants for their review and study support.

### **References**

- APA. 2005. *Planning for Post-Disaster Recovery and Reconstruction*. PAS Report No. 483/484. Chicago IL: American Planning Association.
- Bates, Diane. 2002. "Environmental Refugees? Classifying Human Migrations Caused by Environmental Change." *Population and Environment* 23: 465-477.

- Bolin, Robert C. and Patricia A Bolton. 1986. *Race, Religion, and Ethnicity in Disaster Recovery*. Monograph # 42. Boulder, CO: University of Colorado
- Burby, Raymond J., Scott A. Bollens, James M. Holloway, Edward J. Kaiser, David Mullan, and John R Sheaffer. 1988. *Cities Under Water: A Comparative Evaluation of Ten Cities' Efforts to Manage Floodplain Land Use*. Monograph # 47. Boulder, CO: University of Colorado.
- Bursac, Zoran, C Heath Gauss, David Keith Williams, and David W. Hosmer. 2008. "Purposeful Selection of Variables in Logistic Regression." *Source Code for Biology and Medicine* 3:17.
- Čapek, Stella M. 1993. "The 'Environmental Justice' Frame: A Conceptual Discussion and an Application." *Social Problems* 40: 5-24.
- Clarke Lee and James F. Short. 1993. "Social Organization and Risk: Some Current Controversies." *Annual Review of Sociology* 19: 375-99.
- Conrad, David R., Ben McNitt, and Martha Stout. 1998. *Higher Ground: A Report on Voluntary Property Buyouts in the Nation's Floodplains*. Washington, DC: National Wildlife Federation.
- De Vries, Daniel H. 2011. "Temporal Vulnerability to Flood Hazards: Recurrence, Risk and Referentiality Along the Eastern North Carolina Neuse River." *Global Environmental Change* 21: 154-164
- EPA. 1994. *Executive Order 12898 on Environmental Justice*. Washington DC: Environmental Protection Agency.
- FEMA. 1998. *Property Acquisition Handbook for Local Communities*. Washington DC: Federal Emergency Management Agency.
- FEMA. 2003. *Innovative Floodplain Management Case Studies: Kinston, North Carolina. Mitigation Case Studies*. Washington DC: Federal Emergency Management Agency.
- FEMA. 2007. *Eligibility Requirements. Selecting Appropriate Mitigation Measures for Floodprone Structures*, FEMA 551, Hazard Mitigation Assistance (HMA) Programs. Federal Emergency Management Agency. Washington, DC: Federal Emergency Management Agency.
- Fraser, James, William Rohe, and David Godshalk. 2003. *Implementing Floodplain Land Acquisition Programs in Urban Localities*. Washington DC: Federal Emergency Management Agency.
- Fraser, James, Martin Doyle, and Hanna Young. 2006. "Creating Effective Flood Mitigation Policies." *Eos* 4: 265-270.
- Freudenberg, William R. 1993. "Risk and Recreancy: Weber, the Division of Labor, and the Rationality of Risk Perceptions." *Social Forces* 71: 909-932.
- Freudenburg, William R., and Timothy Jones. 1991. "Attitudes and Stress in the Presence of Technological Risk." *Social Forces* 69: 1143-68.

- Godschalk, David, Timothy Beatley, Phil Berke, David Brower, and Edward J. Kaiser. 1999. *Natural Hazard Mitigation: Recasting Disaster Policy and Planning*. Washington DC: Island Press.
- Handmer, John W. 1985. *Acquisition and Relocation: The Australian Experience*. Canberra, Australia: Australian National University.
- Hunter, Lori M. 2005. "Migration and Environmental Hazards." *Population and Environment* 26: 273-302.
- Kick, Edward, Jim Fraser, Laura A. McKinney, Gregory Fulkerson and Daniel H. de Vries. Forthcoming. "Repetitive Flood Lose Victims and Their Acceptance of FEMA Mitigation and Relocation Offers: An Analysis of Rational Choices with Community-System Policy Implications." *Disasters*.
- Kirschenbaum, Alan. 1996. "Residential Ambiguity and Relocation Decisions: Population and Area At Risk." *International Journal of Mass Emergencies and Disasters* 14: 79-96.
- Kirschenbaum, Alan. 1992. "Warning and Evacuation During a Mass Disaster: A Multivariate Decision Making Model." *International Journal of Mass Emergencies and Disasters* 10: 91-114.
- Lupton, Deborah. 1999. *Risk and Sociocultural Theory: New Directions and Perspectives*. Cambridge, United Kingdom: Cambridge University Press.
- McCann, Eugene J. 2002. "The Cultural Politics of Local Economic Development: Meaning-Making, Place-Making, and the Urban Policy Process." *Geoforum* 33: 385-398.
- Menoni, Scira and Giulia Pesaro. 2008. "Is Relocation a Good Answer to Prevent Risk? Criteria to Help Decision Makers Choose Candidates for Relocation in Areas Exposed to High Hydrogeological Hazards." *Disaster Prevention and Management* 17: 33-53.
- NCDEM. 1999. *Hazard Mitigation in North Carolina: Measuring Success*. Raleigh, NC: NC Department of Crime Control and Public Safety.
- Najarian, Louis M., Armen K. Goenjian, David Pelcovitz, Francine Mandel, and Berj Najarian. 2001. "The Effect of Relocation after a Natural Disaster." *Journal of Traumatic Stress* 14: 511-526.
- Olivera McCan, Monica. 2006. *Case Study of Floodplain Acquisition / Relocation in Kinston, NC after Hurricane Fran (1996) and Floyd (1999)*. Master's Thesis. Chapel Hill, NC: University of North Carolina at Chapel Hill.
- Oliver-Smith, Anthony. 1996. "Anthropological Research on Hazards and Disasters." *Annual Review of Anthropology* 25: 303-328.
- Peacock, Walter Gillis and Chris Girard. 1997. "Ethnic and Racial Inequalities in Hurricane Damage and Insurance Settlements." Pp. 171-205 in *Hurricane Andrew*:

- Ethnicity, Gender and the Sociology of Disasters*, edited by W.G. Peacock, B. H. Morrow and H. Gladwin. New York, NY: Routledge.
- Perry, Ronald W. and Michael K. Lindell. 1997. "Principles for Managing Community Relocation as a Hazard Mitigation." *Journal of Contingencies and Crisis Management* 5: 49-59.
- Raco, Mike. 2000. "Assessing Community Participation in Local Economic Development—Lessons for the New Urban Policy." *Political Geography* 19: 573–599.
- Reinardy, James R. 1995. "Relocation to a New Environment: Decisional Control and the Move to a Nursing Home." *Health and Social Work* 20: 31-38.
- Riad, Jasmin K. and Fran H. Norris. 1996. "The Influence of Relocation on the Environmental, Social and Psychological Stress Experienced by Disaster Victims." *Environment and Behavior* 28: 163-182.
- Ritchie, Liesel A. and Duane A. Gill. 2007. "Social Capital Theory as Integrating Theoretical Framework in Technological Disaster Research." *Sociological Spectrum* 27: 103–129.
- Rohe, William M. and Scott Mouw. 1991. "The Politics of Relocation: The Moving of the Crest Street Community." *Journal of the American Planning Association* 57: 57-68.
- Sanders, Sara, Stan L. Bowie, and Yvonne Dias Bowie. 2003. "Lessons Learned on Forced Relocation of Older Adults: The Impact of Hurricane Andrew on Health, Mental Health, and Social Support of Public Housing Residents." *Journal of Gerontological Social Work* 40: 23-35.
- Schneider, Sue and Kate Klise. 1995. *Out of Harm's Way: The Missouri Buyout Program*. Jefferson City, MO: Missouri State Emergency Management Agency.
- Shriver, Thomas E. and Dennis K. Kennedy. 2005. "Contested Environmental Hazards and Community: Conflict Over Relocation." *Rural Sociology* 70: 491–513.
- Skinner, J. 1992. "The Experience of African American and Other Minority Elders." *Generations* 16: 49-52.
- Smith, D. I. and J. Handmer. 1986. *Flood Warning in Australia: Policies, Institutions and Technology*. Canberra, Australia: Australian National University.
- Slovic, Paul. 2000. *The Perception of Risk*. London, United Kingdom: Earthscan Publications.
- Slovic, Paul, H. Kunreuther, and G. White. 1974. "Decision Processes, Rationality and Adjustments To Natural Hazards". Pp. 187–205 in *Natural Hazards: Local, National, Global*, edited by Gilbert F. White. New York, NY: Oxford University Press.
- Tobin, Graham A., Heather M. Bell, Linda M. Whiteford, Burrell E. Montz. 2006. "Vulnerability of Displaced Persons: Relocation Park Residents in the Wake of

Hurricane Charley.” *International Journal of Mass Emergencies and Disasters* 24:77-109.

U.S House of Representatives. 1994. *Report of the Bipartisan Task Force on Disasters*. Washington, DC: Congress of the United States.

Waldram, James B. 1987. “Relocation, Consolidation, and Settlement Pattern in the Canadian Subarctic.” *Human Ecology* 15:117-131.