RESILIENCE AND POSTDISASTER RELOCATION:
A STUDY OF NEW YORK’S HOME BUYOUT PLAN
IN THE WAKE OF HURRICANE SANDY

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Abstract

Natural disasters can have catastrophic impacts on communities. In the most severe cases, disaster survivors whose homes have been destroyed may choose or be forced to relocate. This is the decision faced by many residents of New York whose homes or communities were damaged by Hurricane Sandy on October 29, 2012. In the aftermath of this disaster, New York launched programs designed to encourage residents to permanently relocate out of the hardest hit areas. Home buyout programs such as these are becoming increasingly popular as postdisaster mitigation measures, though little is known about what factors influence homeowners to rebuild or resettle after a catastrophic event. This study used mixed-methods to assess the relationship between resilience and the relocation decision in two communities that, despite similar exposure to Sandy, made different decisions regarding whether or not to pursue a buyout. The sample was composed of residents from Oakwood Beach and Rockaway Park, both working-class communities in New York City, who participated via a community survey (N=173) and/or in-depth interviews (N=28). Resilience, which has been shown to be important in disaster response, was assessed using the Communities Advancing Resilience Toolkit (CART; Pfefferbaum, Pfefferbaum, & Van Horn, 2011), with supplemental measures of Sense of Community and Sense of Place. The results suggested that resilience (specifically, measures of connection and caring, transformative potential, resources, sense of community, and sense of place) played an important role in moderating the relationship between contextual community factors and the buyout decision. Further, while both communities displayed resilient responses to Sandy, contextual factors (including the community’s history of natural disasters, local cultural norms, and place attachment) helped to explain the trajectory of resilience in each community, influencing one community toward rebuilding and one toward relocation as an adaptive
response. These findings suggest that when faced with a decision of whether or not to accept a buyout, resilient communities may benefit from having the capacity to collectively respond to, process, and recover from the associated disaster event, though contextual factors may influence the path of recovery (rebuilding or relocation) that is chosen.
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Chapter 1: Introduction

Natural disaster can have catastrophic impacts on communities. In the most severe cases, disaster survivors whose homes have been destroyed may choose or be forced to relocate. This is the decision faced by many residents of New York whose homes or communities were damaged by Hurricane Sandy. Hurricane Sandy, also known as Superstorm Sandy, struck the east coast of the United States on October 29, 2012. The storm devastated coastal areas of New York, damaging or destroying an estimated 300,000 homes (10,000 of which were damaged by more than half their value) and claiming 60 lives in the state. Fourteen counties were declared federal disaster areas, and residents in the most heavily affected areas were without power for up to three weeks (Associated Press, 2012; New York State Homes and Community Renewal, 2013; Russ, 2012). In the aftermath of this disaster, New York Governor Andrew M. Cuomo proposed a home buyout plan designed to permanently transform the state’s coastal flood zones into preservation land (Kaplan, 2013; New York State Homes and Community Renewal, 2013). The buyout plan is one component of Rebuild NY, a broader initiative intended to strengthen and upgrade critical state systems and infrastructure.

The buyout plan received federal approval on April 26, 2013 (Sullivan, 2013). In its original form, the plan offered a suite of buyout options for eligible homeowners. Owners of homes located within the 500-year floodplain were to be offered pre-Sandy market value for their homes, and additional incentives were included for homes in high risk communities, for communities that agreed to relocate en masse, and for homeowners who relocated within the same county. Media reports around the time of the plan’s
inception indicated that residents had mixed responses; some voiced an eagerness to relocate (Knafo, 2013), while others expressed strong opposition to the idea of relocation (Roy, 2013).

The existing literature on home buyout plans suggests that several factors may influence the decision of whether or not to participate in a buyout program, including one’s level of trust in those running the buyout program (de Vries & Fraser, 2012), as well as the degree to which the program is perceived as having actively engaged the community (Fraser, Doyle, & Young, 2006; Knobloch, 2005). In addition, economic and social factors play an important role (Fraser et al., 2006; Hunter, 2005). The process of relocating and, importantly, the interim period between the disaster event and final relocation, have been linked in the literature to a number of negative outcomes, including psychological distress (Blaze & Shwalb, 2009), medically unexplained physical symptoms (Yzermans et al., 2005), economic hardship (Hori & Schafer, 2009), and disruptions in social networks (Sanders, Bowie, & Bowie, 2003).

A number of important gaps remain in the disaster relocation literature, particularly related to the perceptions and impacts of home buyout programs. For example, we still know relatively little about why individuals choose to accept or reject buyout programs, and what individual- and community-level factors influence that decision. No studies to date have explored the relationship between community resilience and relocation, particularly in the context of buyout programs. We also still have much to learn about the long-term implications of these decisions, both for those residents who choose to relocate and those who remain in their original community. It is possible that
these questions will be increasingly important to both researchers and practitioners as the effects of climate change are felt in heavily populated areas (Scannell & Gifford, 2011), and more communities are faced with the prospect of relocation.

The present study addressed existing gaps in the disaster relocation literature by exploring the relationship between community resilience and relocation decisions related to New York’s home buyout plan. Specifically, this study compared the experiences and perceptions of two coastal communities that were heavily impacted by Hurricane Sandy: Oakwood Beach on Staten Island, and Rockaway Park in Queens. Both communities are demographically similar and both face a similar threat level with regard to future disasters, yet these communities responded very differently to the proposed buyout plan. Residents of Oakwood Beach actively pursued the buyout, while residents of Rockaway Park, largely, chose to remain in their community. Using a mixed-methods approach that includes both a community survey and in-depth interviews with residents and community leaders, this study investigated what factors contribute to these differences. This study also lays the groundwork for future studies on the long-term implications of postdisaster rebuilding and relocation.
Chapter 2: Review of the Literature


Postdisaster home buyout programs are currently funded as a disaster mitigation measure through two federal programs: the Federal Emergency Management Agency (FEMA) and Community Development Block Grant (CDBG) program. This section will introduce both of these programs and briefly describe the processes through which they provide disaster assistance.

The Federal Emergency Management Agency. As a federal agency housed under the Department of Homeland Security, FEMA’s mission is to reduce the loss of life and property and protect communities nationwide from all hazards, including natural disasters, acts of terrorism, and other man-made disasters. FEMA leads and supports the nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery and mitigation. (Federal Emergency Management Agency, 2013)

In order for FEMA’s resources to be mobilized, the president must approve a gubernatorial request for disaster assistance following the declaration of a major disaster. There are three categories of disaster aid offered through FEMA: individual assistance (such as disaster housing, disaster grants or loans, crisis counseling, or unemployment assistance); public assistance (aid provided to state and local governments for activities such as repairing damaged infrastructure, debris removal, or emergency protective services); and hazard mitigation (activities that reduce future risk to life or property, such as the elevation or relocation of homes in hazard prone areas, retrofitting of buildings, or adoption and enforcement of stricter building codes and standards; Federal Emergency Management Agency, 2012a).
Home buyout and relocation programs are funded under the category of hazard mitigation, specifically through the Hazard Mitigation Grant Program (HMGP). Since 1993, when the agency officially incorporated relocation into its national hazard mitigation strategy in response to Midwest floods, over 20,000 properties have been purchased through FEMA sponsored buyout programs (Federal Emergency Management Agency, 2012b; Perry & Lindell, 1997). Currently, a portion (from 15-20%) of the total funds allocated by FEMA to a specific disaster can be used for mitigation through the HMGP (Salvesen, 2004).

Communities interested in pursuing a buyout must complete a series of steps in order to access HMGP funds. The process begins when an affected community prepares an application. The state then reviews that application and submits it to FEMA. FEMA reviews the application to ensure that it meets all program guidelines, is environmentally sound, and is cost-effective. If FEMA approves the application, then the acquisition process can begin. Homes purchased through a buyout plan are purchased by the local community (FEMA does not buy homes directly), and the program covers costs normally associated with real estate transactions (i.e., appraisal, title search, lot survey, and closing costs). The property owner assumes responsibility for moving expenses (Federal Emergency Management Agency, 2012b).

There are a number of restrictions and requirements associated with buyout funds from FEMA. For example, there can be no duplication of benefits, so that any additional

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1 Importantly, in order to be eligible for HMGP funds, communities must participate in the National Flood Insurance Program (NFIP). NFIP requires participating communities to adopt and enforce ordinances that meet FEMA’s guidelines for flood risk reduction (National Flood Insurance Program, 2013).
assistance received by homeowners (e.g., insurance payouts) will be deducted from the purchase price they are offered on their home through the buyout program (Federal Emergency Management Agency, 2012b). Another important characteristic is that FEMA requires matching funds for home buyouts; FEMA will typically provide 75% of the funds needed for a buyout, and requires a 25% match from local or state funds, or, in some cases, from participating homeowners (Federal Emergency Management Agency, 2012b; Salvesen, 2004). A third important requirement states that buyouts must be voluntary, such that homeowners cannot be forced to participate in a buyout. However, homeowners who do not participate in the buyout may be required to implement other mitigation measures, such as elevating their homes. Finally, land purchased through a buyout program must remain open space (e.g., park land, a wildlife refuge, or a wetland) in perpetuity. The land cannot be sold to private individuals or developed (Federal Emergency Management Agency, 2012b).

**Community Development Block Grant Program.** The second source of funding for home buyout programs is the Community Development Block Grant Program. The buyout plan in New York is funded through CDBG funds. CDBG funds are administered through the U.S. Department of Housing and Urban Development (HUD), and are intended to support state and local efforts related to neighborhood revitalization and economic development. CDBG funds are very flexible, and are designed to allow local and state officials to determine which activities are best suited to their specific development plans (Boyd, 2011). In order to be eligible, activities must meet at least one of CDBG’s three objectives: (1) benefit low- and moderate-income individuals; (2)
prevent or eliminate blight; or (3) meet “other community development needs having particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community, and other financial resources are not available to meet such needs” (U.S. Department of Housing and Urban Development, 2002, p. 1-2).

In addition to these three objectives, the program’s authorizing statute requires 70% of CDBG funds to be used for activities that primarily benefit low- and moderate-income persons (Boyd, 2006).

The third objective, which covers community development needs that are considered urgent, allows supplemental CDBG funds to provide funding for disaster recovery and relief. These funds can only be used in presidentially declared disasters and are allocated through a congressional appropriation. In general, the use of CDBG funds in disasters falls into three categories: (1) short-term disaster relief, such as removal of debris, restoration of essential services, or security patrols, (2) long-term recovery activities, such as improvements to infrastructure or grants to attract new business to the affected area, or, (3) mitigation activities, including property buyouts (Boyd, 2006).

In recent years, CDBG funds appropriated for disaster relief have allowed states to request waivers for some program requirements. For example, Congress has, in some cases, waived or modified the program’s provisions related to income requirements. In the Midwest floods of 1998 and the hurricanes in Florida in 2004 (Hurricanes Charlie, Frances, Ivan, and Jeanne) this requirement was modified so that only 50% of funds had to be allocated to activities benefiting low- or moderate-income individuals (Boyd, 2006). Use of CDBG funds for disaster relief has come under some criticism due to the use of
these waivers, as they are seen as undermining the original intent of the program (Gotham & Greenberg, 2008). There are some requirements that cannot be waived, and for which all activities funded with CDBG funds must comply with applicable federal regulations. These include: non-discrimination (as outlined in the Civil Rights Act), environmental review (requirements related to environmental impact assessments), labor standards (including those related to wage standards, worker safety, and work hours), and fair housing (as outlined in the Fair Housing Act; Boyd, 2006, 2011).

**Home Buyout Programs and Postdisaster Relocation**

This section will provide an introduction to the process of postdisaster relocation, with an emphasis on relocation that is initiated through home buyout programs. It will then present a review of the existing literature related to the factors that influence relocation and the effects of relocation on individuals and communities. For the purpose of illustration, two case examples of communities that were bought out and relocated will be presented in some detail. It should be noted that relocations that occur through home buyout programs represent only a portion of postdisaster relocations. As the data on buyout related relocations is fairly limited, this section will include findings from the literature related to large-scale relocations more generally.

**Defining and classifying postdisaster relocation.** In understanding the concept of postdisaster relocation, it is helpful to begin by looking at some of the characteristics used to define relocation, and to distinguish relocation from other forms of postdisaster disruptions. One feature to consider when classifying postdisaster relocation is the duration of the relocation. In postdisaster settings, relocations can be classified as
temporary, semi-permanent, or permanent. Most disaster related relocations are
temporary, and best classified as evacuations (Hunter, 2005; Perry & Lindell, 1997).
Relocations that extend beyond short-term evacuations fall along a broad spectrum.
Evacuations can become relocations if the damage caused by the disaster is severe
enough to make homes uninhabitable (Riad & Norris, 1996). In some cases, relocations
that are considered temporary by researchers or policy makers may extend for many
months or even years (Hori & Schafer, 2009; Knobloch, 2005), in which case they may
be better labeled as semi-permanent. Permanent relocation, at the far end of the spectrum,
occurs when relocatees take up permanent residence in a new location. A review of the
disaster relocation literature reveals a number of terms used to describe persons who are
displaced as the result of a disaster, including relocatees (Perry & Lindell, 1997; Riad &
Norris, 1996), displacees (Spence, Lachlan, & Burke, 2007), evacuees (Bland et al.,
1997), internally displaced persons (IDPs; Spence et al., 2007), and environmental
refugees (Bates, 1989).

A second feature of relocations that is important to consider is the degree to which
they are voluntary or involuntary. Whereas there is a long history in the United States of
forced evacuations due to public works projects or urban redevelopment and renewal
programs (Perry & Lindell, 1997), disaster related relocations are rarely considered
involuntary. Still, there is a fair amount of ambiguity associated with these terms.
Evacuations are typically considered involuntary (or forced) relocations in the literature
(Hunter, 2005), and there are also some examples of permanent relocations that were
considered to be forced. One well-known event is the Buffalo Creek Dam collapse of
1972. This disaster, which flooded 16 communities in West Virginia and left 4,000 people homeless, resulted in the mass relocation of survivors to makeshift trailer communities that became semi-permanent housing for many (Riad & Norris, 1996).

More often, permanent postdisaster relocations are considered voluntary. This is, in part, due to the fact that federal legislation requires that home buyouts be voluntary. However, while policy safeguards are in place to protect residents of communities from being forced to participate in a buyout program, there is evidence in the literature that the voluntary nature of buyout and relocation programs remains a gray area. This issue was explored by James Fraser and colleagues (de Vries & Fraser, 2012; Fraser, Elmore, Godschalk, & Rohe, 2003), who conducted research on four buyout programs in the U.S.² Across these four communities, 90% of homeowners who received a buyout offer accepted the offer (de Vries & Fraser, 2012), though 42% reported that they would have chosen to rebuild their homes in their original communities if given the opportunity (Fraser et al., 2003). The authors found that the degree to which programs could be considered truly voluntary was influenced by both policy ambiguities and structural inequalities. With regard to policy, while the use of eminent domain is forbidden by FEMA, a similar outcome can be obtained through the use of the “substantially damaged declaration,” where the cost of repair is determined to exceed 50% of a house’s predisaster value. The implications of this policy are not dissimilar to that of forced relocation, especially for homeowners with limited financial means:

² The four communities included in the study were: Greenville, North Carolina (Hurricane Floyd); Kinston, North Carolina (Hurricane Floyd); Grand Forks, North Dakota (the Great Flood of 1997); and San Antonio, Texas (flood of October 1998).
… 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 choose 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. (De Vries & Fraser, 2012, p. 16)

Other policy options that discourage rebuilding include moratoria on construction or the condemnation of homes if homeowners do not return “in a timely manner” (de Vries & Fraser, 2012, p. 18).

Structural inequalities have also been shown to influence the degree to which buyout programs are considered voluntary. After a disaster strikes, economic concerns may compel affected individuals to relocate. Those with higher incomes may be more able to rebuild, in part because of their ability to undertake pre-disaster mitigation measures (e.g. installing disaster resistant roofs and windows) that lessen the level of damage sustained by a disaster (Hunter, 2005). Conversely, homeowners with a lower socioeconomic status are more likely to be offered buyouts after a flood as they are more likely to live in flood prone areas (de Vries & Fraser, 2012), and may be less able to actively influence governmental decisions and supports that impact their postdisaster options (Čapek, 1993).

In theory, then, disaster relocations can be mapped along two spectra: duration (ranging from temporary to permanent) and voluntariness (ranging from voluntary to forced). These options are illustrated in Figure 1. Still, it is important to note that in New York, as has been true of other disaster relocations, perceptions of the voluntary nature of
the buyout program vary greatly. While the buyout program is, on paper, strictly voluntary, it could be argued that when it comes to buyouts, the distinction between forced and voluntary may be a false one.

Factors that influence the decision to relocate. This section explores the various factors that influence the decision of whether or not to relocate after a disaster. This issue was examined broadly by Julian Wolpert (1966) whose “stress-threshold” model suggests that migration decisions are influenced by the ecological fit between an individual and his or her social and physical environment. Wolpert focused on stressors typically associated with urban living (such as traffic, congestion, urban blight, air pollution, lack of open space), describing “noxious forces” that may, if the strain produced is great enough, lead an individual to relocate in an attempt to limit his or her exposure to forces that create strain. Certainly disasters would also fit into this category of ecological stressors. This theory was expanded by Speare (1974) who argued that individuals eventually reach a “threshold of

Figure 1. Mapping the nature of postdisaster relocation programs along key spectra
dissatisfaction” (p. 175) which moves them to consider relocation. Perry and Lindell (1997), come to a similar conclusion with regard to disaster induced relocations:

Ultimately relocation becomes more desirable as a means of mitigation when negative consequences of an environmental threat are high and measures which yield significant protection are limited in efficacy, safety, and feasibility, or when the monetary cost is high. (p. 49)

As we have seen, there are circumstances in which disaster survivors have no option but to relocate. More often, however, residents are faced with a decision to return to their original homes or to move to a new location. Several factors have been identified as playing an important role in influencing relocation decisions. A study of older adults that were forcibly relocated after Hurricane Andrew struck southern Florida found that only 29% of participants wanted to remain in their new housing, even though their original neighborhood had been badly damaged. When asked why they wanted to return, the primary reason given by participants was that they missed their formal and informal support systems (Sanders et al., 2003).

Economic factors also play a role. The availability of jobs and the level of funding offered by the buyout program are cited in the literature as impacting relocation decisions (Fraser et al., 2006; Hunter, 2005). Degree of damage to housing, which is often correlated with lower-cost, lower quality housing, was identified as a factor in relocation after Hurricanes Katrina and Rita (Myers, Slack, & Singelmann, 2008). Structural factors, such as poverty, limited occupational mobility, or lack of homeownership, can remove the element of choice from disaster affected individuals (Chan, 1995). In another example from post-Katrina New Orleans, Green and Olshansky (2012) studied patterns of participation in Louisiana’s home buyout program. They found that socioeconomic
factors may have resulted in some residents having little choice in whether or not to participate in Louisiana’s buyout plan:

…the act of selling one’s home can be interpreted in a variety of ways. On the one hand it could be the expression of a free decision to leave New Orleans behind and start somewhere else. On the other, it can be seen as an act of desperation by one who believes that reconstructing is impossible, no matter how much they desire it.” (p. 89)

The hazard itself, then, may only be a secondary cause of migration for many. Still, Morrow-Jones and Morrow-Jones (1991) found that certain characteristics are associated with a decision to move that is primarily motivated by the hazard. The authors found that those who cited the disaster as their primary motivation for relocating tended to be older, from female-headed households, or members of a minority group. In interpreting these findings, the authors suggest that members of groups that tend to have less social and economic power are more likely to relocate after experiencing a disaster because they have less ability to recoup their losses.

De Vries and Fraser (2012), who specifically examined relocations associated with buyout programs, identified trust in the administrators of the buyout as a key predictor of buyout acceptance. In their study of four buyout programs, the authors found that residents who refused to participate had significantly lower levels of trust in the managers of the buyout programs than those who accepted the buyouts. Community involvement has also been identified as a key factor in buyout related decisions, with those programs that actively engage with the community or actively partner with community based organizations having a higher rate of success in securing buyouts (Fraser et al., 2006; Knobloch, 2005; Perry & Lindell, 1997).
The effects of relocation. This section addresses the question of how postdisaster relocation impacts individuals and communities. Relatively few studies have been conducted on this topic, but the data that are available suggest that relocation is associated with negative consequences for relocatees. Displacement often accompanies a collection of losses, including the loss of possessions, employment, income, and physical and mental health (Mortensen, Wilson, & Ho, 2009). These effects appear to be influenced by the duration (Blaze & Shwalb, 2009; Yzermans et al., 2005), distance (Hori & Schafer, 2009; Kessler et al., 2008), and context (Riad & Norris, 1996) of the relocation.

Duration of the relocation. A number of studies have indicated that the amount of time one is displaced may predict one’s postdisaster outcomes, with long-term or permanent displacees experiencing the most severe effects. For example, a study of evacuees who were forced from their homes for a short period of time (between 1 week and 6 months) during Hurricane Andrew found no difference in the levels of psychological distress between evacuees and non-evacuees 6 months after the disaster (Riad & Norris, 1996). However, several studies of permanent relocations have shown that relocatees experience higher rates of psychological, physiological, and social problems than those whose relocation was temporary.

Gordon Milne (1977) studied the consequences of relocation and evacuation after Cyclone Tracy struck the town of Darwin in Australia’s Northern Territory. The storm struck on Christmas Day in 1975, destroying 5,000 of the 8,000 homes in the town and killing at least 49 people. Milne looked at the impacts of this disaster on three groups of
people: those who never evacuated, those who evacuated but then returned to the town, and those who permanently left Darwin. His study, based on data collected 7 to 10 months after the disaster, found that

…the Non-Returned Evacuees suffered most from the primary impact of the disaster. They also reported the largest degree of post-cyclone maladaptation… The non-return[ees] also reported the largest increases in psychosomatic disorders and in the common forms of addiction; they had the most trouble with their children, especially in schooling, and their social networks were the most severely disrupted. (p. 53)

A second example of the effects of permanent relocation comes from a study of a neighborhood in the Netherlands that was badly damaged after an explosion at a fireworks depot. Researchers in this study found that, 2.5 years after the disaster occurred, residents who had permanently relocated had higher rates of psychological distress and medically unexplained physical symptoms (MUPS) than those who remained in their original neighborhood (Yzermans et al., 2005). A study conducted with youth two years after Hurricane Katrina, similarly, found relocation time to be a significant predictor of posttraumatic stress (Blaze & Shwalb, 2009). Findings from this study indicated that youth who experienced a long-term displacement (27 months, on average) displayed significantly higher levels of posttraumatic stress than did youth who had been temporarily relocated (about two weeks, on average).

Distance relocated. As we have seen in the studies by Yzermans et al. (2005) and Milne (1977), permanent relocation often means relocation to a new, sometimes distant, community. The literature provides examples of how distance moved also has significant implications for relocatees. Hori and Schafer (2009) studied displacement after Hurricane Katrina, distinguishing between individuals who relocated within the same parish (which
they referred to as an internal displacement) and those who moved to a different parish or out of state (external displacement). They found that people who were externally displaced faced greater economic and health difficulties than those who were internally displaced, while internal displacees fared worse than non-relocatees on those same metrics. Specifically, the externally displaced had the highest levels of unemployment one year post-Katrina (15%), followed by the internally displaced (10%) and non-displaced (4%). As the authors explain,

> Displacement increases the odds of unemployment by 160%, and external displacement increases these odds by a whopping 240%, even after controlling for all of the other factors. (p. 80)

Furthermore, the externally displaced experienced the highest proportion of decline in household income (though they had a slightly higher median household income than the internally displaced). In terms of health, 17.7% of all displacees reported symptoms of serious mental illness (SMI; with no significant difference between internal and external displacees), versus 7.5% of the non-displaced. The displaced were also less likely to have access to a primary care facility, a finding that compounds the challenges associated with symptoms of serious mental illness. A second study of Hurricane Katrina examined rates of mental illness and suicidality in survivors according to their living situation one year after the storm (Kessler et al., 2008). This study found that individuals who were living outside of their pre-disaster town had a higher prevalence of anxiety and mood disorders though, interestingly, they found no effect for county or state (whether or not the respondent was living in the same county or state as before the storm).
**Context of the relocation.** A third factor is the context of the relocation, though this has received little direct attention in the literature. Unlike time and distance, context is a community-scale factor that considers the conditions in which relocatees live. Data suggest that postdisaster conditions and experiences may have greater psychological consequences for survivors than the disaster itself (Hori & Schafer, 2009; Norris, Friedman, & Watson, 2002). Riad and Norris (1996), in assessing the conditions of relocatees after Hurricane Andrew, found that ecological stressors (including food shortages, water shortages, and crowding) were only related to distress in relocated victims of the storm. The authors suggest that:

…relocation is a stressor that exacerbates the effect of other stressors but is not unduly problematic in the absence of other coping demands. Possibly, it is the context of the relocation that matters most. The combination of unfamiliar housing and poor conditions may be most stressful, whereas neither unfamiliar housing of good quality nor familiar, if substandard, housing is quite as distressing. (p. 179)

This conclusion is supported by the work of Sanders, Bowie, and Bowie (2004) in their study of elderly survivors of Hurricane Andrew who were relocated from a public housing community to high-rise apartment complexes. Participants in this study reported that the living conditions in their new apartment were substandard, and that the move negatively impacted their social networks and daily activities. They also reported that both physical (e.g., cardiac problems, high blood pressure, respiratory issues, arthritis) and mental (e.g., depression, nightmares, loss of appetite, headaches) problems were exacerbated by the move. In contrast to these findings, Milne (1977) found that permanent relocatees after Cyclone Tracy reported higher standards of housing than their
counterparts who returned to their original community, but still had higher levels of distress overall.

**Case examples: The process of relocation.** A small number of studies have explored the process of community relocation in detail. In this section I present two case examples that are particularly instructive as they offer a detailed account of the steps involved in large-scale community relocations, and because they highlight the lived experiences of affected community members. While the New York home buyout plan does not include provisions for the wholesale relocation of towns, the detailed description of these accounts are helpful in understanding the process from the point of view of the residents, a perspective that has received limited attention in the broader relocation literature.

**Case example: Allenville, Arizona.** Perry & Lindell (1997) present a detailed case study of the relocation of Allenville, Arizona, a small, unincorporated town located on the Gila River, about 45 miles west of Phoenix. Allenville first experienced flooding in 1965 after the construction of a water management and conservation project that included a series of reservoirs located upstream from the town. Water from these dams was occasionally released during periods of heavy rain or snowmelt in an effort to protect against dam collapse. A pattern of seasonal flooding plagued Allenville until, in 1978, a dam release caused a massive flood that affected the entire community, with flood waters reaching a height of six feet in some areas. This flood resulted in a full evacuation of the town.
While there was no loss of life, property damage was extensive, and it became clear that the town was becoming uninhabitable. A long-standing community organization that had historically served as an unofficial town council for Allenville, the Allenville Citizens for Progress (ACP), began to explore options for improving the town’s situation. Formed in 1965, the ACP was run by an elected Board of Directors, and was a well-respected organization. They explored several options for reducing the risk of flooding, including the creation of additional levees or channels to divert the dam runoff and advocating for a termination of releases of water from the dams (Prater & Lindell, 2000). However, they concluded that this would ultimately put the community at an even greater risk should the dams fail (Perry & Lindell, 1997).

The idea of relocation was then explored as a viable alternative. While it appears that the idea of relocation was discussed concomitantly by the ACP and by the Arizona Division of Emergency Management (DEM), there was a staunch belief that the relocation decision was fundamentally made by the community. The subsequent success of the relocation is perhaps much more a function of this orientation on the part of the community than due to any other single factor. (Perry & Lindell, 1997, p. 51)

Once movement toward relocation had begun, the ACP board was given official authority to bargain on behalf of the community with outside stakeholders, principally the DEM and the Army Corps of Engineers. This enabled the Board to negotiate both the sale of Allenville property and the acquisition of property on which to rebuild the town.

The relocation process lasted more than three years, from the time that Allenville was abandoned to the time when residents were able to occupy their new town, which was called Hopeville. During that time, most residents lived in a temporary mobile park
that was administered by the DEM, though some rented homes or lived with friends or relatives.

Perry and Lindell (1997) identified four primary challenges that arose during this period. First, there was the challenge of keeping the community together. Community members had decided to relocate collectively, but maintaining this commitment became more and more difficult as time wore on.

   Early in the process, citizens were occupied with removing possessions from the old site and negotiating sale and acquisition of new property. Thus, individuals could define themselves as engaging in positive actions on a daily basis that lead toward their personal goals of relocation. As time passed, the role for citizens changed to one of simply waiting. (p. 52)

Still, overall support for the plan remained high. While some residents did express reservations, most were primarily concerned with keeping the community intact. Practical concerns, including worries about costs associated with the move and the distance between the new community location and jobs, places of worship, and medical care, also arose.

   A second set of challenges related to communication. In order to keep communication channels open and combat the spread of rumors, the ACP Board maintained regular communication with residents living in the mobile park (a process that was simplified by the fact that much of the community was housed in the same location). Other challenges included maintaining a commitment to relocation (while some families did eventually relocate to other towns, most completed the move to Hopeville) and handling concerns about the relocation by residents of adjacent communities.
When residents who completed the move to Hopeville were asked why they were willing to wait so long for the relocation process, the most popular response was that they wanted to remain near friends, family, and neighbors. About a third of respondents wanted to “preserve the community” (Perry & Lindell, 1997, p. 52) as a friendly, safe place to live. A similar number of respondents referenced financial incentives; because of the buyout of Allenville, many residents who were formerly renters were able to purchase land and mobile homes in Hopeville.

**Case example: Valmeyer, Illinois.** Valmeyer, Illinois was a town of 900 residents located three miles from the Mississippi River (Hunter, 2005; Knobloch, 2005). Like Allenville, severe flooding was the impetus for the relocation of Valmeyer. Dennis Knobloch (2005), the former mayor of Valmeyer, documented a detailed account of the relocation process.

Flooding from the Mississippi River first became an issue for residents of Valmeyer in 1943, when floodwater overtopped a nearby agricultural levee. This event caused flooding as deep as three feet in some areas of town. Over the next five years the town experienced two more floods, in 1944 and again in 1947. At that time, the town approached the Army Corps of Engineers (ACE) about addressing the flooding problem. The ACE then constructed a levee system to protect the area, which was completed in 1950. For 43 years the levees successfully protected Valmeyer from floods. In the 1980s the town attempted to have the levees raised to meet 100-year-flood standards, but they were unable to secure the necessary funding (approximately $8 million).
The Great Midwest Flood of 1993 was a 5-month event lasting from May through September. Flooding affected 150 major rivers and tributaries throughout the Midwest, including the Red, Mississippi, Missouri, and Wisconsin Rivers. The flooding resulted in 50 deaths, $15 billion in damages, and the destruction of 10,000 homes (Larson, 1996). On August 1st, the massive flooding caused the levees protecting Valmeyer to fail.

The beginning of the end occurred on the morning of Sunday, August 1, 1993, when waters overtopped and then breached a levee near Columbia, Illinois. Flood waters entering this breach headed directly toward Valmeyer. Around midnight, the Fountain Creek Levee, which was providing our last line of defense, was overtopped and eventually breached. Early on the morning of Monday, August 2, 1993, the first Mississippi River floodwaters reached Valmeyer. (Knobloch, 2005, p. 42)

Floodwaters reached a height of 16 feet, and some areas of the town remained underwater for more than two months. Nearly all (98%) of structures in the town were classified as substantially damaged (Hunter, 2005).

After the flood, it became clear to residents that returning to Valmeyer would not be an option for many. At the same time, there was concern that if a buyout was offered, residents would disperse to nearby towns. The idea of relocating the entire community was raised by FEMA and a regional planning commission, and was subsequently discussed at a community meeting. Residents expressed interest in relocation, and immediately began planning for the move (Knobloch, 2005).

The planning process was largely resident-driven. Seven different committees were formed within two months of the disaster, each of which met at least weekly to
discuss some aspect of the relocation. The community eventually decided to purchase a 500-acre farm tract located 1.5 miles from Valmeyer but outside of the floodplain.

As was true in Allenville, the actual process of relocation stretched on beyond what residents had hoped. Residents were not able to move in to their new homes until the end of 1995, two and a half years after the flood. In the interim, most residents were housed in FEMA trailers in a neighboring town, a situation that many viewed as a significant hardship:

The temporary living conditions for many Valmeyer residents were less than ideal. Every month that passed without any infrastructure construction progress caused a few more residents to abandon their plan to return to their former town. Some of these people opted for an immediate cure by purchasing an available home in a neighboring community. Citizens of the flooded areas were quickly tiring of their “temporary” lives. Most were living in “temporary” homes. On Sunday, they would attend Church services in “temporary” facilities. Students attended the “temporary” Valmeyer school that had been constructed on the county fairgrounds using portable buildings… Mail was dispensed from a “temporary” window set up at the Waterloo Post Office ten miles away. (p. 44)

In the end, even with the hardships, the relocation of Valmeyer was viewed as a success, and much of its success was attributed to the high level of resident involvement in the process (Hunter, 2005; Knobloch, 2005). Nearly 60% of the original residents relocated to the new town.

In looking at these case examples, we see a number of parallels between these towns and Sandy-affected communities that are facing the prospect of relocation. Both are examples of communities that have considered and completed the buyout process as collective units. From the community perspective, they highlight the role of trust in the program administrators, the importance of community organization and involvement throughout the buyout process, and the value of clear communication and information.
sharing, as well as the strain inherent in the relocation process. Also clear in these examples is the importance of the context in which the buyouts take place, which includes the communities’ histories of past disasters. Still, there are important distinctions between these examples and the buyout that is occurring in New York. Most notably, New York’s buyout program does not contain a plan for the collective relocation of affected communities.

**Sense of Community and Community Resilience**

The communities of Oakwood Beach and Rockaway Park have been selected for this study in part because they have displayed *collective* responses to the prospect of a buyout. In considering the question of what community-level factors have influenced their decisions, the concept of sense of community (SOC) emerges as a possible consideration. Sense of community has long been considered an important factor in the overall health of a community (Bess, Fisher, Sonn, & Bishop, 2002; Chavis & Wandersman, 1990). It was identified by Seymour Sarason (1974) as a unifying theme for the field of community psychology, and it has been the focus of a great deal of research since that time. SOC is of particular interest for this study given that both communities of interest have made *community-based* decisions to stay or relocate, even though, as a voluntary buyout, the relocation decision is an individual (or household) one.

As a construct, there remains a level of disagreement as to SOC’s definition and theoretical framework. To begin, it is common in the literature to use the terms SOC and psychological sense of community, or PSOC, interchangeably, though they are conceptually distinct. In general, SOC can be understood as a group-level experience of
community, while PSOC refers to an individual’s experience of SOC (Townley, Kloos, Green, & Franco, 2011). Most research in community psychology focuses on SOC at the individual level (Perkins & Long, 2002), and, therefore is best categorized as PSOC. I will use the phrase Sense of Community as an umbrella term that captures both the individual- and community-level concepts.

Research related to SOC is complicated by the multiple definitions of the construct presented in the literature. A review by Chipuer and Pretty (1999), for example, found disagreement as to whether SOC is “best conceptualized as a cognition, a behavior, an individual affective state, an environmental characteristic, or a spiritual dimension” (p. 644). The most influential definition of SOC was presented by McMillan and Chavis (1986):

Sense of community is a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together. (p. 9)

This definition is based on four elements of SOC: (1) membership, defined as a feeling of belonging or shared sense of personal relatedness, (2) influence, defined as a “sense of mattering, of making a difference to a group and of the group mattering to its members” (p. 9), (3) integration and fulfillment of needs, which is the belief or understanding that one’s needs will be met through their membership in the group, and, (4) shared emotional connection, built on shared history and experiences, and the expectation of future shared experiences.

While SOC is often considered a positive trait of a community, it is important to note that it can also reflect neutral or negative traits. Bess and colleagues (Bess et al.,
2002) remind us that groups such as the Klu Klux Klan might be defined as a healthy community under McMillan and Chavis’ definition. In recognizing this important distinction, Brodsky (2009) suggests that “what is often called a strong PSOC might be more properly referred to as “positive PSOC” (p. 176). In a related vein, Townley and colleagues (Townley et al., 2011) have recently suggested that SOC may conflict with diversity, another central value of community psychology:

> Although sense of community is generally discussed as a positive outcome and a desirable component of social functioning, one of the primary criticisms of the construct is its tendency to overestimate the importance of uniformity, balance, and regularity in community life. (p. 72)

For the purposes of this study, we are primarily interested in SOC in the context of natural disasters and postdisaster relocation. Of the small subset of studies that have explicitly explored the link between SOC and natural disasters, some have shown that SOC can be enhanced by disasters. For example, after wildfires destroyed much of Louis Creek, a rural community in British Columbia, Canada, residents reported feeling a renewed sense of collective identity:

> When your little unit of Louis Creek is totally toasted, is gone, then you come into a personal pride. Well, we live here, you know, and this is our community and we want to rebuild it and make it happen. I don’t think I ever had any sense of community until the fire came (Thompson, Louis Creek resident). (Cox & Perry, 2011, p. 402)

This type of response is most often visible in the immediate aftermath of disaster, a phase known as the altruistic community in which residents of the affected community experience heightened unity, solidarity, and altruism (Bonanno, Brewin, Kaniasty, & Greca, 2010; Kaniasty & Norris, 1995). In most cases, however, this response is short-
lived, and the majority of studies have shown that disasters tend to erode SOC (Bonanno et al., 2010; Erikson, 1976; Kaniasty & Norris, 2004).

SOC, social capital, and community resilience. While SOC has been analyzed independently in disaster research, it is more frequently considered as a component of social capital or community resilience. The importance of social capital in disaster response and recovery has been highlighted recently in the literature (see, for example, Aldrich, 2012; Cox & Perry, 2011; Ritchie & Gill, 2007), with Aldrich (2010) declaring social capital as “the engine for recovery” (p. 1). Perkins and Long (Long & Perkins, 2007; Perkins & Long, 2002) have argued that SOC is best understood as a component of social capital, which they describe as including three other components: empowerment, neighboring behavior, and participation in community organizations. Using multilevel modeling to analyze SOC at two levels, they demonstrated that SOC is the strongest and most consistent predictor of the other three components of social capital, both at the individual- and community-level (Perkins & Long, 2002). In other words, their findings suggest that

…either living on a block with higher mean SOC or having higher individual SOC (relative to neighbors) was related to higher collective efficacy, more neighboring behaviors, and more participation in civic organizations” (Long & Perkins, 2007, p. 565)

Norris and colleagues (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008) also consider SOC to be a component of social capital, but expanded this concept to examine social capital as an important factor in community resilience (defined as “a process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance,” p. 130). Developed from research on disaster-affected
communities, the authors present a model in which community resilience arises from a set of networked *adaptive capacities*, a term that indicates the importance of both community resources and specific attributes of those resources, namely robustness (the strength and staying power of resources), redundancy (the availability of multiple, interchangeable resources), and rapidity (the ability of resources to be quickly mobilized). The model includes four networked adaptive capacities: information and communication, community competence, economic development, and social capital. While the definition used for social capital in this model differs slightly from that of Perkins and Long (2002), both refer to the same basic concept. An important difference for the purposes of this study, however, is that Norris et al.’s (2008) model includes seven sub-components of social capital. Three of these components relate to social support (perceived social support, received social support, and social embeddedness), and one relates to network structures and linkages. The remaining three components, SOC, sense of place (SOP), and citizen participation, refer to the relationships between individuals and their larger community.

The concept of SOP, sometimes referred to as *place attachment*, is closely related to SOC, and is worth a brief mention here. SOP has been defined as a psychological construct “referring to the meanings, feelings, and sense of relationship that people attribute to a particular place” (Rogers & Bragg, 2012, p. 308). SOP has been further distinguished from SOC in that SOP is considered an emotional attachment to place, while SOC is considered a cognitive attachment to people (Perkins & Long, 2002). SOP is particularly salient in the context of disasters, as disasters harm the built and natural
environments, in some cases damaging them to the point where they are no longer recognizable or habitable (Norris et al., 2008).

While SOC may be one factor involved in postdisaster relocation decisions, then, the literature suggests that it may be helpful, given the exploratory nature of the present study, to consider the role of community resilience more broadly. It is possible, for example, that other components of community resilience, such as sense of place or social support, may play a role in relocation decisions. For this reason, measurement tools that are specific to SOC or PSOC (the most prominent in the field of community psychology being the Sense of Community Index; Chavis, Hogge, McMillan, & Wandersman, 1986) may not be the most appropriate.

The Communities Advancing Resilience Toolkit (CART; Pfefferbaum et al., 2013; Pfefferbaum, Pfefferbaum, & Van Horn, 2011) is a multifaceted intervention framework (consisting of a community survey, key informant interviews, community conversations, stakeholder analyses, and a capacity and vulnerability assessment) designed to assess and enhance community resilience, specifically resilience against disasters and other crises. The CART Toolkit is based on a model of community resilience that was originally developed from attributes that had been identified in the public health and social psychology literatures (Pfefferbaum et al., 2013). This model, which is related conceptually to the resilience models described above, is designed around four domains of community resilience: Connection & Caring, Transformative Potential, Disaster Management, and Resources. The Connection & Caring domain is closely related to social capital, encompassing constructs such as relatedness, social
support, community participation, fairness, and shared values. Transformative Potential reflects a community’s ability to frame collective experiences, and to identify, discuss, and address issues and challenges that arise. Disaster Management is a measure of a community’s capacity to prepare for, respond to, and recovery from disasters. Finally, the Resources domain includes all resources contained in or available to the community, including physical, informational, human, and financial resources.

**The Present Study**

While the decision to permanently relocate in the aftermath of a disaster is often justified and occasionally compulsory, we have seen that relocation may expose disaster victims to a broad array of challenges that are not explained by the hazard itself. These include psychological distress, job and income loss, physiological maladies, severe mental illness, and loss of social support. These effects are influenced by the duration, distance, and context of the relocation.

When we consider participation in home buyout programs as a special case of disaster relocation, the question arises of why homeowners who are offered a buyout choose to accept or reject those offers. The literature on this topic is limited; however, previous studies have suggested a few community-level (e.g., the relationship between the affected community and buyout administrators, the level of community involvement in the buyout process) and individual-level (e.g. social and economic) factors that may influence buyout decisions. Still, a number of important gaps remain in the literature. While a significant body of research has explored the influence of community resilience in disaster-affected communities, few studies to date have explored the relationship
between community resilience and relocation, and no studies, to my knowledge, have examined this relationship in the context of buyout programs. We also still have much to learn about the long-term implications of these decisions, both for those residents who choose to relocate and those who remain in their original community.

The present study addressed existing gaps in the disaster relocation literature by exploring the relationship between community resilience and relocation decisions related to New York’s home buyout plan. Resilience is assessed using the CART resilience model, with supplemental analyses for Sense of Community and Sense of Place. Using a comparative, mixed-methods design, this study compared the experiences and perceptions of two coastal communities (Oakwood Beach and Rockaway Park) that were heavily impacted by Hurricane Sandy, and that are eligible for New York’s Home Buyout Program, for the purpose of gaining insight into what factors influence neighborhoods to support or reject a buyout plan. This study also lays the groundwork for future studies on the long-term implications of postdisaster rebuilding and relocation.

**Study communities.** The communities included in this study were selected because of their demographic and geographic similarities, and because of their similar experiences of Hurricane Sandy. The first community, Oakwood Beach, is a residential

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3 The communities also share some interesting historical similarities. Both areas were originally summer resort towns that, over time, developed into permanent, year-round residential areas (many of the homes are bungalow style homes, or bungalows that have since been built on to). Both were consolidated into New York City in 1898 (Lopate, 2011). Importantly, the fact that neither community was originally part of New York City remains an important part of the shared narrative. Participants in both communities repeatedly expressed their belief that their community was, and had been, ignored or disregarded by the city. The experience of Hurricane Sandy (and the subsequent lack of
neighborhood on the eastern shore of Staten Island. The second community, Rockaway Park, is located on the Rockaway Peninsula in Queens. Both communities are beach communities that suffered catastrophic damage from Sandy, including significant flooding and several fatalities. While these communities share many similarities, they responded very differently to the proposed buyout plan. Residents of Oakwood Beach pursued the plan, while residents of Rockaway Park chose, largely, to remain in their community.

**Research questions.** The primary research question addressed by this study was: given demographic similarities and a similar threat level for future hazards, why has one community chosen to relocate and the other chosen to stay?

Subquestions included:

1. How do perceptions of the buyout plan vary by community?
2. What is the relationship between community resilience and the relocation decision?
   a. What markers of resilience were present in each community before Hurricane Sandy?
   b. What were the psychosocial impacts of Hurricane Sandy?
3. What additional resilience-related predictors explain one community’s choice to relocate and the other community’s choice to stay?

Question 1 explored perceptions and opinions of the buyout plan in each community.

Questions 2 and 3 are interrelated. Question 2 examined the *unique* contribution of resilience to the relocation decision in two ways: the primary analyses assessed the role of the four CART resilience domains on the buyout decision, while supplemental analyses assessed the roles of Sense of Community and Sense of Place. Question 3 then services, information, and support) was often described as one more event in this larger historical context.
built on Question 2 by assessing the role of additional resilience-related predictors, specifically the influence of three additional subscales that are included in the CART model (Information & Communication, Community Renewal, and Personal Relationship to the Community) on the buyout decision.

This study addressed these questions using a mixed-methods design that included both a community survey and in-depth interviews with residents and community leaders. The CART survey instrument was selected as the primary quantitative data collection tool for this study because (1) it is based on a broad conceptualization of community resilience, and (2) it is specifically focused on disaster resilience. In its standard form, the survey reflects the four domains of community resilience on which the CART toolkit is based, and also includes questions related to three subscales: Information & Communication, Community Renewal, and Personal Relationship to the Community (see Table 1 for a description of the four domains of resilience and subscales).

Table 1. CART Resilience Domains and Additional Subscales

<table>
<thead>
<tr>
<th>CART Resilience Domains</th>
<th>Additional Subscales</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection &amp; Caring</strong></td>
<td>Sense of belonging, commitment to the community, community participation, shared values, and support systems</td>
</tr>
<tr>
<td><strong>Transformative Potential</strong></td>
<td>The ability of a community to frame, examine, and learn from collective experiences</td>
</tr>
<tr>
<td><strong>Disaster Management</strong></td>
<td>Covering the phases of the “disaster cycle”: prevention, mitigation, preparedness, response, and recovery</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>Natural, physical, informational, human, social, and financial resources</td>
</tr>
<tr>
<td><strong>Additional Subscales</strong></td>
<td>Effectiveness of communication and availability of information within the community and the community’s level of trust in public officials</td>
</tr>
<tr>
<td><strong>Community Renewal</strong></td>
<td>Perspectives on safety, availability of resources, friendship, and leadership opportunities for the community as a whole</td>
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<tr>
<td>-----------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Personal Relationship to the Community</strong></td>
<td>Perceptions of belonging to the community, the availability of services in the community, and the respondent’s level of involvement in the community</td>
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</tbody>
</table>
Chapter 3: Methods

Description of Selected Communities

Appendix A displays maps of the study areas in Oakwood Beach and Rockaway Park. When viewing these maps, one can clearly see the physical vulnerability of each of these neighborhoods. Both communities have experienced a history of disasters, and both are vulnerable to damage from future hazard events. While Hurricane Sandy was the most recent and most severe, both communities were also impacted by two significant storms in 2011. Hurricane Irene was downgraded to a tropical storm just before making landfall in New York City on August 28, 2011. The storm caused flooding and power outages on both Long Island and Staten Island (Dolnick, 2011). Less than two weeks later, Tropical Storm Lee dropped several more inches of rain in the area (Flegenheimer, 2011).

Oakwood Beach and Rockaway Park are also similar demographically. Table 2 presents a demographic comparison of the two communities. Looking at these data, we do see some differences between the two. Rockaway Park, for example, is racially more diverse and has considerably more renters than Oakwood Beach. Still, there are a number of similarities. Housing in both communities consists primarily of one- or two-family homes (a large percentage of land in both communities is open space). Both communities can be considered working class communities, with similar per-capita incomes and a large percentage of government employees. Median home values are also similar (though higher in Rockaway Park), and indicate that these are relatively

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4 The racial diversity and rental figures for Rockaway Park are influenced by a large low-income housing development that is located in the neighborhood.
affordable neighborhoods in the New York City market, especially for detached homes. Finally, both communities are fairly stable, with 83.3% of homes in Oakwood Beach and 59.5% of homes in Rockaway Park being occupied by the same persons for more than ten years.

Table 2. Demographic Comparison of Oakwood Beach and Rockaway Park

<table>
<thead>
<tr>
<th></th>
<th>Oakwood Beach</th>
<th>Rockaway Park</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total population</strong></td>
<td>3206</td>
<td>3988</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>97.9% (2673)</td>
<td>83.4% (3324)</td>
</tr>
<tr>
<td>Black</td>
<td>0.0% (22)</td>
<td>10% (398)</td>
</tr>
<tr>
<td>Asian</td>
<td>1.6% (153)</td>
<td>4.4% (175)</td>
</tr>
<tr>
<td>2 or more races</td>
<td>0.5% (15)</td>
<td>0.4% (14)</td>
</tr>
<tr>
<td>Hispanic origin (of any race)</td>
<td>6.6% (212)</td>
<td>9.7% (387)</td>
</tr>
<tr>
<td><strong>Land use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% 1-2 family residential</td>
<td>39.1</td>
<td>30.4</td>
</tr>
<tr>
<td>% Multi-family residential</td>
<td>1.5</td>
<td>9.1</td>
</tr>
<tr>
<td><strong>Income and employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per capita income</td>
<td>36,116</td>
<td>35,412</td>
</tr>
<tr>
<td>% of residents over age 16</td>
<td>57.2</td>
<td>62.6</td>
</tr>
<tr>
<td>% employed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Government workers</td>
<td>22.7</td>
<td>26.6</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Homes owner-occupied</td>
<td>89.5</td>
<td>56</td>
</tr>
<tr>
<td>% Homes with same occupant(s)</td>
<td>83.3</td>
<td>59.5</td>
</tr>
<tr>
<td>&gt; 10 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Median home value</strong></td>
<td>$443,300</td>
<td>594,000</td>
</tr>
</tbody>
</table>

Source: United States Census Bureau. All data are from 2010 unless otherwise noted. Neighborhood data reflects census data for census tracts 128.05 (Oakwood Beach) and 934.02 (Rockaway Park), which are reasonable approximations of community boundaries. Land use values are from 2011 for Staten Island and Queens, respectively.
Participants

Participants in this study included individuals who participated only in the survey, individuals who participated in both the survey and an interview, and a small number of individuals who participated only in an interview. Survey participants included 65 men and 108 women (N=173), with an average age of 53 (median: 53.5; SD: 14.23; range: 18 to 88). Survey participants had lived in their neighborhoods for an average of 23.3 years (SD: 15.8; range: 1 to 63). Interview participants included 14 men and 14 women (N=28) who participated in a total of 24 interviews (including four couples who participated in joint interviews). Demographic characteristics of survey and interview participants are detailed in Table 3.

Table 3. Demographic Characteristics of Survey and Interview Participants by Neighborhood

<table>
<thead>
<tr>
<th>SURVEY PARTICIPANTS</th>
<th>Oakwood Beach</th>
<th>Rockaway Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>51.8</td>
<td>53.4</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>35 (48.7%)</td>
<td>30 (30%)</td>
</tr>
<tr>
<td>Female</td>
<td>37 (51.4%)</td>
<td>70 (70%)</td>
</tr>
<tr>
<td>Tenure (in years)</td>
<td>19.5</td>
<td>26</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>64 (91.4%)</td>
<td>91 (91%)</td>
</tr>
<tr>
<td>Other</td>
<td>6 (8.6%)</td>
<td>8 (8%)</td>
</tr>
<tr>
<td>Children under 18 in home</td>
<td>23 (32.4%)</td>
<td>36 (38%)</td>
</tr>
<tr>
<td>Adults over 65 in home</td>
<td>16 (21.9%)</td>
<td>26 (27%)</td>
</tr>
<tr>
<td>Employment level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>33 (45.2%)</td>
<td>56 (56%)</td>
</tr>
<tr>
<td>Part-time</td>
<td>3 (4.1%)</td>
<td>3 (3%)</td>
</tr>
<tr>
<td>Not employed, not looking</td>
<td>10 (13.7%)</td>
<td>12 (12%)</td>
</tr>
<tr>
<td>Not employed, looking</td>
<td>2 (2.7%)</td>
<td>3 (3%)</td>
</tr>
<tr>
<td>Other (incl. retired)</td>
<td>16 (21.9%)</td>
<td>22 (22%)</td>
</tr>
</tbody>
</table>
This table reflects values from the original data, not the imputed data. Values that differ from the total N represent missing data. Percentages are based on the total number of valid values.

### Measures

**Quantitative measures.** The survey instrument used for the quantitative portion of this study was designed to assess resilience in each of the target communities, with a focus on the impacts of Hurricane Sandy and the buyout program. The survey was based on the Communities Advancing Resilience Toolkit (CART) community survey tool (Pfefferbaum et al., 2011), which was designed to assess disaster resilience. For the purposes of this study, the CART survey instrument was adjusted to assess the impacts of Hurricane Sandy on the target communities, and also to gauge their responses to the proposed buyout plan. In addition, participants were asked to respond to some questions twice: once retrospectively (based on their situation before Sandy) and once based on their situation at the time the survey was taken (between seven and ten months after Sandy). These changes, and the CART community survey, are described in detail below.

**CART survey.** The CART survey is intended for use in communities that are interested in assessing and improving their resilience to disasters and other crises. The standard CART survey is designed around four scales representing each of the four CART resilience domains (Connection and Caring, Transformative Potential, Disaster
Management, and Resources) as well as three additional subscales outside of the four resilience domains (Information and Communication, Community Renewal, and Personal Relationship to the Community). The original survey consists of 62 questions that cover the CART resilience domains and subscales, in addition to questions about the respondent’s previous experience with disasters (specifically their training or experience with emergency response teams) and demographic questions.

A benefit of this survey instrument is that it is designed to be adapted to fit within a specific context or application. While the survey is one component of a broader toolkit, it has been used independently to assess community resilience. Sherrieb and colleagues (Sherrieb et al., 2012) used an expanded version of the survey to evaluate the effectiveness of school principals in coastal counties in the U.S. as key informants for disaster resilience in their communities. Factor analysis was used to test for construct validity. Results indicated that all items formed meaningful subsets, and inter-item correlation was highest for Transformative Potential ($r=.42-.72; \alpha=.90$) and lowest for Information and Communication ($r=.23-.51; \alpha=0.77$), but still within acceptable limits.

**Adjustments to the CART survey instrument.** This section details the changes that were made to the CART survey instrument for the purposes of the present study. Three new sections were added to the survey. The first contained eleven items designed to capture participants’ experiences of and since Hurricane Sandy (e.g., *People in my community received the help they needed after Hurricane Sandy, My community will completely recover from Hurricane Sandy*). The second included four items that were

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5 The items related to previous experience with disasters were not included in the survey for the present study.
added to assess exposure to the storm, two of which were included in an index of exposure and used as a covariate (EXPOSURE). The third section included eight items that were designed to assess participants’ perceptions and opinions of the buyout plan (e.g., *If people have the option of taking the buyout, they should, The buyout plan is bad for my community*).

For two subsets of questions drawn from the original CART survey instrument, participants were asked to respond both retrospectively (considering their situation before Sandy) and based on their current situation (since Sandy) to gauge perceived changes since the storm. The first subset of questions focused on the individual participant (questions drawn from the CART subscale on Personal Relationship to the Community), and the second subset focused on the participant’s perceptions of the broader community (questions drawn from the CART Connection & Caring, Resources, and Community Renewal subscales). In addition, four open-ended questions were added to the end of the survey to gather information about the respondent’s opinions on and eligibility for the buyout (these were in addition to the eight survey questions about the buyout described above).

The survey also included numerous demographic questions, which were used as covariates and predictors. These included several questions from the standard CART survey (such as age, race, employment, gender, and number of children in the home). In addition, participants were asked how many years they had lived in their neighborhood (TENURE) and what their living situation was at the time of the survey (HOUSING). Table 4 describes these additional predictors and covariates.
The resulting survey contained 94 items and took approximately 20 minutes to complete when the questions were answered directly and without additional commentary or discussion (see Appendix B for the full survey instrument). With the exception of the four open-ended questions and four binary questions about exposure to the storm, responses were assessed on a 5-point Likert scale, ranging from strongly disagree to strongly agree. The survey was piloted in Oakwood Beach, resulting in minor adjustments.

Table 4. Descriptions of Additional Predictors and Controls

| **EXPOSURE** | Did you ever feel like your life was in danger during the hurricane?  
               | Was your home severely damaged by the storm? |
|--------------|---------------------------------------------------------------------|
| **TENURE**   | Length of residence in years.                                       |
| **HOUSING**  | Post-storm living situation at the time of the survey (original home, with a friend, with a relative, in a rented apartment, other). |
| **EMPLOYMENT** | Employment status at the time of the survey (employed full time, other). |
| **AGE**      | Age category (18-29, 30-39, 40-49, 50-64, 65 and over).            |
| **RACE**     | Binary variable classified as White/all other races.                |
| **CHILDREN** | Binary variable indicating whether or not there were children under 18 in the household (yes/no). |

**Reliability of CART domains and subscales.** Below are descriptions of the reliability of each CART subscale in the present study. Descriptions of the specific items included in each subscale can be found in Table 5. For subscales that included items that were asked retrospectively (denoted by the phase “Before/After Sandy” in Table 5), alphas were calculated for both time intervals. Overall reliability for the CART core
community resilience items (19 items covering each of the four CART domains) was excellent at 0.86 at time 1 (before Sandy), and 0.86 at time 2 (after Sandy).\textsuperscript{6}

The Connection & Caring subscale contains six items examining relatedness among community members, shared values, social support systems, and a sense of fairness and hope. Cronbach’s alpha for the scale was calculated to be 0.78 at time 1, and 0.78 at time 2, indicating good reliability.

The Transformative Potential subscale includes seven items designed to determine the community’s capacity for framing, examining, and learning from collective experiences, and applying the skills that create the potential for community change. Cronbach’s alpha for this scale was calculated to be 0.80, indicating good reliability.

The Disaster Management subscale includes four items assessing the community’s history with and capacity for preventing, preparing for, and responding to disasters. Cronbach’s alpha for this scale was calculated at 0.69, indicating acceptable reliability. When values for questions related to prevention and preparedness were calculated separately from those for disaster response, the alphas were notably higher for the former, at 0.75 and lower for the later, at 0.61.

The Resources subscale includes two items examining the availability of necessary services and resources. Cronbach’s alpha for this scale was 0.70 at time 1, indicating good reliability, but low at time 2, at 0.53. However, the true reliability of this

\textsuperscript{6} Alpha values are based on the imputed dataset. SPSS does not automatically generate pooled values of Cronbach’s alpha from imputed data. Therefore, pooled alphas were manually calculated by taking the mean of the five imputed values.
scale may be underestimated due to the small number of items included in the scale (Eisinga, Grotenhuis, & Pelzer, 2013).

The Information & Communication subscale includes three items that assesses the effectiveness of communication within the community and the community’s level of trust in public officials. Cronbach’s alpha for this scale was calculated at 0.63, indicating acceptable reliability (the reliability of this scale may also be underestimated due to the small number of items included).

The Community Renewal subscale includes four items designed to assess the respondents’ perspectives on safety, availability of resources, friendship, and leadership opportunities for the community as a whole. Cronbach’s alpha for this scale was calculated at 0.62 at time 1, and 0.61 at time 2, indicating acceptable reliability.

The Personal Relationship to the Community subscale includes seven items that assess the respondents’ perceptions of belonging in their community, the availability of services in the community (for the individual respondent), and their level of involvement in the community. Cronbach’s alpha for this scale was calculated at 0.77 at time 1, and 0.73 at time 2, indicating good reliability.
Table 5. Items Included in CART Resilience Domains and Additional Subscales

<table>
<thead>
<tr>
<th>CART Resilience Domains</th>
<th>People in my community feel like they belong to the community.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection &amp; Caring</strong></td>
<td>My community treats people fairly no matter what their</td>
</tr>
<tr>
<td>(alpha Before 1=.78; After=.78)</td>
<td>background is.</td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), people in my community have friendships</td>
</tr>
<tr>
<td></td>
<td>with their neighbors.</td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), people are committed to the well-being</td>
</tr>
<tr>
<td></td>
<td>of the community.</td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), people have hope about the future.</td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), people in my community help each other.</td>
</tr>
<tr>
<td><strong>Transformative Potential</strong></td>
<td>My community has effective leaders.</td>
</tr>
<tr>
<td>(alpha=.80)</td>
<td>My community works with organizations and agencies outside of</td>
</tr>
<tr>
<td></td>
<td>the community to get things done.</td>
</tr>
<tr>
<td></td>
<td>People communicate with leaders who can help improve the</td>
</tr>
<tr>
<td></td>
<td>community.</td>
</tr>
<tr>
<td></td>
<td>People discuss issues so they can improve the community.</td>
</tr>
<tr>
<td></td>
<td>People work together to improve the community.</td>
</tr>
<tr>
<td></td>
<td>My community develops skills and finds resources to solve its</td>
</tr>
<tr>
<td></td>
<td>problems and reach its goals.</td>
</tr>
<tr>
<td></td>
<td>My community has priorities and sets goals for the future.</td>
</tr>
<tr>
<td><strong>Disaster Management</strong></td>
<td>My community tries to prevent disasters.</td>
</tr>
<tr>
<td>(alpha=.69)</td>
<td>My community actively prepares for future disasters.</td>
</tr>
<tr>
<td></td>
<td>My community can provide emergency services during a disaster.</td>
</tr>
<tr>
<td></td>
<td>My community has services and programs to help people after</td>
</tr>
<tr>
<td></td>
<td>a disaster.</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>People in my community are able to get the services they need.</td>
</tr>
<tr>
<td>(alpha Before=.70; After=.53)</td>
<td>(Before/After Sandy), my community has the resources it needs to take care of community problems.</td>
</tr>
</tbody>
</table>

**Additional CART Subscales**

<p>| Information &amp; Communication (alpha=.63) | My community keeps people informed about issues that are relevant to them. |
|                                          | If a disaster occurs, my community provides information about what to do. |
|                                          | People in my community trust public officials. |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
<th>Before/After Sandy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community Renewal</strong></td>
<td>(Before/After Sandy), my community is a safe place to live and work.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), good housing is available for people in my community.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), people have friendships with their neighbors.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), leadership opportunities are available to people who live in my community.</td>
<td></td>
</tr>
<tr>
<td><strong>Personal Relationship to the Community</strong></td>
<td>(Before/After Sandy), I feel like I belong to my community.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), I have hope about the future.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), I live in good housing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), I can get the services I need.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), I work with people in my community to solve our problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), I have friends in my community.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Before/After Sandy), I would get involved in trying to improve the community.</td>
<td></td>
</tr>
</tbody>
</table>

**Supplemental resilience measures.** This study sought to explore the relationship between resilience and the relocation decision using the CART resilience model.

However, previous research on disaster resilience has suggested that Sense of Community and Sense of Place are also useful community-level indicators of resilience; therefore, it seemed feasible that they would provide insight into buyout decisions.

Unfortunately, the inclusion of additional indices for these measures in the survey was not practical, as they would have made the survey instrument prohibitively long.

Instead, an alternative approach was taken. Since there is considerable overlap between the CART resilience domains and common indices of Sense of Community and Sense of Place, items from the CART domains were reconfigured into measures that were reflective of these established constructs. While this approach was less than ideal, it provided an opportunity to supplement the analyses of the CART resilience domains with a limited assessment of two additional, and potentially valuable, measures of resilience.
Items selected from the CART survey for inclusion in the measures of Sense of Community and Sense of Place are detailed in Table 6. Items selected to represent Sense of Community were based on the Sense of Community Index 2 (SCI-2; Chavis et al., 2008). Because the CART survey included both questions about the individual’s own experience and their perceptions of the community as a whole, two measures were created that reflected these two units of analysis: the individual’s experience of Sense of Community (SOC_I, alpha time 1=.80, time 2=.71) and their perceptions of Sense of Community at the community level (SOC_C, alpha time 1=.76, time 2=.75). While SOC_I is closely associated with the CART Personal Relationship to the Community subscale, it was included as a companion measure to SOC_C for the supplemental analyses.

Scales for Sense of Place are less established than those for Sense of Community. As such, items selected from the CART survey to represent Sense of Place were based on those suggested from two sources. The first was the SCI-2, which includes several items that have been demonstrated to represent place attachment (Perkins & Long, 2002). The second source was Proshansky, Fabian, and Kaminof’s (1983) construct of place identity, which is based on the emotional or symbolic meaning one attaching to a particular place. For items included in the Sense of Place measure (SOP), participants were asked to respond “Before/After Sandy” (alpha time 1=.76, time 2=.74).  

7 These measures are referred to throughout this document as sense of community measures at the individual (SOC_I) and community (SOC_C) levels. These terms are used for ease of communication, recognizing that use of the term “level” could indicate that these are multilevel data (which they are not). Both measures represent individual-level perceptions (of oneself and one’s community).
Table 6. Survey Items Included in Sense of Community and Sense of Place Measures

<table>
<thead>
<tr>
<th>Sense of community – individual (SOC-I)</th>
<th>Sense of community – community (SOC-C)</th>
<th>Sense of place (SOP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Before/After Sandy), I feel like I belong to my community.</td>
<td>People in my community feel like they belong to the community.</td>
<td>(Before/After Sandy), I live in good housing.</td>
</tr>
<tr>
<td>(Before/After Sandy), I have hope about the future.</td>
<td>People in my community discuss issues so they can improve the community.</td>
<td>(Before/After Sandy), my community is a safe place to live and work.</td>
</tr>
<tr>
<td>(Before/After Sandy), I work with people in my community to solve our problems.</td>
<td>People in my community work together to improve the community.</td>
<td>(Before/After Sandy), good housing is available for people in my community.</td>
</tr>
<tr>
<td>(Before/After Sandy), I have friends in my community.</td>
<td>My community has priorities and sets goals for the future.</td>
<td>(Before/After Sandy), people in my community are committed to the well-being of the community.</td>
</tr>
<tr>
<td>(Before/After Sandy), I would get involved in trying to improve my community.</td>
<td>(Before/After Sandy), people in my community have hope about the future.</td>
<td></td>
</tr>
<tr>
<td>(Before/After Sandy), I am an active member of my community.</td>
<td>(Before/After Sandy), people in my community have friendships with their neighbors.</td>
<td></td>
</tr>
</tbody>
</table>

**Dependent variable.** The primary dependent variable for the quantitative analyses included in this study is the participants’ intention to participate in the buyout program (BUYOUT). Responses fall into one of three categories: Yes (participant intends to participate in the buyout), No (participant does not intend to participate in the buyout), and Undecided (participant is unsure whether or not he or she will participate in the buyout).
Qualitative measures. For the qualitative interviews, participants were asked to describe their neighborhood, their experience of Hurricane Sandy, their perspective on how life and the community had changed since the storm, and their opinions on the buyout program. Policy makers and community leaders were asked more detailed questions about the buyout plan and its potential impacts on the community, the community’s response to the buyout plan, and, in the case of community leaders, questions about their organization and its role in the community. All interviews were semi-structured and conducted in-person. See Appendix C for the interview protocols.

Procedures

Survey procedure. Survey participants were recruited using a two-step sampling method that included door-to-door surveying and surveying at local community events. Door-to-door surveys were collected using the following process: a single address within each neighborhood was selected at random. Using the randomly selected address as a starting point, I approached every third house and asked the person who answered the door to participate in the survey (if he or she was under 18, I asked if an adult resident of the home was available to participate). If a home was unapproachable (e.g. gated or uninhabitable), I approached the adjacent home and then continued the pattern. In most cases, if there was no answer when I first approached a home I returned to that home on a different day and, when possible, at a different time of day. If there was no answer the second time I approached the home, I struck the house from my sample. Additional surveys were completed via convenience sampling at Sandy-related events and community meetings.
All surveys were conducted in person. During the survey, participants were given a laminated card detailing the response options for survey questions, and asked to respond verbally to each question. Prior to completing the survey, participants were consented using the consent form in Appendix D. In addition to the survey consent form, participants were asked if they would be willing to provide their names and contact information for possible participation in future follow-up studies. Of the 173 survey participants, 101 provided their contact information.

Table 7 details the survey response rates by neighborhood. The number of households for which there was no answer was relatively high in both neighborhoods. A number of factors likely contributed to this. First, both neighborhoods were still in the process of recovering, so many homes were under construction or uninhabitable. Second, most surveys were conducted over the summer months, so the response rates may have been impacted by school vacation. Third, several homeowners mentioned being frustrated with the number of people who came to their doors in the weeks and months after Sandy (such as people looking for contract work or various other services, members of the media, etc.). As a result, some residents may have chosen to not answer the door.
Table 7. Survey Response Rates by Neighborhood

<table>
<thead>
<tr>
<th></th>
<th>Oakwood Beach</th>
<th>Rockaway Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total households in study area</td>
<td>435</td>
<td>588</td>
</tr>
<tr>
<td>Number of households approached</td>
<td>202</td>
<td>217</td>
</tr>
<tr>
<td>Response rates for door-to-door surveys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>61 (31%)</td>
<td>85 (39%)</td>
</tr>
<tr>
<td>No</td>
<td>21 (10%)</td>
<td>44 (20%)</td>
</tr>
<tr>
<td>No answer</td>
<td>120 (59%)</td>
<td>88 (41%)</td>
</tr>
<tr>
<td>Number of surveys completed at community events</td>
<td>12</td>
<td>15</td>
</tr>
</tbody>
</table>

**Interview procedure.** Community interview participants were recruited primarily through the surveying process. Since the number of interviews in each community was limited, I attempted to select interview participants based on a range of considerations. First, survey participants who indicated an interest in sharing their perspectives or experiences beyond the questions that were covered in the survey were asked if they would be willing to participate in an interview. To avoid skewing the sample, I also asked some survey participants who seemed more reserved. I attempted to balance the interviews in terms of age and gender. In addition to the community interviews, key-informant interviews were conducted with community leaders in both communities and one policy maker in Staten Island, all of whom were identified via Internet searches and community meetings.

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8 Three residents of Oakwood Beach, one policy maker on Staten Island, and two community leaders in Rockaway Park participated in interviews but did not complete the survey. These interviews were conducted while I was waiting to have my survey modifications approved by the University of Hawai‘i Committee on Human Studies.
Interviews were scheduled and conducted at times that were convenient for the participants, with most interviews taking place in the participants’ homes. Interview participants were consented using the interview consent form (see Appendix E for the interview consent form, used for both the community and key informant interviews).

Confidentiality. The names and identities of all participants were kept confidential. Transcriptions, field notes, and completed surveys contained no information that could be used to identify the participants. With the consent of the participant, responses to the open-ended questions in the survey and interviews were digitally recorded and transcribed. All survey and interview documents were kept in a secured location, and electronic files were password protected. The purpose of the study and the rights of the participants were clearly explained to each participant both verbally and through a written consent form. All study methods were approved by the University of Hawai‘i at Mānoa Committee on Human Studies.9

Compensation. As compensation for their time spent participating in this study, interview participants received a gift card in the amount of $20.00. Survey participants were not compensated. The reasons for this are as follows: the original intent was to offer all participants – both in the survey and interviews - $5.00 gift cards as compensation. However, in speaking with community leaders I was advised to forgo providing gift cards to survey participants because (1) the amount of compensation I would have been able to provide was very small, and (2) I would often be asking participants to complete the surveys in large gatherings, such as community meetings, which may have seemed unfair.

9 This study was approved April 16, 2013 (CHS #21084). A request for minor modifications to the study was approved on May 22, 2013.
to non-participants. This change was made prior to conducting any surveys. Funds were then reallocated to compensate interview participants, which was appropriate under the circumstances as interviews represented a greater time commitment (interviews lasted between 35 minutes and two hours).

**Data Analysis**

**Quantitative data analysis.** Quantitative data were analyzed using t-tests and chi-square tests for comparisons within and across communities, and multinomial logistic regression, a method that generalizes logistic regression to problems with more than two discrete outcomes. For the regression analyses, the dependent variable was the participant’s buyout decision (BUYOUT). This variable contained three unordered group classifications representing three possible responses: Yes (participant intends to accept the buyout), No (participant intends to reject the buyout), and Undecided (participant is undecided about the buyout decision). Independent variables included the CART resilience domains, the supplemental resilience measures of Sense of Community (individual- and community-level) and Sense of Place, and the CART additional subscales. Covariates included: exposure (an index of the participant’s exposure to Hurricane Sandy); binary covariates including children in the home (yes/no), gender (male/female), race (White, Other), and employment (employed full time/other); and two continuous covariates (age and tenure). To test the role of resilience in the buyout decision, separate regression models were developed that included the CART resilience domains (two models containing two CART domains each) and the supplemental resilience measures (one model containing SOC_I and SOC_C, and one containing SOP).
Three additional models were developed to analyze the effects of each of the three CART additional subscales. Prior to analysis, data were imputed using multiple imputation (MI) procedures (Graham, 2009; Schafer & Graham, 2002; Sinharay, Stern, & Russell, 2001) to address issues with missing data (described in more detail in the results section).

**Qualitative data analysis.** Qualitative data analyses were used to expand on the findings from the quantitative data, with the goal of addressing fully the research questions posed in this study. Specifically, a set of three *a priori* themes were identified that complement the quantitative portion of this study. The first theme, *the experience of previous disasters*, was selected because the literature has suggested that repeated exposure to hazards may play a role in influencing relocation decisions, and because data from this study suggest that this may be an important distinguishing feature for the two target communities. The second theme, *sense of place*, was selected to augment findings related to the nature and role of place attachment in each community. The third theme, *the decision to sell or rebuild*, was chosen to identify factors that residents considered to be important or influential in making their decision to relocate or remain in their community. Taken together, these three themes provided additional insight into the results of the quantitative portion of the study and deepened our understanding of the role of resilience in these communities.

Qualitative data (including responses to open-ended survey questions, field notes, and interviews conducted with community residents and community leaders who lived in the target communities) were coded according to three *a priori* themes, with a focus on
within-case analysis (Patton, 2002). Each theme was then analyzed using grounded theory methodology (Corbin & Strauss, 2008). An inductive process of open coding was used to organize data into initial categories. A process of axial coding was then used to organize categories into higher-level (thematic) concepts. Memos were used to draw out and develop emerging themes, including references to the broader historical and cultural context in which the hurricane took place. This process resulted in a series of subthemes nested within each *a priori* theme representing findings from the qualitative data in each community. All qualitative analyses were conducted manually.
Chapter 4: Results

Data Preparation

In preparation for data analysis, a number of adjustments were made to the survey data. When appropriate, survey questions were reverse scored. In addition, a number of questions with low response rates were dropped from the analyses.\textsuperscript{10} Table 8 details each of these items.

Table 8. Items Reverse Scored or Dropped from Analyses

<table>
<thead>
<tr>
<th>Reverse scored items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurricane Sandy negatively affected people’s relationships with each other.</td>
</tr>
<tr>
<td>Since Hurricane Sandy, I have experienced more conflict with my neighbors.</td>
</tr>
<tr>
<td>Since Hurricane Sandy, I have experienced more conflict with my family.</td>
</tr>
<tr>
<td>I am more stressed or anxious now than I was before Hurricane Sandy.</td>
</tr>
<tr>
<td>The buyout plan is bad for my community.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Items dropped from analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Necessary health care services are available to people who live in my community.</td>
</tr>
<tr>
<td>Good educational opportunities are available for people who live in my community.</td>
</tr>
<tr>
<td>Good work opportunities are available for people who live in my community.</td>
</tr>
<tr>
<td>I am concerned about my neighbors moving away because of the buyout plan.</td>
</tr>
<tr>
<td>Participation in the buyout plan is optional.</td>
</tr>
<tr>
<td>Other than you, how many people in your household are employed?</td>
</tr>
<tr>
<td>Please think of the most significant crisis you have experienced while living in this community.</td>
</tr>
<tr>
<td>Who helped you?</td>
</tr>
<tr>
<td>What is the source of your greatest connection to your community?</td>
</tr>
</tbody>
</table>

\textsuperscript{10} There are two reasons for the low response rates. In most cases, in the course of the fieldwork, these items proved to be confusing or difficult for participants to answer. Other questions (including \textit{Please think of the most significant crisis you have experienced while living in this community} and \textit{What is the source of your greatest connection to your community?}) were often skipped as I ran out of time to complete a survey with a participant. These questions, which typically took quite a long time to answer, were skipped for the sake of collecting demographic information.
Multiple imputation (MI) procedures (Graham, 2009; Schafer & Graham, 2002; Sinharay et al., 2001) were used to impute missing values in the original dataset. MI is a well-accepted method for imputing missing values with reasonable predictions of those values, and has been shown to perform well with small samples (Graham & Schafer, 1999) and with multiple missing data mechanisms (Sinharay et al., 2001). Essentially, multiple imputation replaces each missing value with a list of m>1 simulated values that are predicted from the observed values for each case. A major benefit of MI is that, unlike single imputation methods (in which the imputed values always fall along the regression line), MI incorporates random error variance. In this way, MI simulates several random draws from the population of interest. This method results in multiple (typically 3 to 5), alternative versions of the complete dataset that can then be analyzed using complete-data techniques. Analyses are run separately on each complete dataset, and the results combined (averaged) to create pooled values that reflect a full set of estimates and standard errors of the imputed values.

Two categorical demographic variables were collapsed into binary variables to prepare for the imputation, as small cell sizes (resulting from categorical variables with a large number of categories) can cause the imputation to fail to converge. The collapsed variables included current employment (employed full-time/other) and race (collapsed into White/other). Additionally, two continuous demographic variables were converted into binary or categorical variables. These included number of children in the household (collapsed into a binary variable indicating whether or not there were any children in the home) and age (collapsed into five categories). Among the variables included in the
analyses, the missing data rate in the original dataset ranged from 0% to 27.7% on the item level.

I ran the MI procedures using IBM SPSS Statistics 21 software. The Fully Conditional Specification method was used to impute five sets of missing values. This method uses an iterative Markov chain Monte Carlo process to fit a model with the missing value as the single dependent variable and all other values as predictors. The process is repeated until a set of values is found for each case that is within the specified ranges (here imputed values were constrained to valid data ranges for all variables), or until the maximum number of iterations is reached. If an appropriate set of values is not obtained within the specific maximum number of iterations (which in this case was set at 2100 to achieve convergence), then the procedure begins again using another set of model parameters, and repeats the case drawing process until convergence is achieved or the maximum number of parameter draws (here set at 100) is reached. The imputed values are then saved to the imputed dataset (IBM Corporation, 2011). For this study, this process was repeated five times to produce five imputed datasets. Model parameters were adjusted to account for the relatively large number of categorical variables. Unless otherwise indicated, all analyses of quantitative data have been conducted using the imputed datasets, and results reported represent pooled values, as calculated by SPSS.

**Exposure to Sandy**

In understanding the results presented in the following sections, it is helpful to review some descriptive data on the experience and impacts of Sandy in each neighborhood. While the impact of Sandy was devastating in both communities, the
majority of the damage caused by the storm in Oakwood Beach was a result of flooding (participants reported having up to five feet of water in their main floor, not including the basement, with official reports of total flood depth exceeding ten feet in some areas; Tan, 2013). Rockaway Park also experienced significant flooding, with participants reporting up to six feet of water in their main floor (official reports of total flood depths were between three and ten feet in most areas; Tan, 2013), though on the whole, flood damage was less extensive than in Oakwood Beach. Rockaway Park, however, faced additional hazards in the form of large fires that broke out across the Rockaway peninsula. The fires were particularly frightening during the storm, as the lack of power meant residents could not tell how far away the fires were from their own homes (there were no lights to aid in depth perception), and the flooding made escaping the fires, should they reach one’s home, nearly impossible. Two of the largest fires occurred on either end of the neighborhood: one near the eastern border of Rockaway Park, and one on the border with the Belle Harbor neighborhood, to the west. These differences in the experience of the storm were important in participants’ responses related to exposure. When asked, for example, whether they ever felt their life was in danger during Sandy, residents of Oakwood Beach who answered affirmatively referenced the floods, while residents of Rockaway more frequently cited the fires. These differences in exposure are reflected, to some extent, in participants’ responses to the two items included in the exposure index: Did you ever feel like your life was in danger during the hurricane? and Was your home severely damaged by the storm? Responses to
these two questions are presented in Figure 2. Chi square tests of independence were performed to examine the relationship between the items included in the exposure index and community of residence. Results indicated that the communities did not differ in terms of the number of residents who felt their lives had been in danger ($\chi^2(1, N = 173) = 1.39, p=.40$), though residents of Oakwood Beach were significantly more likely to report that their home had been severely damaged ($\chi^2(1, N = 173) = 8.06, p<.01$).

**Figure 2. Exposure to Sandy by Community**

**Question 1: Perceptions of the Buyout Plan**

The purpose of this study was to explore the following question: given demographic similarities and a similar threat level for future hazards, why has one of the target communities chosen to relocate and the other chosen to stay? In addressing this

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11 Data presented in Figures 2 and 3 represent responses from the original dataset (not pooled values from the imputed dataset).
larger issue, the first research question asked; how do perceptions of the buyout plan vary by community? To begin, it is helpful to review the distribution of responses in each community to the question, *Would you take the buyout offer?* Responses to this question are presented in Figure 3. As expected, the majority of participants in Oakwood Beach responded that they would take the buyout (Yes), while the majority of residents in Rockaway Park responded by saying that they would not take the buyout (No). Still, there were a number of residents in each community whose responses were in contrast to the majority in their community, and others who, at the time of the survey, stated that they were undecided about whether or not they would take a buyout.

**Figure 3. Responses to "Would You Take the Buyout?" by Community**
A comparative analysis of the two communities using independent-samples t-tests indicated that they differed significantly on three items intended to reflect their perspectives of the buyout plan (see Table 9). When asked whether it made sense to return the land in their community to open space, residents of Oakwood Beach ($M=4.18$, $SE=.11$) were significantly more likely to respond favorably than residents of Rockaway Park ($M=2.38$, $SE=.12$). Residents of Oakwood Beach ($M=4.14$, $SE=.11$) were more likely than residents of Rockaway Park ($M=2.81$, $SE=.14$) to agree with the statement that people who have the option of taking a buyout should do so. Interestingly, residents of Rockaway Park often qualified their responses to this statement, saying that it was an individual decision, and they were hesitant to say what others should or should not do in this case. Residents of Oakwood Beach, conversely, tended to be decisive in their responses. Responses to the statement *The buyout plan is bad for my community* (reverse scored) were also significantly different (Oakwood Beach: $M=3.85$, $SE=.15$; Rockaway Park: $M=2.77$, $SE=.15$), indicating that residents of Rockaway Park were more likely to agree that the buyout was bad for their community (though with both communities’ average responses nearer to the midpoint). Overall then, residents of Oakwood Beach expressed more support, on average, for the buyout plan than residents of Rockaway Park.
Table 9. Perceptions of the Buyout by Community

<table>
<thead>
<tr>
<th>Community</th>
<th>Oakwood Beach</th>
<th>Rockaway Park</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>It makes sense to return the land in this area to natural space.</td>
<td>4.18 (.11)</td>
<td>2.38 (.12)</td>
<td>9.97**</td>
<td>171</td>
</tr>
<tr>
<td>If people have the option of taking the buyout, they should.</td>
<td>4.14 (.11)</td>
<td>2.81 (.14)</td>
<td>7.56**</td>
<td>171</td>
</tr>
<tr>
<td>The buyout plan is bad for my community.*</td>
<td>3.85 (.15)</td>
<td>2.77 (.15)</td>
<td>4.52**</td>
<td>171</td>
</tr>
</tbody>
</table>

Note: *p ≤ .05, **p ≤ .01. Standard errors appear in parentheses below means. All values represent pooled values from the imputed dataset. a=items were reverse scored.

Question 2: The Relationship Between Resilience and Relocation

Question 2 explored the relationship between resilience and postdisaster relocation, in three parts. First, I compared the markers of resilience in each community (Question 2a). Then, I examined the psychosocial impacts of Sandy by analyzing the within-community changes before and after the storm (Question 2b). Third, I used a series of multinomial logistic regressions to examine the contribution of resilience to the relocation decision. For analyses involving the resilience measures, results are reported for the CART resilience domains, followed by the supplemental measures of Sense of Community and Sense of Place.

Table 10 displays differences in markers of resilience in each of the study communities. There were no significant differences between the two communities in the following areas: Connection & Caring before Sandy, Transformative Potential, Resources after Sandy, Personal Relationship to the Community before Sandy, individual-level
Sense of Community (before and after Sandy), and Sense of Place before Sandy (note that both communities exhibited high levels of Sense of Place before Sandy). Oakwood Beach scored significantly higher than Rockaway Park in two areas: Disaster Management (indicating greater confidence in their community’s ability to prepare for and respond to a disaster), and Information & Communication (indicating a higher level of perceived availability of information and effectiveness in communication, and a higher level of trust in public officials). On the remaining measures, Rockaway Park scored significantly higher than Oakwood Beach. Interestingly, with the exception of Resources before Sandy, the measures on which Rockaway Park scored higher than Oakwood Beach (Connection & Caring after Sandy, Community Renewal after Sandy, Personal Relationship to the Community after Sandy, community-level Sense of Community before and after Sandy, Sense of Place after Sandy) reflect an overall theme of continued connection to and belief in the community, both relationally and physically.
### Table 10. Between-Community Differences in Resilience

<table>
<thead>
<tr>
<th></th>
<th>Community</th>
<th></th>
<th></th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oakwood Beach</td>
<td>Rockaway Park</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Connection &amp; Caring</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before Sandy</td>
<td>4.23</td>
<td>4.30</td>
<td>-.83</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.07)</td>
<td>(.05)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After Sandy</td>
<td>4.11</td>
<td>4.30</td>
<td>-1.97*</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.08)</td>
<td>(.06)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transformative Potential</strong></td>
<td>3.67</td>
<td>3.67</td>
<td>.06</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.07)</td>
<td>(.06)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Disaster Management</strong></td>
<td>3.49</td>
<td>3.22</td>
<td>2.13*</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.09)</td>
<td>(.08)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before Sandy</td>
<td>3.46</td>
<td>3.13</td>
<td>2.35*</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.12)</td>
<td>(.09)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After Sandy</td>
<td>3.27</td>
<td>3.03</td>
<td>1.66</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.11)</td>
<td>(.09)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Information &amp; Communication</strong></td>
<td>3.45</td>
<td>3.07</td>
<td>2.84**</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.10)</td>
<td>(.08)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Community Renewal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before Sandy</td>
<td>4.17</td>
<td>4.19</td>
<td>-.34</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.07)</td>
<td>(.05)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After Sandy</td>
<td>3.19</td>
<td>3.76</td>
<td>-5.05**</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.09)</td>
<td>(.07)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Personal Relationship to the Community</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before Sandy</td>
<td>4.00</td>
<td>4.04</td>
<td>-.52</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.07)</td>
<td>(.06)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After Sandy</td>
<td>3.80</td>
<td>4.01</td>
<td>-2.14*</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.08)</td>
<td>(.06)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SOC – Individual level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before Sandy</td>
<td>3.79</td>
<td>3.83</td>
<td>-.40</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.08)</td>
<td>(.07)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After Sandy</td>
<td>3.87</td>
<td>3.98</td>
<td>-1.10</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.07)</td>
<td>(.07)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**SOC – Community level**

<table>
<thead>
<tr>
<th></th>
<th>Before Sandy</th>
<th>After Sandy</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOC – Community level</td>
<td>4.03 (0.07)</td>
<td>3.92 (0.07)</td>
<td>-2.04* 171</td>
</tr>
<tr>
<td>Sense of Place</td>
<td>4.19 (0.05)</td>
<td>4.16 (0.05)</td>
<td>-2.91** 171</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** *=p ≤ .05*, **=p ≤ .01. Standard errors appear in parentheses below means. All values represent pooled values from the imputed dataset.

Question 2b asked what the psychosocial impacts of Sandy were in each community. To address this question, paired-samples t-tests were used to assess within-community changes reflected in the survey questions that had before/after components (these are drawn from questions 21 through 53 of the survey instrument, Appendix B). Looking at the results in Table 1, we see that a number of changes occurred in both communities. Interestingly, the same changes occurred in both communities, with one exception; residents of Oakwood Beach responded less positively to the question *My community has the resources it needs to take care of community problems* after the storm than before the storm, where there was no significant change in responses among residents of Rockaway Park.

Responses to questions related to involvement in the community and neighbors’ willingness to help one another were significantly more positive in both neighborhoods after Sandy. With regard to community involvement, responses to the question *I work with people in my community to solve our problems* indicated an increase in involvement in both Oakwood Beach and Rockaway Park. Respondents indicated greater interest in
community involvement (*I would get involved in trying to improve my community*) and
a higher level of active involvement (*I am an active member of my community*) on
average in both Oakwood Beach and Rockaway Park. Both neighborhoods also showed
significant increases in their perceptions of neighbors’ willingness to help each other
(*People in my community help each other*), though responses indicated a high degree of
helpfulness in both communities before and after the storm.

Responses indicated that both communities experienced declines in their levels of
hope about the future, sense of safety, the availability of services, and the availability of
housing. In addition, respondents were asked to respond to questions about hope at both
individual- (*I have hope about the future*) and community-levels (*People in my
community have hope about the future*). Responses indicated a loss of hope in both
communities at both levels. Sense of safety (*My community is a safe place to live and
work*) also declined significantly in both neighborhoods. Further, declines were evident
in both questions related to individual-level availability of services (*I can get the services
I need*) and housing resources (*I live in good housing, Good housing is available for
people in my community*).

It is also interesting to note the areas in which no change occurred. Questions
related to relationships within the community (*I feel like I belong to my community, I
have friends in my community, People in my community have friendships with their
neighbors*) did not change significantly in either neighborhood, with respondents
reporting strong relationships before and after the storm. However, Oakwood Beach
showed a downward trend on all three of these questions, while Rockaway Park showed
an upward trend on the individual level questions (*I feel like I belong to my community, I have friends in my community*) and a downward trend on the community level question (*People in my community have friendships with their neighbors*). The level of commitment to the well-being of the community was unchanged in both neighborhoods, though, again, Oakwood Beach showed a downward trend, whereas Rockaway Park showed an upward trend.

**Table 11. Within-Community Changes**

<table>
<thead>
<tr>
<th>Community</th>
<th>Oakwood Beach</th>
<th>Rockaway Park</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (Before/After)</td>
<td>t</td>
</tr>
<tr>
<td>I feel like I belong to my community.</td>
<td>4.18/3.90 (.11/.14)</td>
<td>1.81</td>
</tr>
<tr>
<td>I have hope about the future.</td>
<td>4.19/3.47 (.11/.13)</td>
<td>4.37**</td>
</tr>
<tr>
<td>I live in good housing.</td>
<td>4.45/3.52 (.08/.15)</td>
<td>5.23**</td>
</tr>
<tr>
<td>I can get the services I need.</td>
<td>4.13/3.54 (.18/.14)</td>
<td>3.79**</td>
</tr>
<tr>
<td>I work with people in my community to solve our problems.</td>
<td>3.21/3.75 (.13/.13)</td>
<td>-3.11**</td>
</tr>
<tr>
<td>I have friends in my community.</td>
<td>4.24/4.26 (.11/.10)</td>
<td>-.12</td>
</tr>
<tr>
<td>I would get involved in trying to improve my community.</td>
<td>3.57/4.13 (.14/.10)</td>
<td>-4.34**</td>
</tr>
<tr>
<td>I am an active member of my community.</td>
<td>3.34/3.73 (.14/.13)</td>
<td>-2.73**</td>
</tr>
<tr>
<td>Question</td>
<td>Mean (SE)</td>
<td>N</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------</td>
<td>---</td>
</tr>
<tr>
<td>My community is a safe place to live and work.</td>
<td>4.42/2.67</td>
<td>72</td>
</tr>
<tr>
<td>(0.12/0.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good housing is available for people in my community.</td>
<td>4.41/2.35</td>
<td>72</td>
</tr>
<tr>
<td>(0.09/0.15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People in my community have friendships with their neighbors.</td>
<td>4.40/4.28</td>
<td>72</td>
</tr>
<tr>
<td>(0.08/0.11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership opportunities are available for people who live in my community.</td>
<td>3.43/3.46</td>
<td>72</td>
</tr>
<tr>
<td>(0.12/0.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My community has the resources it needs to take care of community problems.</td>
<td>3.47/3.09</td>
<td>72</td>
</tr>
<tr>
<td>(0.13/0.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People in my community are committed to the well-being of the community.</td>
<td>4.03/3.93</td>
<td>72</td>
</tr>
<tr>
<td>(0.18/0.13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People in my community have hope about the future.</td>
<td>4.23/3.44</td>
<td>72</td>
</tr>
<tr>
<td>(0.09/0.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People in my community help each other.</td>
<td>4.07/4.33</td>
<td>72</td>
</tr>
<tr>
<td>(0.12/0.11)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: *p ≤ .05, **p ≤ .01. Standard errors appear in parentheses below means. All values represent pooled values from the imputed dataset.

Four additional questions in the survey contributed to the discussion of the psychosocial impacts of Sandy. These questions (Qs 61-64) asked about the individual-level impacts of Sandy on the respondents’ activities, personal relationships, and stress.
levels. The results of independent t-tests on the between-neighborhood differences for these questions indicated that there were no statistically significant differences in terms of reported conflict with neighbors or family members after Sandy (though a noticeably higher percentage of residents in Oakwood Beach reported experiencing more conflict with their families). Differences did emerge in terms of the ability of residents to participate in social activities, with residents of Rockaway Park more likely, on average, to report less of a decline in social activity (Rockaway Park: \(M=3.73, SE=.10\), Oakwood Beach: \(M=3.19, SE=.15\)). Residents of Rockaway Park also reported lower levels of post-Sandy stress, on average, than residents of Oakwood Beach (Rockaway Park: \(M=2.70, SE=.13\), Oakwood Beach: \(M=2.22, SE=.15\)). These results are presented in Table 12.

Table 12. Responses to Post-Sandy Individual-Level Psychosocial Questions

<table>
<thead>
<tr>
<th>Community</th>
<th>Oakwood Beach</th>
<th>Rockaway Park</th>
<th>% Agree/Strongly Agree</th>
<th>Mean (SE)</th>
<th>% Agree/Strongly Agree</th>
<th>Mean (SE)</th>
<th>(t)</th>
<th>(df)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Since Sandy, I have still been able to participate in social activities that I enjoy.</td>
<td>50%</td>
<td>3.19 (.15)</td>
<td>70%</td>
<td>3.73 (.10)</td>
<td>-3.11**</td>
<td>171</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Since Sandy, I have experienced more conflict with my neighbors.</td>
<td>7%</td>
<td>4.18 (.12)</td>
<td>5.8</td>
<td>4.11 (.09)</td>
<td>.47</td>
<td>171</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Since Sandy, I have experienced more conflict with my family.</td>
<td>24%</td>
<td>3.67 (.16)</td>
<td>11%</td>
<td>3.96 (.10)</td>
<td>-1.64</td>
<td>171</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
We now return to our primary question of the role of resilience in the buyout decision. A series of four hierarchical multinomial logistic regressions were used to analyze resilience-related predictors of BUYOUT (Would you take the buyout offer?), an outcome variable with three unordered group classifications (Yes, No, Undecided). The reference category for the outcome variable was “No,” indicating respondents who said they would not take the buyout (the remaining categories of “Yes” and “Undecided” were compared to the reference group). The role of resilience in predicting buyout was assessed using two sets of models. The first two models assessed the role of the CART resilience domains on the buyout decision. The second set of models assessed the role of Sense of Community and Sense of Place as predictors of the buyout decision.

For each analysis, hierarchical multinomial logistic regressions were used to analyze the effects, in turn, of a consistent set of covariates alone (exposure, children in home, gender, age, race, employment, tenure), the main effects of the resilience domains, and the interaction of the resilience domains with the covariates. The “No” category was selected as the reference group after some debate, primarily because it made the interpretation of the regression results and interaction probes more intuitive. Doing this still allowed for the comparison of the two groups that are of primary concern in this study: those who wanted to take a buyout, and those who did not. This design also allows for a comparison of the “No” group with the “Undecided” group, though it does not compare the “Undecided” group with the “Yes” group. That said, while the question of what factors contributed to homeowners being undecided about the buyout is a worthy one that could be addressed by future analyses, it is not the primary focus of this study.

Note: * = p ≤ .05, ** = p ≤ .01. Standard errors appear in parentheses below means. All values represent pooled values from the imputed dataset. a = % of respondents who agreed or strongly agreed with the original statement. R = items are reverse coded for analysis. Lower values represent stronger agreement with the original statement.
measures, and the main effects of resilience measures with their associated interaction terms (testing community as a moderator of each resilience factor). For resilience measures that included both before and after Sandy components (Connection & Caring, Resources, SOC_I, SOC_C, and Sense of Place), these analyses were run using the before Sandy measure. The pre-Sandy versions of the measures were selected for these analyses for two reasons. First, several measures contained a combination of questions that were specific to participants’ experiences before (and after) Sandy and questions that were not time dependent. For questions that were not time dependent, participants were asked to respond to questions in general, based on their entire time of residence in the community. Given the relative stability of these communities (the average length of residence was 19.5 years in Oakwood Beach, and 26 years in Rockaway Park), these measures seemed to reflect the residents’ perceptions of their community before Sandy, and so are best paired with the “before” version of the before/after questions. The second reason, related to the first, is the assumption, again given the long tenure of residents, that residents’ perceptions of their community over the course of their time there will weigh more heavily in the buyout decision than will their perceptions of the community in the few months that had passed since Sandy. Prior to testing each model, bivariate correlation matrices were generated to assess the level of multicollinearity among predictor variables. With these results as well as concerns regarding power, separate regression models were conducted to minimize multicollinearity among the resilience measures. Additionally, resilience measures were centered for tests of moderation.
Tables 13 and 14 display the results from the models that tested the CART resilience domains. Table 13 displays the results for the first model, which regressed Connection & Caring and Disaster Management on the buyout decision. A bivariate correlation matrix for predictors included in this model detected no serious problems of multicollinearity (the highest correlation coefficient was between Connection & Caring and Disaster Management, at $r=.36$). Changes in Nagelkerke’s $R^2$ indicated that the models accounted for additional variance with each block of predictors (covariates only, $R^2=.19$; main effects, $R^2=.51$, full model, $R^2=.58$).

The first column has the outcome of “Yes” compared to “No” (reference category). The results indicated a significant main effect of community (OR=.01), indicating that the odds of accepting the buyout (versus rejecting it) were decreased by a factor of .01 by being a resident of Rockaway Park (residents of Oakwood Beach were more likely to accept the buyout). There were no significant main effects for any of the covariates. There was no main effect of Connection & Caring. However, there was a significant interaction between Connection & Caring and community, inditing that the magnitude of the effect of Connection & Caring on the buyout decision varied as a function of location, or, stated differently, that the association between Connection & Caring and the buyout decision was dependent upon community of residence. Disaster Management and the corresponding interaction term were not significant predictors of the buyout decision.

The second column in Table 13 has the outcome of “Undecided” (indicating residents who said they were unsure whether or not they would accept a buyout)
compared to “No” (reference category). Here, we again find a main effect of community (OR=.16), indicating that the odds of being undecided about the buyout (versus rejecting it) were decreased by a factor of .16 by being a resident of Rockaway Park (residents of Rockaway Park were significantly less likely to be undecided about the buyout than were residents of Oakwood Beach). There was a significant main effect of race (OR=7.97), indicating that non-White residents were more likely to be undecided about the buyout. However, there were no significant main effects of either of the resilience items or the interaction terms.
Table 13. Multinomial Logistic Regression Analysis of BUYOUT as a Function of Connection & Caring and Disaster Management, with Community as a Moderator

<table>
<thead>
<tr>
<th></th>
<th>Responded “No” to “Would you take the buyout?” vs.</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (OR)</td>
<td>95% CI</td>
<td>SE</td>
</tr>
<tr>
<td></td>
<td>Undecided (OR)</td>
<td>95% CI</td>
<td>SE</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.53</td>
<td>1.45</td>
<td></td>
</tr>
<tr>
<td>Exposure</td>
<td>1.87 (.69-5.06)</td>
<td>.49 (.73)</td>
<td>.35-1.52 (.37)</td>
</tr>
<tr>
<td>Community (Rockaway)</td>
<td>.01** (.00-.05)</td>
<td>.49 (.16**)</td>
<td>.04-.59 (.66)</td>
</tr>
<tr>
<td>Children in home</td>
<td>1.13 (.34-3.74)</td>
<td>.61 (1.22)</td>
<td>.42-3.54 (.54)</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td>.94 (.30-2.95)</td>
<td>.58 (.71)</td>
<td>.24-2.09 (.55)</td>
</tr>
<tr>
<td>Age</td>
<td>.83 (.48-1.42)</td>
<td>.28 (.72)</td>
<td>.43-1.21 (.27)</td>
</tr>
<tr>
<td>Race (Non-White)</td>
<td>8.14 (.89-74.49)</td>
<td>1.12 (7.97*)</td>
<td>1.31-38.38 (.92)</td>
</tr>
<tr>
<td>Employed Full-time</td>
<td>.67 (.23-2.00)</td>
<td>.56 (.54)</td>
<td>.19-1.57 (.54)</td>
</tr>
<tr>
<td>Tenure</td>
<td>.98 (.95-1.02)</td>
<td>.02 (.99)</td>
<td>.96-1.02 (.02)</td>
</tr>
<tr>
<td>Connection &amp; Caring</td>
<td>5.31 (.59-48.24)</td>
<td>1.09 (3.67)</td>
<td>.15-87.34 (1.50)</td>
</tr>
<tr>
<td>Disaster Management</td>
<td>.81 (.17-3.81)</td>
<td>.78 (1.47)</td>
<td>.22-9.99 (.96)</td>
</tr>
<tr>
<td>Community * Connection &amp; Caring</td>
<td>.04* (.00-.59)</td>
<td>1.39 (.09)</td>
<td>.00-5.44 (1.90)</td>
</tr>
<tr>
<td>Community * Disaster Management</td>
<td>.24 (.03-1.79)</td>
<td>1.02 (.88)</td>
<td>.09-8.90 (1.14)</td>
</tr>
</tbody>
</table>

Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient ($e^\beta$). Odds ratios <1 represent negative $\beta$ values, odds ratios >1 represent positive $\beta$ values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.

Probing the interaction between Connection & Caring and community produced the pattern presented in Figure 4.\(^{13}\) In both communities, the decision to accept or reject

\(^{13}\) For all interaction probes, the Y-axis represents the log odds, or $b$ value, of the represented outcome (either saying yes to the buyout, or being undecided about the buyout). Exponentiating these values ($e^b$) converts them to odds ratios.
the buyout was dependent upon the perception of Connection & Caring. Higher perceived Connection & Caring was associated with being more likely to take the buyout in Oakwood Beach \((b = 1.67, p < .001)\), and more likely to reject the buyout in Rockaway Park \((b = -1.62, p < .001)\). Community of residence was a strong determinant of the buyout decision for individuals with a high perception of Connection & Caring (one standard deviation above the mean), but was not as strong of a determinant for individuals with a low perception of Connection & Caring before Sandy (one standard deviation below the mean).

**Figure 4. Interaction Between Community and Connection & Caring Before Sandy**

![Graph depicting the interaction between community and Connection & Caring before Sandy.](image)

The results of the second model, which regressed Transformative Potential and Resources on the buyout decision, are displayed in Table 14. A bivariate correlation matrix for the predictors indicated that, while there was overlap among the predictors, no
serious problems of multicollinearity were detected (the highest correlation coefficient was between Transformative Potential and Resources, at $r=.37$). Changes in Nagelkerke’s $R^2$ indicated that the model accounted for additional variance with each block of predictors (covariates only, $R^2=.19$; main effects, $R^2=.49$; full model, $R^2=.56$).

Looking at the first column (“Yes” compared to “No”), the results suggested a significant main effect of community (OR=.01). There was also a main effect of race (OR=18.04), indicating that the odds of accepting the buyout (versus rejecting it) were increased by over a factor of 18 for residents who self-identified as a race other than White. Looking at the resilience measures, we find a significant interaction between Transformative Potential and community (OR=.09), indicating that the association between Transformative Potential and the decision of whether to accept or reject the buyout was dependent upon the place of residence. There was also a significant interaction between Resources and community (OR=.21), indicating that the magnitude of the effect of Resources on the buyout decision varied as a function of location.

Turning to the results displayed in column 2 of Table 1 (Undecided compared to No), there were significant main effects of community (OR=.12) and race (OR=16.71). Looking at the resilience measures, there was a significant main effect of Transformative Potential (OR=8.57), indicating that, overall, a greater perception of Transformative Potential was associated with being undecided about the buyout (versus rejecting the buyout). The interaction term of Transformative Potential by community was also significant (OR=.07), indicating that the magnitude of the effect of Transformative
Potential on the buyout decision varied as a function of location for individuals who were undecided about the buyout. There were no significant effects for Resources.

**Table 14. Multinomial Logistic Regression Analysis of BUYOUT as a Function of Transformative Potential and Resources, with Community as a Moderator**

<table>
<thead>
<tr>
<th></th>
<th>Responded “No” to “Would you take the buyout?” vs.</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Undecided</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>SE</td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Intercept</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure</td>
<td>2.29</td>
<td>.91-5.75</td>
<td>.46</td>
<td>.81</td>
<td>.40-1.64</td>
</tr>
<tr>
<td>Community (Rockaway)</td>
<td>.01**</td>
<td>.00-.06</td>
<td>.74</td>
<td>.12**</td>
<td>.03-.46</td>
</tr>
<tr>
<td>Children in home</td>
<td>1.03</td>
<td>.31-3.38</td>
<td>.61</td>
<td>1.33</td>
<td>.45-3.94</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td>.81</td>
<td>.27-2.45</td>
<td>.57</td>
<td>.48</td>
<td>.17-1.40</td>
</tr>
<tr>
<td>Age</td>
<td>.87</td>
<td>.50-1.49</td>
<td>.28</td>
<td>.71</td>
<td>.43-1.20</td>
</tr>
<tr>
<td>Race (Non-White)</td>
<td>18.04*</td>
<td>1.82-178.5</td>
<td>1.16</td>
<td>16.71*</td>
<td>2.43-115.1</td>
</tr>
<tr>
<td>Employed Full-time</td>
<td>.61</td>
<td>.19-1.92</td>
<td>.59</td>
<td>.48</td>
<td>.16-1.44</td>
</tr>
<tr>
<td>Tenure</td>
<td>.99</td>
<td>.95-1.02</td>
<td>.02</td>
<td>.99</td>
<td>.95-1.02</td>
</tr>
<tr>
<td>Transformative Potential</td>
<td>5.82</td>
<td>.91-37.26</td>
<td>.94</td>
<td>8.57*</td>
<td>1.09-67.36</td>
</tr>
<tr>
<td>Resources</td>
<td>1.64</td>
<td>.57-4.71</td>
<td>.53</td>
<td>1.34</td>
<td>.43-4.20</td>
</tr>
<tr>
<td>Community *</td>
<td>.09*</td>
<td>.01-.85</td>
<td>1.15</td>
<td>.07*</td>
<td>.01-.719</td>
</tr>
<tr>
<td>Transformative Potential</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community * Resources</td>
<td>.21*</td>
<td>.05-.80</td>
<td>.69</td>
<td>.47</td>
<td>.11-1.96</td>
</tr>
</tbody>
</table>

Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient ($e^b$). Odds ratios <1 represent negative $\beta$ values, odds ratios >1 represent positive $\beta$ values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.
Plotting the interaction between Transformative Potential and community for residents who planned to accept the buyout compared to those who planned to reject it (Figure 5) revealed that, for residents living in Oakwood Beach, a higher perception of Transformative Potential (a measure of the community’s ability to frame collective experiences, and to identify, discuss, and address issues and challenges that arise) was associated with being more likely to accept the buyout ($b = 1.76, p<.001$), but for individuals living in Rockaway Park, a higher perception of Transformative Potential was associated with being less likely to accept the buyout ($b =-.66, p<.001$). Stated differently, community of residence was a stronger determinant of whether residents would accept the buyout if they had a high perception of Transformative Potential (one standard deviation about the mean) than if they had a low perception of Transformative Potential (one standard deviation below the mean).
Probing of the significant interaction between Resources and community (“Yes” compared to “No”, Figure 6), results showed that, for residents of Oakwood Beach, a higher perception of the availability of community resources before Sandy was associated with being more likely to accept the buyout ($b = .49, p < .001$), whereas for individuals living in Rockaway Park, a higher perception of Resources before Sandy was associated with being less likely to accept the buyout ($b = -1.09, p < .001$).
Figure 7 shows the interaction between Transformative Potential and community for residents who were undecided about the buyout (compared to the “No” group). Here, high Transformative Potential was associated with being more likely to be undecided about the buyout (versus rejecting the buyout) for residents of Oakwood Beach ($b = 2.15$, $p < .001$), and less likely to be undecided about the buyout (versus rejecting the buyout) in Rockaway Park ($b = -0.49$, $p < .001$). Stated differently, community of residence was not a strong determinant for whether individuals would be undecided about the buyout if they had a low perception of Transformative Potential (one standard deviation below the mean) but it was a strong predictor for individuals' with a high perception of Transformative Potential (one standard deviation above the mean).
Tables 15 and 16 display the results for the Sense of Community and Sense of Place measures. Table 15 displays the results of the Sense of Community model, which regressed SOC_I and SOC_C on the buyout decision. A bivariate correlation matrix for the predictors indicated that, while there was overlap among the predictors, no serious problems of multicollinearity existed (the highest correlation coefficient was between SOC_I and SOC_C, at $r=.63$). Changes in Nagelkerke’s $R^2$ indicated that the model accounted for additional variance with each block of predictors (covariates only, $R^2=.19$; main effects $R^2=.50$; full model, $R^2=.55$).

The first column of Table 15 has the outcome of “Yes” (indicating residents who said they would take a buyout) compared to “No” (reference category). The results

Figure 7. Interaction Between Community and Transformative Potential (Undecided vs. No)
suggested that there was a significant main effect of community (OR=.02), indicating that the odds of accepting the buyout (versus rejecting it) were decreased by a factor of .02 by being a resident of Rockaway Park (residents of Oakwood Beach were more likely to accept the buyout). There were no significant main effects for any of the covariates. Neither measure of Sense of Community (SOC_I, SOC_C) had significant main effects, nor was there a significant interaction between SOC_I and community. However, SOC_C showed a significant interaction with community. The significant interaction term (OR=.05) indicated that the magnitude of the effect of SOC_C on the buyout decision varied as a function of location.

The second column in Table 15 has the outcome of “Undecided” (indicating residents who said they were unsure whether or not they would accept a buyout) compared to “No” (reference category). Here, we again find a main effect of community (OR=.21), indicating that the odds of being undecided about the buyout (versus rejecting it) were decreased by a factor of .21 by being a resident of Rockaway Park. There was also a significant main effect race (OR=8.73), indicating that non-White residents were more likely to be undecided about the buyout.

**Table 15. Multinomial Logistic Regression Analysis of BUYOUT as a Function of SOC_C and SOC_I, with Community as a Moderator**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>SE</td>
<td>OR</td>
<td>95% CI</td>
<td>SE</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.53</td>
<td></td>
<td></td>
<td>1.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure</td>
<td>2.21</td>
<td>.86-5.67</td>
<td>.47</td>
<td>.74</td>
<td>.37-1.50</td>
<td>.36</td>
</tr>
</tbody>
</table>
Looking at Figure 8, which plots the community by SOC_C interaction, we find that in Oakwood Beach, higher perceived SOC_C was associated with being *more* likely to accept the buyout ($b = 1.78, p < .001$), whereas in Rockaway Park, a higher perceived sense of community was associated with being *less* likely to accept the buyout ($b = -1.33, p < .001$). More generally, community of residence was not a strong predictor of the buyout decision for participants with a low perceived sense of community (one standard deviation below the mean), but it was a strong predictor for individuals with a high perceived sense of community (one standard deviation above the mean).

<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>95% CI</th>
<th>SE</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community (Rockaway)</td>
<td>0.02**</td>
<td>0.01-0.8</td>
<td>0.65</td>
<td>0.21*</td>
</tr>
<tr>
<td>Children in home</td>
<td>1.00</td>
<td>0.31-3.22</td>
<td>0.59</td>
<td>1.20</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td>1.00</td>
<td>0.35-2.89</td>
<td>0.54</td>
<td>0.73</td>
</tr>
<tr>
<td>Age</td>
<td>0.83</td>
<td>0.48-1.44</td>
<td>0.28</td>
<td>0.72</td>
</tr>
<tr>
<td>Race (Non-White)</td>
<td>4.38</td>
<td>0.54-35.52</td>
<td>1.06</td>
<td>8.73*</td>
</tr>
<tr>
<td>Employed Full-time</td>
<td>0.66</td>
<td>0.28-1.91</td>
<td>0.54</td>
<td>0.51</td>
</tr>
<tr>
<td>Tenure</td>
<td>0.99</td>
<td>0.96-1.03</td>
<td>0.02</td>
<td>0.99</td>
</tr>
<tr>
<td>SOC_I</td>
<td>0.56</td>
<td>0.09-3.37</td>
<td>0.91</td>
<td>3.32</td>
</tr>
<tr>
<td>SOC_C</td>
<td>5.96</td>
<td>0.70-50.72</td>
<td>1.08</td>
<td>2.04</td>
</tr>
<tr>
<td>Community * SOC_I</td>
<td>1.03</td>
<td>0.12-9.06</td>
<td>1.11</td>
<td>0.24</td>
</tr>
<tr>
<td>Community * SOC_C</td>
<td>0.05*</td>
<td>0.00-0.80</td>
<td>1.47</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Note: *$p \leq .05$, **$p \leq .01$. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient ($e^b$). Odds ratios <1 represent negative $\beta$ values, odds ratios >1 represent positive $\beta$ values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.
Table 16 displays the results for the fourth model, which regressed Sense of Place on the buyout decision. A bivariate correlation matrix detected no serious problems of multicollinearity among the predictors (the highest correlation coefficient was between age and tenure, at $r=.29$). Changes in Nagelkerke’s $R^2$ indicated that the model accounted for additional variance with each block of predictors (covariates only, $R^2=.19$; main effects, $R^2=.49$; full model, $R^2=.53$).

Looking at respondents who planned to accept the buyout (relative to those planning to reject the buyout, column 1), we find a significant main effect of community (OR=.03). The interaction term of Sense of Place by community was also significant.
(OR=.14), indicating that the magnitude of the effect of Sense of Place on the buyout decision varied as a function of community of residence.

In comparing respondents who were undecided to those who rejected the buyout (column 2 of Table 16), there were significant main effects of community (OR=.19) and race (OR=6.68). The interaction term of Sense of Place by community was also significant for this group.

Table 16. Multinomial Logistic Regression Analysis of BUYOUT as a Function of Sense of Place, with Community as a Moderator

<table>
<thead>
<tr>
<th></th>
<th>Responded “No” to “Would you take the buyout?” vs.</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Undecided</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>1.38</td>
<td>1.35</td>
<td></td>
</tr>
<tr>
<td>Exposure</td>
<td>2.08</td>
<td>.89-4.88</td>
<td>.75</td>
</tr>
<tr>
<td>Community (Rockaway)</td>
<td>.03**</td>
<td>.01-09</td>
<td>.58</td>
</tr>
<tr>
<td>Children in home</td>
<td>.91</td>
<td>.30-2.78</td>
<td>.57</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td>1.14</td>
<td>.40-3.23</td>
<td>.53</td>
</tr>
<tr>
<td>Age</td>
<td>.95</td>
<td>.57-1.57</td>
<td>.26</td>
</tr>
<tr>
<td>Race (Non-White)</td>
<td>4.90</td>
<td>.67-35.82</td>
<td>1.01</td>
</tr>
<tr>
<td>Employed Full-time</td>
<td>.68</td>
<td>.24-1.94</td>
<td>.54</td>
</tr>
<tr>
<td>Tenure</td>
<td>.99</td>
<td>.96-1.02</td>
<td>.02</td>
</tr>
<tr>
<td>Sense of Place</td>
<td>1.85</td>
<td>.51-6.73</td>
<td>.64</td>
</tr>
<tr>
<td>Community * Sense of Place</td>
<td>.14*</td>
<td>.02-1.04</td>
<td>1.02</td>
</tr>
</tbody>
</table>

Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient ($e^\beta$). Odds ratios <1 represent negative $\beta$ values, odds ratios >1 represent positive $\beta$ values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.
Exploring the interaction between Sense of Place and community for residents who planned to accept the buyout (compared to those who planned to reject it; Figure 9) indicated that, for residents living in Oakwood Beach, a higher perception of Sense of Place was associated with being more likely to accept the buyout ($b = .61, p < .001$), but for individuals living in Rockaway Park, a higher perception of Sense of Place was associated with being less likely to accept the buyout ($b = -1.39, p < .001$).

**Figure 9. Interaction Between Community and Sense of Place Before Sandy (Yes vs. No)**

![Figure 9](image)

Figure 10 probes the interaction between Sense of Place and community for residents who were undecided about the buyout (compared to the “No” group). High Sense of Place was associated with being more likely to be undecided about the buyout (versus rejecting the buyout) for residents of Oakwood Beach ($b = 1.22, p < .001$), and less
likely to be undecided about the buyout (versus rejecting the buyout) in Rockaway Park \( (b = -1.76, p < .001) \).

**Figure 10. Interaction Between Community and Sense of Place Before Sandy (Undecided vs. No)**

![Graph showing Interaction Between Community and Sense of Place Before Sandy](image)

**Question 3: Additional Predictors of the Relocation Decision**

The third research question builds on Question 2 by exploring the influence of additional community-level predictors, beyond the resilience-related predictors examined thus far, on the buyout decision. Specifically, this section builds on the findings from the two CART resilience models analyzed in the previous section (Tables 13 and 14) by assessing the role of the additional subscales included in the CART survey (Information & Communication, Community Renewal, and Personal Relationship to the Community) on the buyout decision, above and beyond the four CART resilience domains (the Sense
of Community and Sense of Place measures are not included in these analyses, due to the overlap with the CART measures). While these subscales could certainly be considered to be related to resilience, they are analyzed separately as they are not a part of the four core domains of resilience.

The following process was used to construct the models for Question 3. First, significant predictors of the buyout decision that were identified from Question 2 were used to develop a base model. To review, the analyses of the CART resilience domains showed significant main effects for community, race, and Transformative Potential (undecided participants only). In addition, significant interaction terms included those of community by Connection & Caring, Transformative Potential, and Resources. The effects of each of the three subscales were then assessed, in turn, through their inclusion in the base model. Due to the limited sample size it was not possible to include all three subscales in a single model. Rather, each subscale was tested separately due to concerns with statistical power. To address further the issue of power, the number of covariates was reduced. Two covariates, children in the home and employment, were dropped as they showed no significant effects in the resilience regressions. The remaining covariates (exposure, gender, age, race, and tenure) were retained for the base model. Though some of the variables that were retained in the model were not found to be significant in the earlier resilience models, they were included because the literature has indicated that they are important to consider (Morrow-Jones & Morrow-Jones, 1991).

The following models, then, examined the role of the three additional CART subscales on the buyout decision, above and beyond the influence of the significant
CART resilience-related predictors. Prior to testing each model, bivariate correlation matrices were generated to assess the level of multicollinearity among predictor variables. The first model assessed the role of Information & Communication on the buyout decision. The second model regressed Community Renewal on the buyout decision, and the third model regressed Personal Relationship to the Community on the buyout decision.

Interestingly, *none* of the additional CART subscales nor their corresponding interaction terms were found to be significant predictors of the buyout decision.\(^{14}\)

Looking at the results of the models presented in Tables 17-19, we see, in general, the same patterns that we saw in the resilience-related models, with significant main effects of community and race, though Resources was the only resilience measure that was statically significant in these models.

---

\(^{14}\) Given these results, I reran all of these models substituting SOC_C and Sense of Place before Sandy as the resilience items in the base model. I then ran the models as they are presented (with the CART items in the base model), but removing Connection and Caring before Sandy, as this variable was highly correlated with both Community Renewal (r=.70) and Personal Relationship to the Community (r=.74). Neither of these alternative methods produced different results. There were no other serious problems with multicollinearity. Interestingly, the before and after Sandy measures of Community Renewal (r=.34) and Personal Relationship to the Community (r=.51) were not highly correlated.
Table 17. Multinomial Logistic Regression Analysis of BUYOUT as a Function of CART Resilience Domains and Information & Communication, with Community as a Moderator

<table>
<thead>
<tr>
<th></th>
<th>Responded “No” to “Would you take the buyout?” vs.</th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>95% CI</td>
<td>SE</td>
<td>Undecided</td>
<td>95% CI</td>
</tr>
<tr>
<td>Intercept</td>
<td></td>
<td>1.30</td>
<td></td>
<td></td>
<td>1.24</td>
<td></td>
</tr>
<tr>
<td>Exposure</td>
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<td>.85-6.23</td>
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<td>.39-1.65</td>
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<td>Community (Rockaway)</td>
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<td>.00-.04</td>
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<td>.14**</td>
<td>.03-.56</td>
</tr>
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<td>Gender (Female)</td>
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<td>.57</td>
<td>.20-1.62</td>
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<tr>
<td>Age</td>
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<td>.49-1.24</td>
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<td>1.91-197.5</td>
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<td>14.81**</td>
<td>2.18-100.4</td>
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<tr>
<td>Tenure</td>
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<td>.95-1.03</td>
<td>.02</td>
<td>.99</td>
<td>.95-1.02</td>
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<tr>
<td>Connection &amp; Caring</td>
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<td>.01-12.88</td>
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<td>Transformative Potential</td>
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<td>.39-38.14</td>
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<td>.02-2.62</td>
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<td>.40-4.34</td>
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<td>.88</td>
<td>.13-5.93</td>
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</table>

Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient ($e^b$). Odds ratios <1 represent negative β values, odds ratios >1 represent positive β values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.
Table 18. Multinomial Logistic Regression Analysis of BUYOUT as a Function of CART Resilience Domains and Community Renewal, with Community as a Moderator

<table>
<thead>
<tr>
<th></th>
<th>Responded “No” to “Would you take the buyout?” vs.</th>
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<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
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<td>SE</td>
<td>OR</td>
<td>95% CI</td>
<td>SE</td>
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<tr>
<td>Intercept</td>
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<td>1.25</td>
<td>1.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure</td>
<td></td>
<td>2.40</td>
<td>.94-.6.13</td>
<td>.47</td>
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<td>1.38-.1.77</td>
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<td>.00-.05</td>
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<td>.11 **</td>
<td>.03-.41</td>
<td>.68</td>
</tr>
<tr>
<td>Gender (Female)</td>
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<td>.25-2.29</td>
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<td>.48</td>
<td>1.16-1.4</td>
<td>.56</td>
</tr>
<tr>
<td>Age</td>
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<td>.90</td>
<td>.55-1.47</td>
<td>.25</td>
<td>.77</td>
<td>1.48-1.23</td>
<td>.24</td>
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<tr>
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<td>17.09**</td>
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<td>.02</td>
<td>.99</td>
<td>.96-1.03</td>
<td>.02</td>
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<tr>
<td>Connection &amp; Caring</td>
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<td>.00-1.73</td>
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<td>.01-16.71</td>
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<td>Transformative Potential</td>
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<td>.37-4.24</td>
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<td>.12-2.15</td>
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<td>1.82</td>
<td>.37</td>
<td>.01-12.20</td>
<td>1.77</td>
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Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient ($e^\beta$). Odds ratios <1 represent negative $\beta$ values, odds ratios >1 represent positive $\beta$ values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.
Table 19. Multinomial Logistic Regression Analysis of BUYOUT as a Function of CART Resilience Domains and Personal Relationship to the Community, with Community as a Moderator

<table>
<thead>
<tr>
<th></th>
<th>Responded “No” to “Would you take the buyout?” vs.</th>
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<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
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<td></td>
<td>Yes</td>
<td>OR</td>
<td>95% CI</td>
<td>SE</td>
<td>Undecided</td>
<td>OR</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.28</td>
<td>1.23</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Exposure</td>
<td>2.62</td>
<td>.94-7.33</td>
<td>.50</td>
<td>.83</td>
<td>.39-1.74</td>
<td>.28</td>
</tr>
<tr>
<td>Community (Rockaway)</td>
<td>.01**</td>
<td>.00-0.05</td>
<td>.77</td>
<td>.12**</td>
<td>.03-.46</td>
<td>.68</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td>.79</td>
<td>.26-2.44</td>
<td>.58</td>
<td>.55</td>
<td>.19-1.59</td>
<td>.54</td>
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<tr>
<td>Age</td>
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<td>.54-1.47</td>
<td>.26</td>
<td>.80</td>
<td>.49-1.29</td>
<td>.24</td>
</tr>
<tr>
<td>Race (Non-White)</td>
<td>11.81*</td>
<td>1.20-116.1</td>
<td>1.61</td>
<td>14.98**</td>
<td>2.18-102.9</td>
<td>.98</td>
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<tr>
<td>Tenure</td>
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<td>.95-1.03</td>
<td>.02</td>
<td>.99</td>
<td>.96-1.02</td>
<td>.02</td>
</tr>
<tr>
<td>Connection &amp; Caring</td>
<td>4.59</td>
<td>.35-60.16</td>
<td>1.31</td>
<td>1.36</td>
<td>.03-69.83</td>
<td>1.93</td>
</tr>
<tr>
<td>Community * Connection &amp; Caring</td>
<td>.17</td>
<td>.01-5.52</td>
<td>.77</td>
<td>.82</td>
<td>.01-73.08</td>
<td>2.21</td>
</tr>
<tr>
<td>Transformative Potential</td>
<td>2.94</td>
<td>.40-21.37</td>
<td>1.01</td>
<td>5.11</td>
<td>.54-48.29</td>
<td>1.15</td>
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<td>.53</td>
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<td>.40-4.63</td>
<td>.62</td>
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<td>1.65</td>
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</table>

Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient (e^b). Odds ratios <1 represent negative β values, odds ratios >1 represent positive β values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.
**Exploratory Analyses**

To this point, for resilience measures that included both before and after Sandy components (Connection & Caring, Resources, SOC_I, SOC_C, and Sense of Place), all models have been run using the measure that included the *before* Sandy items. In the course of specifying these models, the question arose of which version of the resilience measures – the version with the before Sandy items, or the after Sandy items – would be best suited to predicting the buyout decision. The measures that contain the before Sandy items were selected for the main analyses because (1) they are most aligned with the non-time dependent questions, also included in the resilience measures, for which respondents were asked to answer based on their entire time of residence in the community, and (2), given the long average tenure of residents in these communities, it was assumed that residents’ perceptions of their community over the course of their residence would weigh more heavily in the buyout decision than would their perceptions of the community in the few months that had passed since Sandy. However, the inclusion of the before and after questions provided an opportunity to ask an exploratory question: which version of these measures is *more* influential in the buyout decision? In other words, were participants’ decisions about the buyout better explained by their perspectives of their community before Sandy, or their perspectives of their community after Sandy? In this section, I explored this question by rerunning the models presented in Tables 13-16, but substituting the after Sandy measures for Connection & Caring, Resources, SOC_I, SOC_C, and Sense of Place.
The results of these analyses, presented in Tables 20-23, were comparable to the before Sandy models in that the main effects of community and race were consistent for both the “Yes” and “Undecided” groups. However, looking at the resilience measures, there were no significant main effects, and only one interaction term, community by SOC_C, was significant (OR=.01, indicating that the association between perceived sense of community at the community level after Sandy and the buyout decision was dependent upon community of residence). In comparison, the before Sandy models indicated that there were multiple significant interactions between community and the resilience terms, specifically community by Connection & Caring, Resources, SOC_C, and Sense of Place. In light of these findings, had this study included only post-Sandy items, the effects of several resilience measures might have been missed.\textsuperscript{15}

\textsuperscript{15} I also calculated residualized change scores for the resilience measures to test whether, controlling for the before measures, the differences in participants’ before and after responses were significant predictors of the buyout decision. Beginning with the same base models (i.e., resilience measures that included the “before” version of the before and after questions and the corresponding interaction terms), I added the “after” version(s) of each of the resilience items and the corresponding interaction term(s) into a single model. These analyses are not reported in full here, primarily due to concerns about statistical power. However, in running these analyses, one effect, which was the interaction of community by SOC_C after Sandy, approached significance (p=.06), indicating that, controlling for SOC_C before Sandy, SOC_C after Sandy was significantly associated with the buyout decision, but that the magnitude of that effect was dependent upon community of residence. Probing this interaction indicated that, controlling for SOC_C before Sandy, high SOC_C after Sandy was associated with being more likely to take the buyout for residents of Oakwood Beach (b =2.65, p<.001), and being more likely to reject the buyout for residents of Rockaway Park (b = -2.30, p<.001). In other words, the events of Sandy may have led to a strengthening of the associations between SOC_C and the buyout decision for both Oakwood Beach and Rockaway Park, albeit in different directions.
Table 20. Multinomial Logistic Regression Analysis of BUYOUT as a Function of Connection & Caring (After Sandy) and Disaster Management, with Community as a Moderator

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<th>Yes</th>
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<td>SE</td>
<td>OR</td>
<td>95% CI</td>
<td>SE</td>
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Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient \(e^\beta\). Odds ratios <1 represent negative \(\beta\) values, odds ratios >1 represent positive \(\beta\) values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.
Table 21. Multinomial Logistic Regression Analysis of BUYOUT as a Function of Transformative Potential and Resources (After Sandy), with Community as a Moderator

<table>
<thead>
<tr>
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<td>95% CI</td>
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Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient ($e^\beta$). Odds ratios <1 represent negative $\beta$ values, odds ratios >1 represent positive $\beta$ values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.
Table 22. Multinomial Logistic Regression Analysis of BUYOUT as a Function of SOC_I (After Sandy) and SOC_C (After Sandy), with Community as a Moderator

<table>
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<th></th>
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<td>SE</td>
<td>OR</td>
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<td>SE</td>
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<td>.07</td>
<td>.00-1.22</td>
<td>1.44</td>
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</table>

Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient (e^b). Odds ratios <1 represent negative β values, odds ratios >1 represent positive β values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.
Table 23. Multinomial Logistic Regression Analysis of BUYOUT as a Function of Sense of Place (After Sandy), with Community as a Moderator

<table>
<thead>
<tr>
<th></th>
<th>Responded “No” to “Would you take the buyout?” vs.</th>
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<tbody>
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</tr>
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<td>Intercept</td>
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<td>Sense of Place (After)</td>
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<tr>
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<td>.39</td>
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Note: *p ≤ .05, **p ≤ .01. All values represent pooled values from the imputed dataset. OR=Odds ratio. The odds ratio is the exponential function of the regression coefficient ($e^b$). Odds ratios <1 represent negative $\hat{b}$ values, odds ratios >1 represent positive $\hat{b}$ values. CI=Confidence interval of the odds ratio. SE=Standard error of the regression coefficient.

Qualitative Results

This section describes the results from the analysis of the qualitative interview data. Data are presented according to the three a priori themes (the experience of previous disasters, sense of place, and the process of deciding to rebuild or sell) that were
selected in order to expand on the research questions on which this study is based.

Results for each *a priori* theme, and associated sub-themes, are presented by community.

**The Experience of Previous Disasters**

**The Experience of Previous Disasters in Oakwood Beach.** Oakwood Beach and Rockaway Park have both experienced a number of disasters in the past. However, important differences emerged from the data regarding the nature of those disasters and, in turn, the ways in which each community responded to the challenges they faced. The following sections explore two subthemes that illustrate the experience of previous disasters in Oakwood Beach.

**A history of natural disasters.** The residents of Oakwood Beach have a long history of dealing with natural disasters. However, in the memories of current residents, major hurricanes have not been among these disasters. The last major hurricane to hit Staten Island was the Great New England Hurricane of 1938,\(^{16}\) a category 3 storm that resulted in 700 deaths throughout New York and southern New England (Mandia, 2013). However, this storm predated most of the current residents of Oakwood Beach, and though its impact was severe, it was only mentioned by one participant.

Still, it is difficult to understand the story of Oakwood Beach without understanding the impacts that previous events have had on the community. In this study, the most frequently cited of these events was a nor’easter that struck the area in 1992 (causing significant flooding and damage) and Hurricane Irene, which passed over the

\(^{16}\) This storm may have been the origin of the phrase “below the boulevard” discussed in the following section on sense of place, though I was not able to find documentation of this.
area in 2012 (resulting in virtually no damage). While the impacts of these events were very different, both play an important role in understanding the community’s experience of Sandy.

With a small number of exceptions, when residents first moved to the area they did not conceive of nature as a significant threat.

You don’t believe how close that beach is. And that was one of the reasons why I bought this house… ‘Cause I love water… I love the sun, I love the water. I never thought it would be a threat. I really didn’t.

Um, I’m drawn to the ocean. So is my husband. So, we really loved it. We never even thought about flooding. Ever.

This began to change when, in December 1992, a powerful nor’easter hit Staten Island, resulting in what was, for most residents, their first instance of significant flooding in their homes. The severity of flooding caused by the storm varied across the community, but according to participants, ranged from a few inches of water to several feet in the homes closest to the ocean. For a community accustomed to only minor flooding, this came as a shock:

Um, in 1992 we had a, a terrible storm... This nor’easter that hit. And, uh, that was our first real experience of coastal flooding… But, we lost, uh, two cars, uh, every, all the contents of our shed, all the contents of our basement, uh, hot water heaters, everything. Um, and, just… shock. It was traumatic, but it was shocking.

When I came home, there was five feet of water in my basement. The door got pushed open, because the sea gates were broke. The, uh, flood gates?...The flood gates were broke. That was, that problem, then… And then, you know, we just did it all over. I just said we can’t have carpet no more. Let’s put a tile floor… Five feet? I was sick, though, I’ll tell you the truth. I went to lay down… And I just had a tremendous migraine headache. I, I couldn’t get off the bed. That, in the middle a the night, I got up, and I looked. I said maybe I’m just dreamin’ this. Ahh, it was no dream. It was there, ya know?
After this storm, residents formed a committee, the Oakwood Beach Flood Victims Committee, to determine what their next steps should be. According to a former member of that committee, there were a few homeowners at that time who were interested in trying to sell and relocate out of the area. According to most accounts, this was when the idea of a buyout was first broached. Eventually, however, the residents determined that selling was not the best course of action. Many were committed to staying in the area, and, even for those who had considered selling, real estate values were low at the time and many people were upside down on their mortgages.

Instead, the community organized and began lobbying to have protections installed so that they did not flood again. One participant described the beginning phases of this effort by saying:

We started doing meetings. And, the first few meetings, everybody was really angry. Um, “We’re not gonna put up with this anymore! We’ve been living like this for, you know, 50 years, and…” So, it was decided that we were going to petition the different levels of government, um, for repair and restoration to the shoreline, so that we could continue to live there.

This process continued for many years, and eventually resulted in some improvements being made. For example, some repairs were made to the berm and seawall that separated the residential area from the ocean. With this, residents once again began to feel that their community was a reasonably safe place to live. As such, residents continued to work on their homes and build their lives in the community.

After that, the ’92 storm, and we did get the protection, and it did work. Because, guess what. The flood protection was working. We felt safe. And we though, okay, we love it here! We love it here! So we built a big, beautiful beach house.

My home took, from the bungalow, we, in 2001 decided to expand. Because of all these promises that were bein’ made about the government about what was going to be done. To prevent this, or to downgrade it, at least.
However, a former member of the committee stated that the changes, which were based on a study by the Army Corps of Engineers, were never sufficient.

…unfortunately, because of funding, is what it was blamed on, um, we did not get the gate that was supposed to be operating, the way it was supposed to. We didn’t get the height that was required for the berm… We didn’t get the repairs to the seawall that their own study said that we needed. And we didn’t get the second levee that their own study said that we needed to prevent flooding for this community.

The Army Corps of Engineers had originally called for the seawall to be replaced. However, after it was determined the replacement was cost-prohibitive, a second set of recommendations was issued calling for the installation of a series of levees that would guide water from future storm surges into the neighboring marsh (Knafo & Shapiro, 2012; O’Grady, 1998). These plans were never implemented. Instead, a series of new homes were built on the land that was the intended location of one of the levees.

Participant: Um, those homes were not there during the 1992 storm. However, when it was presented as part of the project that was needed to have a levee built there to hold back the storm water, from that top end of the community…

Interviewer: Instead there are townhouses.

Participant: Instead there are townhouses. And, and permits were given in record time.

The efforts of the Oakwood Beach Flood Victims Committee were documented in the media, which residents saw as a validation of their plight. Their story took on new meaning in the wake of Sandy, which was, by all accounts, the feared worst-case scenario that the community had hoped, but ultimately failed, to escape. Shortly after Sandy, for example, an account in the Huffington Post summarized Oakwood Beach’s history as follows:

For almost half a century, two generations of Staten Island's generally conservative, independent and anti-government residents had petitioned the government to build and maintain a variety of barriers to defend them from the
sea -- and although elected officials had promised, on many occasions, to protect residents and their homes, authorities never delivered safety measures that the government's own Army Corps of Engineers deemed worthy of serious consideration. The population simply continued to boom, and as real estate developers and their political allies pushed for growth, Oakwood Beach, like many other shoreline neighborhoods, morphed from a bungalow community into a modern suburb. (Knafo & Shapiro, 2012)

The details of these mitigation measures were hazy for many participants. However, there was a shared sense that, as time passed, the city was not properly maintaining the berm and floodgates, which were the primary protections that were in place.

They were fighting. They were fighting back then to fix things. And some things were fixed, and some things were broken again. You know what I’m saying? And like, even like the sand, like, they’re no sand on the beach. It’s rocks. But they were all covered. So we had certain things done. Back then. But over the years, some things broke? You know, some things had to be fixed. The week before, I donno if it was the week or the month before. I’m pretty sure it was the week before. In the paper, there was an article about how the state, or, I donno who it was, granted like a half a million, that, to fix what was supposed to be fixed. Okay? It was, it was a couple years, but the money was allocated for that reason.

With regard to hurricanes, prior to Sandy, Oakwood Beach had also experienced a number of false alarms. The most recent of these occurred just one year before Sandy, when Hurricane Irene was forecasted to bring extensive flooding and high winds to the area. New York City took the threat of Irene seriously, and the mayor issued a mandatory evacuation of the low-lying areas of Oakwood Beach. A number of residents shared their experience of evacuating or otherwise preparing for Irene, and described how the police and other emergency workers had gone door-to-door through the neighborhood, trying to enforce the evacuation order.

In the end, Irene resulted in minimal damage in the area. Some residents mentioned that they had lost some shingles off the roof or sustained minor wind damage,
but overall, the community was spared. While that was good news at the time, participants described how it contributed to a sense of complacency about Sandy.

Well, it was the day of the storm, when it was coming. As you know I, Irene went prior to that storm. Again, we didn’t get a, and inch of water. So when this was approachin’ us, we weren’t 100% serious about it.

We were expecting to go right back home like we did after Irene… I didn’t even bring shoes. I just brought my slippers. I thought, what do I need shoes for? I’m getting out of the car, walking into [my friend’s] house, and walking to the car.

Last year when we had that? Irene? The year before? Everybody was tapin’ windows. I didn’t go that far. But you know what I did with all my stuff in the curios? I brought ‘em up [from the basement], I laid them on the floor… And I figured, you know, let me be safe than be sorry… And, when I came home, I said oh, now I gotta put all that together again.

The timing of Irene, then, was an unfortunate coincidence. While little could have been done to protect people’s homes from Sandy, a number of participants who did not evacuate during Sandy attributed that decision to their experience with Irene. Others went as far as suggesting that, had Irene not come when it did, or had the city responded to Sandy with the same level of urgency, the three individuals who died in Oakwood Beach may have chosen to evacuate instead.17

‘Double trouble’. While Oakwood Beach faced occasional threats from large-scale hazard events, residents’ main concerns before Sandy were the smaller-scale floods and fires that plagued the neighborhood. As one participant described it, the area faces _double trouble:_

17 While natural disasters were the most frequently discussed events among participants from Oakwood Beach, the community was also impacted by the September 11th attacks on the World Trade Center. One participant reported that many of the firefighters who were killed on September 11th were from Staten Island (though, to my knowledge, none were from this neighborhood). Another participant worked on the 45th floor second tower, and detailed his experience of escaping the area just before the tower collapsed. Still, these were the only two interview participants to mention this event.
And, uh, they make a joke. We have like, option. We can be in a fire, or we can be in flood! Each year, it’s like, different news. Who want to live in this area? It’s like, I told you, it’s double trouble.

Residents described minor floods and fires as being a normal and expected fact of life.

Flooding was relatively common in the low-lying areas, and fires would break out in the phragmites and brush and that populated the wetland and surrounding areas.

There was floods here for years and years and years, before I ever got married.

Believe me, we’ve had water, all the time… You just, if this is your home, you either learn how to live with it, or conquer it…

There would be, there would be fires. Yeah, we have a big thing with fires. Because of so much of this [brush].

Up until relatively recently, these events were viewed mostly as nuisance, but nuisances that residents were willing to live with. While floods were commonplace, for example, participants stated that they had never had water in their home until the 1992 nor’easter.

The floods and fires became more of a concern when residents began to notice an escalation in the number and severity of these events. According to the participants, they began to notice an increase in the flooding in the area in the years leading up to Sandy.

About four, four to five years ago we started noticing that we were flooding again. So, I had to start contacting people and say, something’s not right. There no reason to, just because this is a full moon, that, my yard is flooded. And I don’t mean just a puddle of water. It’s flooded.

The flood, the flooding has grown every year to, two times, four times a year. And the… extensiveness of it has grown.

Participants attributed this flooding to new development that had taken place in the neighborhood (some of which, as is described above, is on the land that had been designated for the construction of a levee). Residents complained that this new construction brought regular flooding to the area for the first time:
Um, it seemed the more they build, the more congested it got, the more the flooding reoccurred and remained longer…

I think what everybody is saying about, the area? Is the truth. Because if you look at it now, and you see what was. You know what was there, and what’s there now. We have nothing, when it rains? The water has no place to go.

What happened, this was always considered, um wetlands. And they start building, you see all these houses, all over, all new houses. And that ruined, you know where the water, like, used to go through the ground. Now there’s nowhere for it to go. ‘Cause they should never been built. All these years it was wetlands, all the sudden, it went off the map as wetlands.

Similarly, the perception was that the brush fires, which had been a regular occurrence for years, had also begun to feel like more of a threat. One participant described the neighborhood as being “ravaged with fires.” Again, these concerns were validated by the media that reported, for example, that the area experienced 42 separate brush fires in 2010 (Farinacci, 2011). These fires culminated in a six-alarm fire that burned for four hours on Easter Sunday, April 12, 2009 (White, 2009). As one resident pointed out, while no one was injured as a direct result of the fire, it did damage the berm:

…we had a terrible fire a few, about 5 years ago, I think. That burned down that, um, bulkhead… Which was part of our protection. And when we notified them, immediately, of that fire, that it wasn’t just the fire that we were concerned about, um, but that bulkhead is gone. It’s gonna start causing flooding again.

The Experience of Previous Disasters in Rockaway Park. In general, residents of Rockaway Park made fewer references to previous disasters than residents of Oakwood Beach. However, this was still a prominent theme in Rockaway Park, and one that highlights important distinctions between the two communities. The data presented below are organized into two subthemes that explore the salience of terrorism and
technological (rather than natural) disasters in Rockaway Park, and the perception of Sandy as the area’s first, major natural disaster.

**Salience of terrorism and technological disasters.** Whereas natural disasters like the ’92 nor’easter emerged as the most salient disaster events for participants in Oakwood Beach, *unnatural* disasters, including 9/11 and the crash of American Airlines flight 587, were by far the most salient events for participants in Rockaway Park.

September 11th impacted the community heavily. Several participants mentioned that a large number of firefighters from the area had been killed, and others described watching the towers fall from their neighborhood (Manhattan is visible across the bay). One woman shared that, while her husband, who was a firefighter, had survived, all the other members of his fire station were killed. Another participant described how he had been personally injured in the attacks, while a third described the impact this event had on the community as a whole:

9/11 came, we lost a tremendous amount of people. We lost 72 people in the neighborhood. So everyday you would hear the church bells ringing. Somebody died. And it’s usually firemen, ‘cause it’s basically a lot of firemen and policemen here. That live in, in the area. And, and everybody walked around dazed, no smiles, nothing.

On November 12, 2001, just two months later, American Airlines flight 587 crashed at the border of Rockaway Park and neighboring Belle Harbor. Participants described the horror of seeing the plane, which had taken off from John F. Kennedy airport just a few minutes earlier, crash into their community. The cause of the crash, which killed 265 people, was later determined to be turbulence from another plane (Mathias, 2013). However, due to the timing of the event, residents feared that they, too,
might be experiencing a terrorist attack. One resident reported that she saw the plane crash, and had not flown since. Another participant described her experience by saying:

Then we were living on 131st St., and two months later that American Airlines plane came down. And I remember it coming down, and I remember just being in the middle of the street on my knees, looking down at it. I thought it was the end of the world. Just crying, what is going on. I just didn’t my brain couldn’t get anything in as to what was going on in the world.

Sandy as the ‘first disaster’. This is not to say that natural disasters were a non-issue in Rockaway. They, too, had experienced other hurricanes, including Hurricane Gloria (1985) and Hurricane Donna (1960). These events, however, were only mentioned by one resident each. With regard to Hurricane Gloria, one resident remembered experiencing significant flooding from the storm:

…my boy was, like nine years old? From the porch for the house, because when you get off from the house, you have a porch. And then you have to go to stairs to get to, on the ground? And the water was to the porch. That high was the water. In Hurricane Gloria.

Another participant described how his neighbor, who was now in her 90s, had lived through Hurricane Donna. When Sandy came and he tried to convince her to evacuate, she replied that she had “survived Hurricane Donna on the 60s, so she wasn’t going to leave.”

There were reports of occasional, minor flooding. For example, at high tide, residents reported, water would rush up through the storm drains on the bay side of the community, and sometimes result in minor flooding. More commonly, though, participants would report that they had never had flooding or water in their homes for as long as they had lived in Rockaway.
In general, residents of Rockaway spoke of hurricanes and other natural
disasters as events that were always threatened, but never materialized. One participant
described how normally, if there is a hurricane, it is “like a party” because people are off
of school and work. She went on to say that before Sandy, she and her neighbors had
done what they usually did before a hurricane, which was to take cocktails down to the
boardwalk to watch the storm come in. Another resident explained how he had only
evacuated for Sandy because some of his family members had expressed concern about
him staying:

Actually I, uh, I evacuated for the simple reason of, living in Rockaway you
always hear about the big storm, the big storm, and, nobody ever takes it serious.
But, this particular time, some people were concerned more than the other times
when storms hit.

Yet another participant described feeling “invincible” to storms before Sandy:

…before I felt – it’s silly, but invincible. Like oh, a storm. It never hits us! So,
what are you gonna do?

As had been true in Oakwood Beach, the false alarm of Irene the year before
contributed to the lack of concern about Sandy. One resident attributed people’s
complacency to Sandy to the fact that Irene had been “all hyped up,” and others agreed:

We were fooled by Irene. We were told it was going to be terrible, and then
nothing happened.

The key word for Hurricane Sandy was complacency. And then when it got to be
too late, it was too late to do anything.

Residents of Rockaway Park, then, did not expect the devastation that Sandy
brought to their neighborhood, nor did they have any recent memories of storms causing
any kind of significant damage. As such, Sandy was perceived as the community’s first
major natural disaster. A couple who had lived in the area since 1971 described it this way:

Participant 1: This is first disaster we’ve ever had. So, it’s very hard…
Participant 2: Well we’ve had, personally, previous situation where our basements was flooded, so…
Participant 1: But major. This was a major disaster… And we’ve never, ever even had, uh, a flood. They, the water has come up and gone back down.
Participant 2: Right.

Another resident, reflecting this same sentiment, said, “I mean, we thought a hurricane was coming. We’ve been through hurricanes. We never, never expected anything like what came in that night.” In reflecting on Sandy’s impacts, one resident lamented that, maybe if the community had experienced other disasters in the past, they would have responded better to this one.

**Sense of Place**

**Sense of Place in Oakwood Beach.** Sense of place emerged as a key theme in both communities. Looking first at Oakwood Beach, four subthemes emerged related to sense of place or place attachment.

*An oasis in the city.* The first subtheme was the identification of Oakwood Beach as an oasis in the city. Residents described their neighborhood as a relatively unknown and unique area in which they were sheltered from many of the normal stressors and concerns of city living:

But, it was, that kind a place because it was so, out a the way. It was like, three little blocks, that, if you didn’t know it was there, you wouldn’t know it was there.

Because you don’t have the, the traffic. You don’t have your, uh, uh, let me use the word gossip that you would have in a, in more inland where you have, uh, a lot more people and you live a lot closer. So, uh, yeah.
But we really did love where we lived, because it was surrounded by this natural boundary that offered us, um, almost like an oasis. Coming home from the city every day. Or even and oasis from the rest of the island, because it was this hidden little gem.

This view of the neighborhood as a private oasis was closely connected to an attachment to the natural resources in the area. Though Oakwood Beach is a neighborhood in New York City, its unique ecology (it is bordered by the ocean and wetlands) fostered a connection to nature that contributed to residents’ perceptions that their community was special and unique.

Participant 1: That’s amazing, so close to New York City, that you would have your own little paradise over here.
Participant 2: And you should see the fish in here. Crab and clam and… beautiful.

So, uh, I think that’s why we never left, really. Um, even after we had storms and flooding, um, that’s why we never left. We really did love where we lived. From the, uh…. Uh, again, the wildlife, aside from the fish, turtles, frogs, aquatic life, there was this incredible amount of, um, water fowl, and other types of, of birds that bird watchers would actually come down and see. We’re not too far from a purple martin colony, which I think is the only one in the United States because it’s a South American migrating bird, and it makes one stop a year, on Staten Island, and we’re not too far from that? So we would always see the migration of the purple martins, and sometimes even have a few stray ones around. Um, so, all, all, a lot of bird life, uh, was there. Um, wild ducks, Canadian geese, um, raccoons… groundhogs, just opossums, just, a lot of things that, I’m describing it this way so you really get the picture.

Strong personal connections among the neighbors also contributed to this perception of Oakwood Beach as a safe and unique community:

Like, you know, we, we, we don’t even have to knock on somebody – my door was never locked… except at night. It was never locked. The cars were never locked, that’s just how it was, then. You know what I mean? So it was nice. It was a nice place.

**Personal histories and intergenerational ties.** For this community, the beach and other natural resources became part of the residents’ daily lives and activities and, in turn,
an important part of their personal histories. This brings us to the second subtheme for Oakwood Beach, which is the presence of deep personal and intergenerational ties to the area. Several participants shared memories of how they and their families had spent time at the beach, or taken advantage of the many other opportunities to enjoy their surroundings:

Participant: I raised six children down here. And I have no yard. You saw my dimensions. So that’s where they would play.
Interviewer: The beach was your yard.
Participant: Yeah! Uh, they would play, and, I mean my oldest is 53. So, the, this was, you know, I think he was about 13 when we moved here.

‘Cause down there, there’s always, like, people crabbin’, and stuff. You know… We used to come down here when the kids were little. I got pictures a that someplace. In the garbage.

Um, there was a… a flowing creek that runs parallel to the ocean, so a lot of people would set, uh, killy traps and catch killies as bait fish, and then go fishing off the pier, down at the ocean. So, it really was idyllic. It really was very Tom Sawyer-like.

For a number of residents, their attachment to the neighborhood began in their own childhoods, or even with their parents’ generation. One man, who moved to the neighborhood permanently in 1986, had summered in Oakwood Beach since 1966, when he was 6 years old:

Growin’ up as a kid, you were able to make a fire on the beach. Especially on the 4th of July. People would make a bonfire there. The next morning you’d wake up early and go beachcombin’ and see what you could find.

His story was not uncommon, and several of his childhood friends still lived in the neighborhood. Another couple, who had met in the neighborhood and lived there as permanent residents since 1953, described how they originally came to Oakwood Beach by ferry as children, before the Verazano Bridge made Staten Island accessible by car:
Participant 1: Well it was no bridge to get to here, it was just a ferry boat, and not everybody was here.
Participant 2: We had like a private beach. There’s like 5 people, and the community was beautiful.
Interviewer: Right. When did they build the bridge over.
Participant 2: 1964 I think, right, hun?

Importantly, when residents described their activities related to the beach and other natural resources, they nearly always described them in the past tense. For example, no one discussed any recent examples of time they had spent at the beach; rather this was something they described as having done as children, or with their own children when they were younger.

And, it had its purpose, you know? I mean, we’re down at the beach, then there were kids everyday. Everybody would pack up their lunch, and go down to the beach. And it was nice, you know? Now they’re older, and it’s just, you know, when they’re older, it’s just, everything’s different anyway.

In fact, during the summer months when I was conducting my fieldwork, I never saw anyone at the beach. While this may have been due, in part, to the general sense of upheaval in the neighborhood (many people had not returned to the neighborhood, and people who was back were busy with home repairs and related activities), there was some indication that the community’s relationship with the beach changed after the 1992 nor’easter which, according to participants’ accounts, washed away much of the beach.

A piece of the American dream. I have labeled the third subtheme in Oakwood Beach a piece of the American dream. Oakwood Beach is not a wealthy neighborhood. Most of the residents are blue-collar workers or city employees who live in modest homes purchased with their modest incomes. Still, on the whole, residents take great

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18 A notable exception was a woman who still visited the adjacent state park daily. Though Sandy had destroyed most of the walking paths in the park, she continued to visit the park by car.
pride in their homes and their community, and they value their community as a place
where they can own their own (detached or semi-attached) home with amenities that are inaccessible in other areas of the city:

It’s small, you see it, it’s small, but you can make it what you want it to be. It’s your home. And if you’re proud of it? You know.

This was a very close knit neighborhood. It’s, it’s gotta be, I’m gonna say, 90 to 95% owner-occupied. So everybody had a pride, whether it was a big home or a small home, everything was neat, clean, um, not even a need for a neighborhood patrol or neighborhood watch.

It was like an estate. It was like a retreat. It was somethin’ that we could never have, my wife and I, because of our finances. I mean we both work. We’re both workin’ people, but we’re not well-to-do people. Every, I worked 2 jobs over 20 years, and every extra dollar I made, I put into that house to finish it.

One participant described her family’s experience of transitioning to their own, more modest, home in Oakwood Beach:

Participant: I was [in my old neighborhood] about seven years. And then, we had bought with family. So at the time, my sister-in-law, they had no children, and we had six. So I said it was time to, you know, let’s be friends and let’s part. Yeah. That’s what was, that’s what happened… And I loved livin’ alone. Because you get up in the middle of the night, you can wash your clothes, nobody says nothin’. You know what I mean? It was like your own thing.
Interviewer: Yeah.
Participant: But we sized down. That was a bigger house. But it was what my husband could afford at the time. He was the only one working.

It was common for participants to discuss how they had made improvements to their homes over the years, often by adding a swimming pool, or an upgraded kitchen, or a deck. Again, these were described as amenities that would not have been accessible had they lived elsewhere in the city. As an example, one resident described how a friend in the neighborhood decided to install a koi pond in her yard.
She goes oh, I’m makin’ a hole. I’m makin’ a pond. I’m from Brooklyn. We don’t have ponds! And she dug this hole, and it was all dug, and it was a big “I”, for her last name.

At the same time, there were some negative connotations associated with living in this area. Residents commonly referred to Oakwood Beach as the area “below the Boulevard.” This refers to Hylan Boulevard, the main road that delineates the inland boundary of Oakwood Beach (it was also, incidentally, the outer limit of the flooding from Sandy).

Participant: And that, on Staten Island, we’re like, the “below the boulevard” people. It’s not the same as above the boulevard.
Interviewer: Okay. What’s the…
Participant: It’s, below the boulevard is exactly, like, I didn’t know this – I’m from Brooklyn. So I don’t know you don’t buy a house below the boulevard. ‘Cause that’s like, not lower class, not even a little bit lower. But that’s how it’s looked at? Even though that’s not what it is. That’s how people, you know. I don’t know why, but…
Interviewer: So people have that line.
Participant: Yeah, there’s a line.

And then, like I said, it wasn’t my house. My wife’s house. I would never have been comfortable living that close to the water. On Staten Island. Even growing up in this area… people aren’t comfortable living that far below the boulevard.

While this phase was often repeated, it didn’t seem to dampen residents’ feeling about their community. It did, however, belie a vague conception of risk associated with living in a low-lying, coastal area.

A neighborhood in flux. While the residents of Oakwood Beach described their community in overwhelmingly positive terms, it was also clear that this was a neighborhood in transition before Sandy hit. The wave of new construction that brought new flooding to the area also brought new neighbors, and the introduction of residents from more varied ethnic backgrounds into a racially homogenous area. Some of these
new residents were viewed with suspicion, and the sense of the neighborhood as safe and idyllic showed signs of erosion.\(^\text{19}\)

But then there was issues with neighbors, and, you know, stranger people started moving in, and, it changed. But it was still a decent place. You know what I mean?

It was very, it was much more homey? Years ago? Now it’s like, you gotta like, watch your back. Kinda thing. But I think that’s all neighborhoods.

One participant attributed these changes to the crash of the real estate market, which meant that many of the new homes that had been built in the area inhabited by renters instead of homeowners:

…the neighborhood was an excellent neighborhood to live in, to a point. I mean, I have my personal feelings about the last 4 years. Of how the neighborhood changed. Because of the building. And, when you can’t sell homes, you rent homes out, and when you rent homes out, you don’t, you aren’t as particular of who you’re rentin’ these homes out to. So we started getting a lot more drug infestations, we started getting garbage dumping, we started getting break-ins, attempted break-ins… I also had my cars broken into, which was unheard of, um, 5 years ago, in that area.

Taken together, these changes in an otherwise stable community become an important part of the community narrative. These changes were not embraced, and appear to have been associated with a sense of detachment from the community as a whole.

**Sense of Place in Rockaway Park.** In looking at sense of place in Rockaway Park, there were a number of similarities with the subthemes that emerged from Oakwood Beach, particularly in the residents’ perspective of their community as special

\(^{19}\) In some ways, a similar situation occurred in Rockaway Park with the construction of large public housing developments in the neighborhood. While some residents mentioned these housing development (always with negative connotations), the impact on the neighborhood as a whole did not seem to be internalized in the same way, perhaps because the public housing units were geographically isolated from the rest of the community.
and unique, and in the interweaving of place with participants’ personal and family histories. At the same time, a distinctive subtheme arose from the data on Rockaway Park regarding the role of shared narratives. The following sections present each of these three subthemes.

**There’s no place like Rockaway.** Like the residents of Oakwood Beach, residents of Rockaway see their community as a uniquely beautiful and private corner of New York City. One resident summarized this view by describing Rockaway as “one of New York’s best-kept secrets”:

I think in a way it’s one of New York’s best-kept secrets to live out here. There’s nothin’ like it. I mean, there’s so much to gain whether it’s summer, or, even comin’ home from work on a Friday afternoon in, the middle of winter time, when it’s cold… You could take a walk, and you walk to your car in the morning, you’re smelling that – when you come home in the afternoon, you’re smelling that fresh saltwater air. It’s a beautiful place. That’s pretty much it.

The neighborhood was viewed as a place where people were surrounded by nature, and protected from the normal stressors of city living.

Brooklyn is, you know, kind of overcrowded, and one on top of the other a little bit… It was definitely a change. Rockaway brings a, a certain peace out here in the Rockaways. You’re near the beach 24, uh, 12 months out of the year.

So, if I had to describe Rockaway to someone, I would say, a beach community that is a part of New York, that is not part of New York. It’s slower, calmer, nicer, wetter, saltier, sandier. Um, a community. Instead of, a real, a neighborhood.

And, um, I just feel it’s a, it’s a part of New York City. But it’s a great part of New York City, because you don’t really feel like you’re attached to the city?... And it’s a good place to bring up kids. Um, our crime rate is zero, basically zero out here. And I, you can always leave your door open and feel safe. It’s that kind of a neighborhood.

Participants routinely described how their daily lives were organized around the community’s natural resources. As an example, one couple described how they had
actually moved the windows in their home so that they would have a better view of
the bay:

Participant 1: Look, if you stand here, and I look out that window, we actually
moved that window. This window used to be over here…
Participant 2: We moved this so we could see the bay. I mean, this is…
Interviewer: It’s beautiful.
Participant 1: It’s a beautiful neighborhood, the beach is right down here…
Gorgeous view. Uh, it’s such a beautiful place to live.

It was common for participants to describe their love of the beach, or their regular use of
the large parks located near the neighborhood. However, the most commonly cited
resource was the boardwalk that had extended along the beach for several miles before
Sandy washed it away. The boardwalk can best be described as a cultural symbol in
Rockaway, and it was mentioned by all but three community members who participated
in interviews (not to mention many survey participants). The boardwalk was a gathering
place where residents of all ages met to walk, ride bicycles, and interact, and it was
greatly missed.

But, we had this beautiful boardwalk here, I guess, from the beginning of time. It
was a treasure. And we walked on it, we biked on it, the kids skated on it. It was
like a way of life. People in the summer, practically, everyone came out in the
evening, and that’s where they practically lived. They sat on it. They played
music. We even, in the last couple a years had movies shown down there, in the
summer? And it was like a fabulous space. And, we don’t have that.

It would be nice to have the boardwalk back. That’s what I miss most. It was very
good to go for a bike ride. The kids loved to go. It was perfect for families, you
know? Everyone rode their bikes on the boardwalk. It was so nice.

A couple of times, when I come out of my house, if I make a right, it’s to the
boardwalk, and it’s left to the other way. And I was like, oh no, I’m going the
wrong – like, it doesn’t exist anymore, but by rote, I’m just so used to going,
phoop! But there is no phoop. There’s no right. There’s sand. So I really, really,
really miss the boardwalk. I miss walking on there at night. Just on the summer
nights. I miss riding my bike in the morning, there… And I miss the same people
I would see all the time on the boardwalk? There was like, some tai chi guy
always, the old, Chinese guy. And I, just from seeing them over and over and
over, like, just a hello, I’m sharing the planet at the same time. I’ve now seen you
several days in a row, we’re gonna acknowledge each other, kinda thing.

Importantly, these connections to natural resources were discussed in both the
past and present tense. These connections were active up until Sandy hit, and the
disruption caused by Sandy was felt acutely. During Sandy, the boardwalk broke into
pieces and floated down the streets in front of people’s homes. Reflecting on the loss of
the boardwalk, one participant stated, “We have no boardwalk. We have nothing.”
Another resident, commenting on life after Sandy, said, “It won’t be back to normal until
the boardwalk is back in place.”

**Personal histories and intergenerational ties.** As was true in Oakwood Beach,
participants in Rockaway provided many examples of how their personal and family
histories were tied to the community. Like Oakwood Beach, Rockaway Park had once
been a summer beach community that, over time, had been developed for year-round
living. A number of participants had first come to spend the summers in Rockaway Park
as children, and had later moved to the area permanently.

I’ve been a part of the Rockaways, even though I’ve lived out here for 20 years
plus, I’ve been comin’ out here since I was a kid. So it’s always been a part of me.

Okay. I was a summer resident, from birth, basically. I was born in April, and my
first summer here was that summer… I have a picture of me on the porch of the
house that my parents owned, which is 2, 3 houses away from the house that I live
in now.

And, we used to come, you know, we lived, my family lived in the Bronx, and
we’d come here in the summertime. So we have this emotional connection with
the place.
This sense of connection to place was also evident in participants’ descriptions of their social connections and relationships within the community. Residents described their community as a close-knit area where “everybody knows everybody.”

Because it’s just that, we are a family here. Everybody knows everybody. Everybody’s kids have grown up. We’ve been all, to graduations, baptisms, deaths, funerals. It’s just, it’s a family. And nobody wants to break that family up.

Beyond participants’ personal histories, there was a sense of the importance of intergenerational ties to the area. Interestingly, this perception of Rockaway as a place with deep, intergenerational roots was shared by those with these connections, but also by those without them, as though their personal stories were a continuation of the history of the area:

Participant 1: And we’ve lived here for 43 years. And people are attached to it here. Most people, a lot a people here, were born and raised here. So, there is a strong…
Participant 2: There’s generations of people.
Participant 1: There is a strong, generational attachment to the place.

Sand in your shoes. One cannot spend too much time in Rockaway without hearing the phrase “sand in your shoes.” For the purposes of this study, this saying represents an important shared narrative that residents use to express their connection to Rockaway, and their identity as a (permanent) member of the community.

Because there’s a saying in Rockaway, and we all live by it, once you get sand in your shoes, you can’t get it out. Once you are a Rockawayite, you’re a Rockawayite for life.

You come here, sand gets in your shoes, you stay here.

So, yeah, I’m here forever, I’ve got sand in my shoes.

This phrase is a part of the vernacular. People hang signs with this phase outside of their front doors. It is a part of the local culture that, importantly, distinguishes the experience
of residents of Rockaway Park from the residents of Oakwood Beach. While both communities described deep personal and intergenerational connections to their communities, the personal histories of residents of Rockaway Park were couched in a strong, shared narrative that bound their personal stories into a collective experience and a collective identity.

The Decision to Sell or Rebuild

The decision to sell or rebuild in Oakwood Beach. The third and final theme explores the decision-making process around rebuilding or taking the buyout in each community. To begin, it is important to note that these decisions were not made lightly or without reservations in either community. However, in the end, the majority of residents of Oakwood Beach opted to take the buyout, and the majority of residents in Rockaway Park opted to rebuild. This section explores the decision making process that led to these outcomes in each community, by identifying themes that emerged as residents described this process in their own words.

Looking first at Oakwood Beach, three subthemes emerged that helped to illuminate residents’ decision-making processes. The three subthemes examined: the reemergence of the Oakwood Beach Flood Victims Committee, residents’ key concerns about leaving and staying in the area, and concerns about the physical safety of the community.

The Oakwood Beach Buyout Committee. As residents of Oakwood Beach returned to their homes in the days after Sandy, they began to speak with each other about what they should do next. Soon a group of residents, most of whom were former
members of the Flood Victims Committee, decided to organize a community meeting to discuss their options.

… we started talkin’, and we wound up meeting up on the block, and [names of former Flood Committee members] happened to come down. And we all started talkin’, and we decided that we should form again. And it formed. And, we started movin’ forward.

So all I said was we’re, we’re gonna do something. I don’t know yet. What it’s going to be, but we need to, do exactly what we did the last time. Have a community meeting. Quick. Uh, so, we kind of made flyers, I think within that first week, and said, you know, let’s have a meeting. And so what the response was, just by talking to people and, the grapevine, telephone, um… and, our first meeting, I don’t even know what the date was, but it was… it was fast. It was, probably the first week of November.

The leaders of this effort eventually formed into the Oakwood Beach Buyout Committee. The idea to pursue a buyout, according to one member of the committee, emerged almost immediately. As she explains, a buyout had been discussed briefly, but not pursued, among members of the Flood Victims committee after the ’92 nor’easter. In their conversations after Sandy, the idea resurfaced:

Participant: And, uh, the few people that had been involved [in the Flood Victims Committee], we kind of just looked at each other, and I can say right now that, looking at it in my mind? It looked like a movie. Like, you know, we know what we have to do, right? Yep. Ready? Yep, I’m ready. You got, you still have the file? Yep, I have the file, I have 4 boxes, I’ve got this file, I’ve got that, I’ve got everything. Alright, let’s do this! It was almost unspoken. We knew what it had to be. We talked about the idea after the ’92 storm, because we had an eight year window of waiting! So we were talking about it then, just amongst ourselves, not with the community. People…
Interviewer: About selling?
Participant: People weren’t ready for it. Right, about buyout.

The early meetings of the Buyout Committee were described as being well organized and tightly guarded by the community:

So, we kind of knew, that we had already, the idea of a buyout. That was just being stored. And, uh, we did it. We had this meeting, and everybody we, this
first meeting, um… People found out about it, politicians were contacting us, that they would come to the meeting, and we just kept telling them no. No, no, no. Some even came anyway, and they were turned away at the door. And they or their reps kept saying, “But we can help you!” We, you don’t even, we don’t even know what we want. How are you gonna help us? Nobody has answers right now. As a community, we are gonna decide what we want. When we know what we want, we’ll let you know. Just reminding them that they do work for us.

This meeting became the first of many as the buyout process progressed.

According to residents, while not everyone was on board with the idea of a buyout in the beginning, the pursuit of a buyout became the main topic of these meetings early on. Largely due to the efforts of this committee, Oakwood Beach was selected as a pilot area for the buyout program, and the first home purchased through the buyout was in Oakwood Beach on October 7, 2013 (Randall, 2013), just shy of the storm’s one-year anniversary. In this way, Oakwood Beach’s decision-making progress was influenced by their experience recovering from past disasters. Similarly, though the buyout was not considered a certainty until the day the first home was purchased, the possibility of a buyout influenced people’s decisions about when or whether to begin repairing their homes. One participant, for example, stated that she and her partner stopped working on their home shortly after they heard that a buyout might be an option:

And then, when they started talkin’ about the buyout it was, there wasn’t even a thought about fixing the house after that.

Many residents in the most heavily damaged areas of the community, though, continued to repair and rebuild their homes, and moved back into the neighborhood as soon as (or even before) their homes became livable again.¹¹ Once construction was completed,

¹¹ I estimate that just over half of the remaining homes in the most heavily damaged area of Oakwood Beach were inhabited during the time I was conducting my fieldwork.
several participants mentioned that their homes were better than they had been before the storm.

*The buyout as the last, best hope.* The decision of whether or not to take the buyout was not an easy one for residents of Oakwood Beach. They had established roots in the community, and had not anticipated leaving. The community was viewed as unique in terms of the physical environment, the relative affordability, and the social bonds. There were many factors to consider in deciding whether or not to leave, and residents had a number of very serious concerns about selling their homes and relocating. Perhaps chief among these was the concern that, if and when the buyout went through, the buyout offer they received from the state would not be enough. For some, this was a concern that the offer would not reflect the true value of their home:

> Aw, no, we’re not interested now because we can’t say nothing. We don’t know what we’re doing. If they don’t, I mean, I’m not going no place… If they don’t offer me enough money, my value of my home, you know?

More common, however, was a concern that the buyout would not leave them with enough money to relocate to a comparable home in an area that provided them with the benefits they had enjoyed while living in Oakwood Beach. While a large number of participants from Oakwood Beach stated that they intended to stay on Staten Island when they moved, those who had begun to actively search for new homes had concerns about the feasibility of finding what they were looking for.

> And, it’s hard! So I don’t know where, that’s what I’m saying. Where will they go. Uh… everything’s so expensive, and they’re gonna give you the value of your house, the day before the storm. That I heard, too. You know what? They, they’re not sendin’ you off in the, with a half a million dollars.

But this was different, it was a very different kinda neighborhood. It’s a very rare place. Like right now, I’m shop – I need to find a house. I don’t wanna house,
like, on top of anybody? I don’t want a house, like, on a main street? I don’t want that. Like, we don’t even have sidewalks. You know what I mean? You don’t find that.

What are we lookin’ for. Alright, we’re gettin’ old, so let’s keep it on one floor. We don’t need a lot a room. Two bedrooms would be fine, if you have a guest or whatever. Okay? Uh, I wouldn’t mind a 2-car garage or a 1-car garage… You’d want the utilities to be accessible and high and dry. You know. Uh, do you need a lot a property? Well, I had 50x120, I’d settle for 40x100. You know what I mean? And now if you could put a price tag on that. And, in a location where I don’t have to worry about the addicts and the crack, people, you know, you can find stuff for less. Okay? But then, I don’t need a home invasion? Or um, you know, and opportunist, you know.

For residents with mortgages, the picture was even bleaker. One participant, who was planning to take the buyout, described how he was concerned because most of any payment they received from the buyout would have to go to pay off their existing mortgage and to reimburse FEMA for assistance they had received and used for purposes other than repairing their home. After that, they would have very little, if any money left with which to find a new home. An older couple lamented that, at their age, they would not be able to purchase another home, and would instead have to move into an apartment:

Participant 1: We’ll like, just get an apartment and we’ll, we’ll live until we die. It can’t be long!
Participant 2: The thing is, at our age, you can’t buy a house at 80 years old.

A second major concern about taking the buyout had to do with the strong sense of place attachment and personal connection to the community that made the thought of walking away painful. One couple, who had finished repairing their home and were undecided about taking the buyout, shared this exchange:

21 There was a tremendous amount of confusion around aid that residents received from FEMA and payouts they received from their flood insurance. Residents reported that funds they received from FEMA had to be used to repair their homes, and that they would have to return any funds to FEMA that they could not document as being used for that purpose.
Participant 1: Well I am a little stressed out.
Participant 2: Yeah, she’s washed up.
Participant 1: You know what it is, too, you’re up in the air. You don’t know what you’re gonna do… You don’t know what your, you know what I mean? That’s the hard thing. We’ve been here 60 years. That’s a life here. We raised five children here. Five children. Same house.

Another participant explained how she had decided to sell her home a year before Sandy, but then changed her mind and took her house off the market because of her family ties in the immediate area. At the time of her interview, she was leaning toward rejecting the buyout and staying in the community:

And as I said to you before, this is the only home I know, even though I had made a decision last year to move. And for some reason, I prayed on it. I prayed every day. I really did. I’m not even, you know. I prayed. I wanted answers. Is this my right move? … And, I don’t know. Just one day I said, you know what, I don’t think I can, even though I did have the three people that wanted it. And, I just, chucked the sign, and said I’m sorry to the guy, and, you know. ‘Cause they advertise, they do everything. You know. But I waited about three, four months I was on the market… But after that decision is when I decided to do outside, make it clean and nice. I’m stayin’.

On the whole, however, concerns about staying in the neighborhood weighed more heavily on participants than did concerns over relocating. There was a sense among residents that this buyout was their last, best hope, and that no better options were coming to them if they chose not to sell. There were a number of specific concerns that pointed to this general outlook. Several of these concerns were financial in nature. To begin, there was a recognition that housing values had dropped significantly, and a fear that the market would never recover:

Everybody knows Sandy, I think, was such a, such a huge storm, I think it’ll take a couple years for the market prices, the prices to rise in this area. And, I mean, the only way for people to move out is to get some kind of buyout assistance program. So I, I think it’s a good idea. I think it’ll help.
Uh, we had really had intended to stay here. As you know now, with this buyout from the state, it’s a pilot program. They’re willing to give us 10% above, uh, pre-storm value. Uh, I’m also a part-time realtor, so, doing my own comps, pre-storm, I feel this house is basically worth around, the low side should be around $320,000? So if you add 10% onto that, it’s a nice piece a change, that I have to sell, because no one’s gonna buy this house. No one’s gonna rent this house.

Then you have to consider what you’re value’s gonna be, for the next 30 years, because my generation, myself and my children, will have to pass away, before anyone even thinks of moving down there.

Another participant, speaking more directly, said, “No one is ever going to want to buy [these houses] again.” The buyout, it was felt, would only make the situation worse:

Because if and when they ever go to sell their house, because of the other houses are gonna be knocked down and it’s all gonna be brought back to nature, everybody’s gonna remember exactly what happened. So you are never going to get the money you could’ve gotten through this buyout. Because they’re giving up before flood prices. So even if you fix your house up perfectly now, it’s not worth what it was October 28th. Just because of what happened on October 29th.

In addition to the loss of market value, residents were extremely disappointed with the payouts they received from their flood insurance. Even with additional support from FEMA, it was not enough to complete the necessary repairs on their home:

You know, basically what we heard was from FEMA over the air, over the airways, every family’s gonna get $31,000. Alright, we’re thinkin’, $31,000. Alright, you know… It’s not much, but we’ll see what we can do. At this point we knew we had to replace the house. But we were also thinking we were also going to get insurance money to do that… Which was non-existent… It’s ridiculous. And they force you to get flood insurance, so that if there is a flood, you’re covered. Then they don’t wanna pay you. What sense does that make?

One participant, who reported having used his retirement money to fix his home when the insurance payout was insufficient, summed up the sentiments of many of his neighbors when he said, “Flood insurance is such a waste.”
Compounding residents’ frustration over their limited flood insurance payout were policy changes that threatened to dramatically increase flood insurance rates for those who stayed in the area, unless they implemented expensive mitigation measures (namely elevating their home above the new base flood elevation). These changes had the potential to make staying in Oakwood Beach impossible for most of its middle class residents:

Participant: If I don’t, if you don’t raise the house? They’re talkin’ [raising flood insurance rates] about $20,000 a year.

Interviewer: Who can do that. That’s insane.

Participant: So, let’s say I did pay the $20,000 a year. And in four years there’s a flood. I’ll have paid in $80,000 to what, get maybe $70,000 back? Again?... I mean you really have to be ridiculous to think that anybody would do that.

Financial concerns, then, weighed heavily on residents. Underlying these very practical financial concerns was a fear of being left in a largely abandoned neighborhood. According to the state’s plan, any structures remaining on properties purchased through the buyout would be torn down, and the lots converted into open space. If most people decided to sell, what would become of those who were left? One participant predicted an increase in crime and a decrease in services:

So. Like those people, they’re not thinking what’s gonna happen to services… Do you think the cops are gonna respond, Johnny on the spot? You know what I’m saying? And according to people in the neighborhood, I never saw it, but the end of Tarlton they’re supposedly having drug deal going on, and all this stuff going on down there. Nobody’s living there, what you thinks gonna happen? You think that’s gonna stop? You know?

Others wondered whether their homes would be taken by eminent domain after the buyout, if they opted to stay:

Participant 1: Because they said the… they’re like, when you do, if you do, see people don’t know, what’s that other thing? Like a domain? Something?

Interviewer: Yeah, eminent domain.
Participant 1: Yeah.
Participant 2: Then you lose everything.
Participant 1: Then if you have to leave, then they don’t give you the value of your home. So, know what I mean?

And, like, these people don’t wanna leave. And, they wanna make a park. Let’s just say. I don’t really think they’re gonna do that. I don’t, in my head, I don’t think they’re gonna do that. What happens to those people? Are they gonna just take their house? That’s what they’re tryin’ to say. They’re trying to say, if you don’t leave now, and you don’t, uh, go with it now, it’s time that you’re not gonna have a choice. And you’re not gonna offer you the same thing. Oh they’re gonna just take, um, imminent domain. And, like, you’re screwed.

What is clear from these data is that very few residents wanted the buyout. Rather, when the options were weighed, most residents determined the buyout to be the lesser of two evils, or the best of two less-than-ideal options. One participant summarized his view of the situation by stating, “We come out losers no matter what happens”.

**Sense of safety violated.** I have described how residents of Oakwood Beach valued the sense of safety their neighborhood provided. Even having experienced past and recurring hazards, and acknowledging that living “below the boulevard” was, however vaguely, associated with risk, they continued to feel that their community was a safe place to live. The devastation from Sandy, however, was beyond what anyone had anticipated:

Uh, you know, when you’re livin’ here so many years, you try to conquer it. But this was something that was unconquerable. It was devastating, really.

After Sandy, it became clear that this sense of safety had been violated. The massive destruction caused by the wind and storm surge took a toll, and caused many residents to doubt that the community was or could be made safe from similar threats in the future.

One resident, when asked her primary reason for wanting to leave the area, responded by saying:
To be in more safe place… Yes. It’s like number one, because, like, a family, and we have kids? We should be responsible like parents. And if it’s rain? It’s destroy again. That’s not good. Because, okay, like I told, we have, we have wall, we have roof. But in our mind, like, we feel not safe all the time. And probably when we stay in this area, each year it will be same, uh, scary thing for you. And each year we should be prepared, like, it’s happened before. And each year we should be smart and try to protect. I don’t know how, how, how much we can do.

Another resident summed up her feelings by saying “there was no way for me to feel safe there.”

Participant: And if the buyout didn’t come, we were walking away. Or selling it for whatever we could get for it, you know. There was no moving back. That wasn’t even an option… There was no way.
Interviewer: And was that mostly, what do you think was driving that mostly… Participant: I don’t feel safe there! … From a rain standpoint it wasn’t safe. You know, there was no way for me to feel safe there.

These fears were associated with the expectation of future storms that might cause more devastation, or take more lives:

They’re scared. They’re afraid… How can they jeopardize their children. I mean, they got out once. Will they get out again? You know?

So, just to reiterate, ‘92 was horrendous. From 92 to, um, last year, to this big storm, it’s just been growing… So when I hear about Sandy being the hundred-year storm, that’s garbage.

These fears extended beyond storms. For a number of residents, stories about wildlife, which were so positive before Sandy, became stories of how the neighborhood was now overrun with rats and insects. One woman, who was living in a rented apartment at the time of her interview, told the story of her neighbor who had moved back into her home:

Participant: I’d be afraid to live there. Because, like [name], the other day, with her rat. She told you the rat story?
Interviewer: Oh no. No. It sounds bad.
Participant: When she walks into her house, at night, there are rats. Okay? There are rats around her house. Okay?
Not only did residents not feel safe in their neighborhood, but some expressed a belief that *nothing could be done* to protect the neighborhood. The neighborhood was unsafe, and nothing could be done to change that. In the past, residents had put their faith in engineered flood control measures – such as berms and sea walls – believing that, if built and maintained properly, these measures would protect their community. After Sandy, residents lost faith in these solutions:

And you know what? Even if they fixed [the existing protections], it wouldn’t a fixed it. Nothing woulda stopped this. That’s the truth. You know what I mean?

…it’s been established that it’s so below sea level, nothing can protect it. There’s no sea wall, there’s no berm, there’s no irrigation – there’s nothing that can keep it from flooding, in even a modest storm. Not a Sandy, a modest storm, ‘cause we’ve been getting flooded, like in ’92, with modest storms.

Contamination was another major safety concern. As would be expected, mold was a huge issue, and one that residents’ worried was not being dealt with effectively:

Yeah. You know what it is? It took at least five months to get back. Because first you had to get rid of all this mold! All over. Green, and white, and who knows what colors. See, people are afraid that, comin’ back, they’re gonna, develop it or somthin’? I don’t know. I really don’t know. I couldn’t say. I mean, like, you say you have allergies. Let’s say I start coughin’ a lot. It, did I get it from the mold? Or am I just sick. Well, who know, you know? You don’t wanna endanger, you know, especially children.

There were particularly strong concerns about ground contamination associated with the large sewage treatment plant that abuts the neighborhood. Staten Island has a combined sewer system, meaning industrial and household sewage is transported through the same pipes as stormwater runoff. As is typically the case with combined sewers, heavy rains can exceed the capacity of the systems, so that any overflow beyond the capacity of the system is released untreated, in this case, into the ocean. An overflow situation developed during Sandy, and the sewage treatment plant released the overflow as they normally
would. In this case, however, wastewater, including raw sewage, that would normally be released into the ocean washed back into the neighborhood with the storm surge.\textsuperscript{22} The presence of these contaminants was a point of significant stress. One resident described how they had gutted their house down to the studs, but they could still smell the sewage, even in the studs. From this, he concluded, “So it can’t be cleaned. It can’t really be fixed to a point where the houses are safe.” Other residents agreed:

First off, we know for a fact that sewer came out. The sewer plant died. They can deny it all they want. I walked in my house. I know what that sewer plant smells like. And it was all throughout my house. So, it was either level my house, dig up all the dirt around it, to get all that, God knows what out of there. Or live with the fact that maybe 20 years down the road we come down with some funky disease. Because all this sewer just stuffed in our wood, and in the ground.

After that storm, Sandy, I went down to my home with, um, packages, bundles of rags, and paper towels, cleaners – Fantastic – and such. And we found doors to my home missing. We hooked up a fire hydrant hose. We washed out the entire house. There were inches of human sewage and gasoline and sludge in the house – different kinds of toxins that I had tested and came up positive. I took care of that myself. … I went back a few days later to start cleaning. And I called my wife, and I looked around, and I said to my wife on the phone, there’s nothing we can do here. There’s no cleaning that can be done here. And, um, I said to her, we’re basically done. The place is done. There’s nothin’ we can do to move back in this house. I don’t even know where to begin.

Adding to this fear of contamination was the fact that the sewage plant, once blocked by trees, became clearly visible from the neighborhood after the storm.

**The decision to sell or rebuild in Rockaway Park.** Residents of Rockaway Park also faced difficult decisions after Sandy. Unlike the residents of Oakwood Beach, however, most residents of Rockaway Park opted to rebuild and remain in their homes.

\textsuperscript{22} This narrative was shared in the community as something of a conspiracy theory: a belief that the sewage was discharged before the storm surge, but the government was not owning up to it. However, this story was confirmed to me by a high-ranking public official, who said of this treatment plant, “Oh yeah, they opened it right up.”
This section presents three subthemes that provide insight into how and why these decisions were made.

**Staying, but with reservations.** While a few residents of Rockaway Park expressed a clear interest in selling and participating in a buyout program, in general, there seemed to be very little community interest in the idea. In their references to the idea of a buyout, homeowners in the area frequently cited the intergenerational nature of the community as a reason for this lack of interest:

Homes in this area have been handed down from generation to generation. It’s a crime to not let them rebuild.

People have been here for generations in this community, and never seen a storm like this. So what, are we just supposed to give up?"

More generally, the attitude of the majority of residents in Rockaway was expressed in comments such as these, which indicate that the idea was simply unpalatable:

There’s one man, ‘cause he’s got an old, crappy house, he said yeah, I’ll take anything they’ll give me. He didn’t fix it. He hadn’t gotten rid of the mold in his house, and he’s still living in it, you know. Yeah. He would take [a buyout]. He’s take the money and run to Florida. But as far as anybody else, and then they talked about, uh, Bloomberg has brought up in many conferences, of just totally, and he did say after Hurricane Sandy, totally knocking Rockaway down completely. And just making it a wildlife sanctuary. Not leaving any houses… And, that’s not going down too good with people.

Well that kind of really scares us. Puts us in a spin… We don’t want a buyout… We want to stay in our home. No. And we are on the very edge. They had said the first three homes along the bay [would be bought out]. And we’re the third home on the bay. So that really put us in a spin.

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This bias against the idea of a buyout became very clear at community meetings that I attended in Rockaway. I attended one meeting, for example, that had representatives from the state’s buyout program, the city’s buyout and rebuilding programs, and other local officials. Residents at the meeting asked many, many questions about their options for rebuilding, but not one question was asked about a buyout.
While they were quick to dismiss the idea of a buyout, residents of Rockaway Park expressed reservations about staying in their community. As was true in Oakwood Beach, residents were concerned about changes in the flood insurance program. As a primarily working-class community, the thought of having to pay exorbitantly high flood insurance premiums was alarming and would threaten their ability to afford to stay in the community. Equally alarming was the alternative, which involved spending tens of thousands of dollars to raise their homes and/or losing precious square footage by filling in their basements.

Participant 1: You can’t get your insurance money or anything if you have the basement – they want them filled in. And we’re on slab but they wanna raise it 14 feet, that we wouldn’t have a first floor, either. Which we can’t afford. It’d be over 100,000 to raise the house. We don’t have that!... And the SBA loan, they were gonna give us $37,000, we were gonna have to pay $650 a month to repay it. We’re barely making it now! We live check to check!

Participant 2: So we left things as is. Leave it be.

Participant 1: And now they’re sayin’, talkin’ about the insurance goin’ up. The flood insurance.

Participant 2: Ten thousand.

Participant 1: I said I’m not payin’ it.

Participant 2: They want ten thousand a year for a house like this…

Participant 1: Then say, well, how can they make you pay 10,000 a year? Like, you don’t have that ten thousand to pay them.

Still, decisions had to be made, and homes were repaired and rebuilt. When insurance payouts and FEMA assistance proved insufficient to cover the costs of rebuilding, many residents reported using their retirement savings to repair their homes. The draws on personal funds were a source of anxiety, and this anxiety was exacerbated by the knowledge that they were making decisions about their homes without the necessary information about the new building requirements.
It’s the on-, not knowing. Like, waiting for flood maps to come out. And not know, um, can we reconstruct our house? Do we have to raise it up? Do we have to knock it down? Do we have to sell it to the government?... It’s all of that not knowing... And it’s a long time now. We’ve been waiting. And, each time they come out, they say, with the flood maps. Then we find out the next day, no, they’re preliminary. They can change. I know we’re not the only ones. Everybody in the community has the same problem. Everyone. Which is stressful… Everybody has this stress and worry about the future.

*Faith in the community.* Despite these reservations, the majority of residents decided to stay in their homes. One factor that seemed to contribute to this decision was the fact that their faith in the community remained intact, even with all of the devastation and change caused by Sandy. When participants described their decision to stay, they spoke about how, while some things had certainly changed, Rockaway was still home, and life there would still go on:

> [My husband] took the whole thing very bad. The house lost so much value. Blah, blah, blah. But I said we weren’t going and selling the house, really. We weren’t. We bought it to raise our family, and what happens at the end when they’re all grown up? I don’t know. We’ll take it, you know, day by day. But, uh, we weren’t planning on leaving and going anywhere else. So, you know. So what are you complaining about?... It’s still the same house. It might not be worth the same about of money. We might not be able to sell it like we would have been able to sell it prior to Sandy, but, really, it’s a non-issue. You know?

The expectation that their friends and neighbors would also remain in the area – and that their social networks would remain largely intact – was an important factor here. One participant, who had lived in the area for 30 years, described how he and his family had gone through an “emotional roller coaster” right after Sandy, thinking about whether they should stay or go. In the end, they decided to stay because they had a lot of friends in the community who were also staying, and those relationships were an important part of their and their children’s lives. On the weekends, he explained, they all got together to go to the beach. In this way, the relational ties were more than just social connections;
they were the foundation of daily life in the community. This was evident in the following exchange:

Interviewer: If the city showed up at your door tomorrow and said, we’ll pay you pre-market value for your house, no strings attached,
Participant: Would I leave.
Interviewer: Would you consider taking it?
Participant: I wanna say no, but of course I would consider it. I would consider it, but I’d have to think of where would I go… It would be very hard to walk away. Could you imagine living somewhere where you didn’t know anyone? Who didn’t know you? Who you didn’t know, for like, the past 40 years? Who I didn’t know their kids, or they didn’t know my parents, or, you know? I don’t know. It would be very weird to be anonymous somewhere. I don’t think I’d like that. If I had no choice, I would certainly pick myself up, dust myself off, and deal.
Interviewer: Sure.
Participant: But if I had a choice in it, I don’t think I’d like it at all. Like, you know when you walk into a place and you look for a familiar face, could you imagine going someplace where you didn’t know anybody else, and living there? That would be bizarre. Like, I could walk with you right now? And see 40 people I knew in a second.

Participants acknowledged that their community had changed, and things would likely never return to exactly the way they had been before Sandy. Still, the expectation was that the community would fully recover, and maybe even improve. As one participant commented, the “community will be back, and maybe even better. Not the same, but better.” They chose to embrace what was repeatedly referred to as “the new normal.”

It’s gonna be a different community. The beach is gonna be different. The boardwalk, which was the backbone of the Rockaway community, is gone. And who knows what form it will take when it’s rebuilt.

They were not minimizing the damage that had occurred, nor glossing over the challenge of recovery. They were, however, keeping a hopeful outlook on the future:

There’s an awful lot going on, yeah. And our one little street, um… sorry. Was totally, totally destroyed. And now, stores are all open… It’s like, it’s just the most amazing thing. How it came back. Stores are all brand new. Everybody’s
back. There’s maybe one or two stores that didn’t come back, but there’s somebody else already in there with a new store, a new restaurant… I don’t know. I just think that’s the most hopeful sign for the whole community… You see, on that one little block, on 129th street, you can hardly walk. It’s crowded with men and women, and little children, and people going to the beach, and people doing this and that, and bikes and skates and, you think, well, oh my God. There is the community. And that, like for all, for about three months, it was just the most depressing place to go. Everything was gone. So that, I think, I think that’s probably the most hopeful sign.

‘Learn to live with nature’. Sandy took a toll of Rockaway Park and, as was true in Oakwood Beach, it affected residents’ concept of their community as a safe place to live. Some residents expected this change to be permanent:

Um, I’ll never go in the ocean with my feet again. ‘Cause I’m that afraid of it. After what I saw. The fury. Of how that thing came at us. And, the bay, which is, to me, part of the ocean…

This view, however, was the exception to the rule:

The beach is still there. I’ve forgiven it, for ruining my life. The sand and I, the beach and I, it took a while for me to forgive it. But I sat on it this summer and managed quite well.

While residents of Rockaway Park expressed concerns about whether or not it was safe to continue living in their community, these comments were typically expressed in a way that indicated these concerns were temporary, and would be resolved in time. As one participant concluded, “We have to learn to live with nature. It can be done.”

Unlike residents in Oakwood Beach, residents in Rockaway Park maintained an underlying belief that something could still be done to protect their community from natural hazards. Participants discussed a number of potential mitigation measures that could (and should) be put in place to protect the community from future storms. These included modifications to individual homes and large-scale projects. One woman, whose
main floor was destroyed by Sandy, explained how she would be interested in raising (but not selling) her home:

I would raise up [my house], but I don’t think I’d leave… I would feel safe up higher. Definitely would. Just to have a car park under there? And nothing else?

There was a great deal of interest in larger scale mitigation measures that would protect the community as a whole. As one resident stated, “We want protection.” In the months after the storm, the city had placed a row of large, black sandbags along the beach (where the boardwalk had been24), at the entries to the residential areas. It was clear to residents that these were not going to provide effective protection in the event of a major storm, but the hope was that these were temporary, and more permanent and effective measures would be put in place in time:

Now, hopefully, we’ll be prepared… If the monies come, and they go to the right place, and we get some serious protection – I’m not talkin’ about those Glad bags they filled with sand down there. Um, maybe, in 2 or 3 years, with luck we won’t have another storm, and in 2 or 3 years we’ll be prepared for somethin’ like that. I hope it’s the worst. That we’ve seen. That’s my hope, anyway. That’s why I’m down here rebuildin’.

Residents described a number of possible options, including the installation of a double dune system or a series of rock jetties in the ocean.

Along with this belief that their community could be protected was a view by the majority of participants of Sandy as a “blip on the screen”: a freak event that likely would not be repeated. Some referred to Sandy as a hundred-year storm, interpreting this to mean that this was a once in a lifetime event:

24 Interestingly, the boardwalk was also mentioned on several occasions as a form of protection from the ocean (seemingly because, though it provided no actual protection from the ocean, it provided a visual barrier between people’s homes and the ocean).
I mean, this, if this is in fact that hundred-year storm, then I’m pretty good. I’m already almost 60. You know? Like, I’m pretty sure I won’t see another one, kinda thing?

Others reflected on how, in all the years they had lived in the area, they had never experienced anything like Sandy, and they hoped that pattern would continue:

And also, like, since we never had a disaster, we are just hoping, that we won’t have anything like that again. I mean, all the years that we’ve been here, and nothing. I mean, we never had an insurance claim. For our flood insurance.

Another participant commented that more storms like Irene are probably coming, but Sandy was “Super.”

In reviewing the data, however, this does appear to be more of a hope than a belief, per se. As such, it may be more accurate to say that residents did have some concern about future storms, but it was a concern they were willing to live with.

Interestingly, in explaining their choice to remain in a hazard prone area, it was common for participants to draw comparisons with other hazard-prone communities across the country. There was an attitude that “disasters happen everywhere,” so why move?

Let’s say I wanted to go, ‘cause I always say oh, I have to move someplace where’s there’s more cruise ports. Ok, so Florida. They have worse storms! … It’s easy to say you’re gonna move? But it’s really hard to do it. And, where would I go? Upstate New York has too much snow, and other places have storms, and, I like the proximity to the city, and I work here, and, I’m not going anywhere. So.

If other areas are just as vulnerable to hazards, in other words, then residents of Rockaway would be no worse off if they chose to remain where they are.
Chapter 5: Discussion

This study sought to address the question of why two similar communities would come to different conclusions about whether to accept or reject a home buyout after experiencing a major disaster, and to explore the role that resilience played in these decisions. In addition, it sought to understand what accounted for the seemingly community-level decision to stay or go, even though the decision to accept or reject a buyout is technically an individual- or household-level one.

Study Communities Before and After Sandy

The two communities included in this study were selected because of their demographic similarities, exposure to Sandy, and comparable levels of vulnerability to future hazards. In the course of this study, additional similarities were identified that add depth to this comparison. First, we saw that residents in both areas viewed their communities as special and unique among New York City neighborhoods. Second, residents in both communities had deep personal, family, and intergenerational ties to the area, which contributed to a strong sense of place. Third, data from the survey indicate that, prior to Sandy, the two communities were similar on several measures of resilience, including Connection & Caring, Transformative Potential, Personal Relationship to the Community, SOC_I, and Sense of Place.25 Further, both communities scored relatively high on each of these measures. As such, both Oakwood Beach and Rockaway Park exhibited characteristics of resilient communities.

25 Here, again, CART measures that did not include items that were specific to before and after Sandy are considered reflective, primarily, of residents’ pre-Sandy perspectives.
Data from this study suggest that a number of changes occurred within each community after Sandy, and, interestingly, the nature of these changes was similar in both communities. In general, residents of both communities reported significant increases in community involvement and helping behaviors, while significant declines were reported in hope, safety, the availability of services, and the availability of housing. There were no significant changes in perceptions of belonging or the strength of relationships in either community, though Oakwood Beach showed a downward trend in these areas and Rockaway Park showed an upward trend. Relatedly, residents of Oakwood Beach reported significantly higher levels of post-Sandy stress and significantly less participation in social activities than residents of Rockaway Park.

**Resilience and the Buyout Decision**

With regard to the buyout decision, this study was primarily concerned with understanding differences between residents who planned to accept the buyout and those who planned to reject the buyout. As such, this discussion focuses on a comparison of the findings for these two groups, setting aside, for now, findings related to residents who were undecided about the buyout.

**The role of individual-level predictors.** Looking across findings from the survey, two interesting trends emerge. First, with the exception of race, there were no individual-level predictors or covariates that were significant predictors of the buyout decision. The effects of race are difficult to extrapolate given the homogeneity of the sample (and the two communities). Previous studies have suggested that members of minority groups are more likely to relocate after a disaster, a decision that may be
associated with limited social power (Morrow-Jones & Morrow-Jones, 1991). However, in the present study, race was more closely associated with being undecided about the buyout. It is possible that this effect reflects outgroup behavior, whereby residents who are not from the dominant racial group are insulated from ingroup behaviors and perceptions related to the buyout (Baumeister & Leary, 1995; Putnam, 2007). In other words, if residents who are from minority racial groups are less integrated into the community as a whole, they may not be privy to or influenced by the dominant community narrative related to the buyout decision.

Taken together, the lack of significance of these individual-level predictors is surprising, particularly with regard to tenure, exposure (Myers et al., 2008)\textsuperscript{26}, and Personal Relationship to the Community (or the closely related SOC_I measure), all of which one might expect to influence the decision to remain in or leave one’s home. The implication here is that residents’ perceptions of their broader community were more influential in the buyout decision than were their experiences of Sandy, personal or family characteristics (such as whether the household included children), or their perceptions of their own belonging and relationship to their community. This finding indicates that, while the decision to accept or reject the buyout is made independently by each homeowner, this choice is tied to the decisions of one’s neighbors in a very real way. Consider, for example, the ramifications if a homeowner rejects the buyout, but a

\textsuperscript{26}There were qualitative differences in residents’ exposure to Sandy (floods in Oakwood Beach, and floods and fires in Rockaway Park, and higher reports of home damage in Oakwood Beach). However, the two items included in the exposure index (Would you say your home was severely damaged? Did you ever feel like your life was in danger?) were not significant predictors of the buyout decision when analyzed independently.
large number of his or her neighbors accept the buyout and move away. This decision has potentially serious implications in terms of safety, the availability of services, social connections, and property values. Similarly, the choice to accept the buyout has certain known implications (including the loss of one’s home, the disruption of social networks, and the hassle of finding and establishing one’s self in a new home). If a homeowner makes a decision to relocate, but a large number of her neighbors remain in the community, she is likely to experience these losses more deeply than if she knows the majority of the neighbors have relocated and the community has disbanded. Either way, there are risks associated with being in the minority, and comfort in acting as a group.

**Trajectories of resilience.** The second trend relates to the role of resilience factors in each community. In comparing the role of resilience-related measures on the buyout decisions for these two groups, data from this study suggest that resilience did play a significant role, though the nature of this role varied as a function of community of residence. Recall that significant interaction effects were found for community by Connection & Caring, Transformative Potential, Resources, SOC_C, and Sense of Place. Importantly, in each of these areas, higher values of the resilience measure were associated with being *more* likely to accept the buyout in Oakwood Beach, and being *less* likely to accept the buyout in Rockaway Park. Thus, each community’s decision was influenced by its characteristics of resilience, but these characteristics influenced the communities in opposite directions.

While these responses may seem counterintuitive, the disaster resilience literature offers some insight into why these communities may have behaved as they did. As a
construct, disaster resilience has been theorized as following two primary trajectories.

Traditionally, community resilience has been defined as the ability to “bounce back” from a catastrophic event (Berke & Smith, 2009; Cutter et al., 2008; Manyena, 2006), which for disaster affected communities, is interpreted as recovery and a return to normal functioning. Manyena (2006) has summarized this view:

Disaster resilience is seen as the ‘shield’, ‘shock absorber’ or buffer that moderates the outcome to ensure benign or small-scale negative consequences. Indeed, the goal of disaster risk management is to guarantee minimal loss of life and livelihoods and to allow the affected community or system to return to ‘normal’ within the shortest possible time. (p. 438)

However, disaster resilience has also been defined as the ability to recognize and adapt to changing circumstances:

Resilience is the ability of a social system to respond and recover from disasters and includes those inherent conditions that allow the system to absorb impacts and cope with an event, as well as post-event, adaptive processes that facilitate the ability of the social system to re-organize, change, and learn in response to a threat. (Cutter et al., 2008, p. 599)

In this definition, the concept of resilience is expanded to include both the ability to effectively respond to and recover from an event, and the ability to adapt, as necessary, to change. Adaptation can occur in situ through activities such as lifestyle changes or mitigation measures (Manyena, 2006), but can also encompass more extreme adaptation measures.

What we see in this comparison of Oakwood Beach and Rockaway Park is an example of how two resilient communities exhibited resilient responses to a major disaster, though this resilience manifested differently depending on the community. In Oakwood Beach, the community chose to adapt to changing circumstances, which in their case meant relocating out of an area that was no longer viewed as livable (an
extreme form of adaptation). Rockaway Park, in contrast, followed a path of overcoming the hurricane and reestablishing their way of life. While a certain level of adaptation was necessary in the case of Rockaway Park (mitigation measures, for example, can be viewed as a form of adaptation), the community’s primary focus was on rebuilding and reestablishing their community as they knew it.

The question may arise of whether relocation – which, by definition permanently disrupts an established household or community – can be considered a resilient response. From a policy, engineering, and hazards perspective, the relocation of residents out of vulnerable areas has been viewed as a means of increasing the overall resilience of larger social systems (see, for example, Godschalk, 2003). However, this approach, while easily justifiable, fails to consider the nuance and complexity of what it means to decide (or be forced) to leave one’s home and community. From a community perspective, accordingly, relocation has been considered a threat to resilience (Bonanno et al., 2010; Bronen, 2009). While this may prove true in the medium to long-term, what is clear in Oakwood Beach is that the decision to relocate, difficult as it might be, was a logical next step along a trajectory of resilience. One resident stated this rather directly:

So, if we could get this [buyout] done? Then you have a future. You have a new beginning. It’s not so bleak. It’s, there’s an end of the rainbow there. So that’s what made me decide that we had to go another route. There’s gotta be a better [way].

Here, then, we have two examples of resilient responses: in Oakwood Beach, an example of relocation as adaptation, and adaptation as a resilient response to an altered environment; and in Rockaway Park, an example of rebuilding as a return to normalcy, and a return to normalcy as a resilient response to a major disruption. In both cases,
resilience, established and nurtured over time, enabled these communities to be active participants in their own recovery (the alternative being a persistent state of dysfunction; Norris, Tracy, & Galea, 2009).

The role of context. This leads us to the question of why resilience played different roles in each of these communities. Insight into this question is found in the results of the qualitative portion of this study, which suggest that each community’s response to Sandy and, in turn, their decision regarding the buyout, is best understood in the context of the history and local culture of the community. We have seen how, in each community, the buyout decision was made with reservations. However, in each case it was reflective of the broader response to and interpretation of the events of Sandy.

After Sandy, residents of Oakwood Beach no longer felt safe in their homes or in their community. They feared and expected future storms, and felt that nothing could be done to protect them from those events. In Rockaway Park, residents also expressed concern about the possibility of future storms, but they maintained an overarching belief that their community could be protected, and, while Sandy may have changed the community, they believed that it would fully recover in time. The response to Sandy was reflective, in turn, of each community’s history of disasters. Residents of Oakwood Beach had been dealing with natural disasters for years and, largely, accepted them as part of life in the area. However, they had experienced a major natural disaster in the past, and they had concerns that the routine fire and flood events were steadily becoming more frequent and more severe. Residents of Rockaway Park, conversely, viewed Sandy as their “first disaster,” though they had suffered severely in the past from technological
and terrorism related disasters. While residents of Rockaway Park were able to
dismiss Sandy as a freak event, in Oakwood Beach, Sandy represented the culmination of
a series of increasingly severe events. Or, while Sandy was an unprecedented event in
both communities, it was considered an anomaly in Rockaway Park, and part of a pattern
in Oakwood Beach.

The importance of local culture must also be considered. While both communities
are considered neighborhoods of New York City, both were also grounded in local
cultural systems that connected residents to each other and to their physical communities.
In Oakwood Beach, this local culture was based in residents’ ability to achieve the
“American dream” of homeownership, or, as one participant stated, their “piece of the
rock.” In Rockaway Park, residents’ connection to their community is reflected in the
phrase, “sand in your shoes.” In both cases, these cultural systems augmented the deep
sense of connection to place that was built through personal and intergenerational ties to
the neighborhood. Here, an important distinction is drawn by the buyout. While residents
of Oakwood Beach were deeply committed to the community, there was some evidence
that this connection had begun to shift in recent years as the neighborhood developed and
changed. And, while the thought of leaving was painful, the buyout did, at least on paper,
offer the promise of homeownership elsewhere (and thus the maintenance of an important
cultural symbol). The culture of Rockaway Park, however, is inextricably tied to one
geographic location. While residents could, presumably, find a new home near a different
beach, relocating out of Rockaway Park would mean shaking the sand from one’s shoes,
and giving up one’s identity as a Rockawayite.
The story of Oakwood Beach, then, concluded with a decision to accept a buyout and relocate, which may have been influenced by a long and increasingly troublesome history with natural hazards, and a disrupted cultural system that could be, at least in part, ameliorated by the buyout. The story of Rockaway Park ended with a decision to reject the buyout, but also included a deep cultural grounding to the place itself and a long history of near, but not actual, major disasters. The buyout decision in each community cannot be understood without considering these contextual factors.

The context of resilience. Just as the buyout decisions in these communities cannot be understood without considering the historical and cultural context, the role of resilience in the buyout decision is also context specific. These data indicate that resilience was not directly related to the outcome, but rather, resilience moderated the relationship between contextual community factors and the buyout decision. In general, characteristics of resilience helped to explain why these communities had the capacity to collectively assess and address a large scale disaster. Looking more specifically at the resilience measures that were significant predictors of the buyout decision, we can infer why these particular characteristics were important in this event.

In both cases, strong social connections before Sandy (reflected in measures of Connection & Caring and SOC_C) provided the foundation needed to facilitate mutual aid and collective communication about the disaster itself and its implications for each community. Further, results from the exploratory analyses suggested that SOC_C was enhanced in both communities after Sandy, a finding that has been supported in the
literature (Cox & Perry, 2011), though more often contradicted (Bonanno et al., 2010; Erikson, 1976; Kaniasty & Norris, 2004).

Transformative Potential speaks to the community’s ability to collectively discuss and address issues and challenges that arise, using both internal resources and connections to resources outside of the community. While the role of Transformative Potential is evident in both communities, specific characteristics of the communities provide insight into why it manifested as it did in each location. In Oakwood Beach, discussion and decisions regarding what course of action the community should follow was integrated into a formal process early on through the (re)formation of the Oakwood Beach Buyout Committee (which was, in turn, influenced by the community’s history of organizing around disaster events and lobbying for more storm protection\textsuperscript{27}). This aligns with findings from previous studies, which have indicated that community involvement in the buyout process is associated with higher rates of executed buyouts (Fraser et al., 2006; Perry & Lindell, 1997). The process in Rockaway Park was less formally organized, but not less effective in moving the community toward its goal of rebuilding. While there was not, to my knowledge, an organization in Rockaway Park that was the equivalent of the Buyout Committee, there were a number of community meetings organized by a variety of community-based organizations. At least one new organization formed in the area specifically to assist residents with the rebuilding process, and other organizations (including the Graybeards, a local organization that formed after 9/11 and

\textsuperscript{27} With the exception of the Oakwood Beach Flood Victims Committee and the Oakwood Beach Buyout Committee, both of which were organized to address specific events, residents of Oakwood Beach stated that their community did not maintain formal community organizations or associations.
the crash of American Airlines Flight 587 to meet community needs) refocused their efforts on the rebuilding process.

The Resources domain was found to interact with community, so that a higher perception of Resources (the before Sandy version of the measure) was associated with being more likely to take the buyout in Oakwood Beach, and more likely to reject the buyout in Rockaway Park. This measure reflects a perception that necessary services were available in the community and the community had access to the resources necessary to address local problems. At first glance, it seems surprising that a higher perception of Resources in Oakwood Beach would be associated with a higher likelihood of accepting the buyout. In a direct comparison of the two communities, residents of Oakwood Beach responded significantly more positively to questions about the availability of resources in the community before Sandy than did residents of Rockaway Park, though there was no difference between the communities in their responses to questions about the availability of resources after Sandy. The relationship between resources and the buyout decision in Oakwood Beach may have reflected a protective mindset on the part of residents who had, largely, already decided to take the buyout. Before Sandy, residents perceived their community as having the resources it needed. Sandy decimated those resources, but the buyout program, in a way, may have served as a replacement for resources that were lost. In Rockaway Park, there was a significant decline in residents’ perceptions of their ability to access services in the community, but there was no significant change before and after Sandy in residents’ responses to the question, “My community has the resources it needs to take care of community
problems.” This seems to imply that residents of Rockaway Park were confident that their community had, or could access, the resources necessary to achieve their goal of rebuilding.

Sense of Place (again, the before Sandy measure) also played a role in the buyout decision for both communities. In Oakwood Beach, higher Sense of Place before Sandy was associated with being more likely to take the buyout. While it seems odd that a strong connection to place would be associated with leaving, it is clear from the qualitative data that residents’ perceptions of their community had begun to shift in the years leading up to Sandy. It is possible that these changes, which had been underway for some time, were fortified in residents’ minds by Sandy, thereby spurring their decision to leave. Before definitive conclusions can be drawn about the role of Sense of Place in the residents’ buyout decisions, additional research is needed. In Rockaway Park, the data presented in this study indicate that place attachment was strong before Sandy, remained intact after Sandy, and was an important reason why residents were not willing to consider relocating.

**Implications**

The present study examined why residents of two communities chose to rebuild or relocate after a major disaster. Findings from this study have important implications for the affected communities, as well as for other communities that have or will face similar choices in the future. Both Oakwood Beach and Rockaway Park benefited from relatively high levels of resilience, indicating that efforts to bolster community resilience are important in preparing communities to respond to major, collective crises. The role of
community level predictors in the buyout decision is also important to note. Home buyout programs are interesting in that there are typically both individual- and community-level factors that contribute to the decision-making process. At the individual (or household level) lies the ultimate decision to accept or reject a buyout offer. This decision is typically couched in a program offered to a collection of homeowners or to an entire community. The present study indicates that the individual buyout decision cannot be understood without considering the influence of community-level factors, suggesting that the interplay between these two levels deserves further attention. Additionally, the experience for residents of the buyout or rebuilding process must be considered. For participants in this study, the decision to relocate or rebuild was marked by uncertainty, and ultimately had to be made based on incomplete and imperfect information. The experience of this process was the source of tremendous stress for many residents, the effects of which may continue to be felt for years to come.

While the question of why residents choose to accept or reject a buyout is an important one, and one that should continue to be examined, it is just one issue among many in a complex process. The decision of whether or not to take the buyout was one of numerous challenges that residents of Oakwood Beach and Rockaway Park have faced and will continue to face. The implications of many of these decisions have yet to play out. While Oakwood Beach accomplished its goal of obtaining a buyout, it is clear from the literature that relocation is associated with a number of negative outcomes. These residents now face the dissolution of their community, the stress and difficulty of finding a comparable home, and the challenges of reintegration into a new community. By
contrast, residents of Rockaway Park have, for the most part, achieved their goals of rebuilding and remaining in their community. However, they now face potential policy changes\textsuperscript{28} that could threaten their ability to remain in their homes and, of course, the ever-looming threat of future disasters. At this point, it also seems clear that a number of residents will choose, in contrast to the majority of their neighbors, to remain in Oakwood Beach. The implications of this decision are unclear, but they are likely to be impacted by major physical and social changes to the community, and by future policy regarding the use and zoning of the land. Similarly, the implications for residents of Rockaway who chose to relocate away from their (intact) community must be considered.

This study also has implications for the field of community psychology, specifically for the application of community psychology to the study of disasters. While community psychologists have focused on the issue of disasters, there is a tendency within the field to concentrate on individual-level issues, such as the psychological impacts of hazard events. While this research is certainly valuable, the present study highlights the need for more contextualizing research on the impact of and recovery from disaster events. Community psychology, with its emphasis on context and multiple levels of analysis, has the potential to play a leading role in reshaping disaster research by

\textsuperscript{28} Sandy spurred a national discussion about the viability of the National Flood Insurance Program (NFIP), which is administered by FEMA. In 2012, Congress passed the Biggert-Waters Flood Insurance Reform Act, which mandated significant changes to NFIP that would have resulted in drastically higher flood insurance premiums for homeowners living in designated flood zones (or required expensive mitigation measures, such as raising one’s home above the base flood elevation). In March 2014, the Homeowner Flood Insurance Affordability Act of 2014, which repealed many of the key provisions of the Biggert-Waters Flood Insurance Reform Act, was signed into law, though the debate continues regarding the viability of NFIP.
taking an ecological approach to understanding disasters at the individual, household, community, and societal levels.

**Policy Applications**

From a policy perspective, it is easy to understand why home buyout programs are attractive solutions for communities that are located in high-risk areas. As was true after Hurricane Katrina, areas devastated by Hurricane Sandy have been designated by public officials and the media as places where no one should live. Of course, these declarations are complicated by the fact that people do live in these areas (and, in the case of the communities in this study, have for a very long time), and that depopulating all vulnerable areas is simply infeasible.

What is evident from this study is that buyouts cannot be viewed as an easy fix, and there is not a programmatic answer for convincing people to accept a buyout. That decision, as evidenced by Oakwood Beach and Rockaway Park, depends heavily on the context (particularly the historical, cultural, and social context) of each community. Importantly, the contextualized nature of the decisions in these two communities was evidenced through the inclusion of qualitative data in the study. While the quantitative data played an important role in explicating certain facets of the relocation decision, the qualitative data provided crucial insight into the question of why residents made the choices they did, and, importantly, highlighted the role of local contextual factors in that decision. In turn, exploring and understanding the role of context in situations like these will provide insight into how we can best support residents of disaster-affected
communities as they make these difficult decisions, and will also afford data that can be used to develop more effective policy initiatives related to postdisaster relocation.

Relatedly, the next steps of the buyout and rebuilding processes in these communities need to be examined just as carefully as the buyout decision itself, as effective policy related to the relocation and reintegration of dislocated residents, and to the rebuilding and mitigation of communities that remain in situ, must also reflect a deep understanding of the individual-level, community-level, and contextual factors at play. The communities of Oakwood Beach and Rockaway Park provide an opportunity to explore and compare these processes, at each step and over time. Specific recommendations for future quantitative and qualitative studies are discussed below.

It would be a mistake to limit this discussion to the experience of postdisaster relocation in the United States. This is a global issue of interest, as evidenced by a number of major disasters across the globe in recent years. For example, after a series of earthquakes devastated the major urban center of Christchurch, New Zealand in 2011, local authorities instituted residential “Red Zones” in the city, in which no homes were permitted to be repaired or rebuilt (Dickinson, 2013). This resulted in the forced relocation of approximately 6,000 residents, a process that was facilitated by a government buyout (Parker, 2011). There are some interesting parallels between Oakwood Beach and the communities included in the Red Zones in Christchurch. For example, according to recent reports, about 2% of Red Zone residents rejected the government’s buyout offer on their homes, even under threat of loss of basic services (3 News, 2014). Additionally, in both cases the buyouts were implemented against a
backdrop of pre-existing policy interests in the land: redevelopment in Christchurch (McCrone, 2013), and the expansion of a stormwater management system, called the Bluebelt, designed to accommodate ongoing development on Staten Island (City of New York, 2014). This event, and others like it, highlight the importance of quality research on the issue of relocation, and further emphasize the need to link data with policy and action on this issue.

These challenges are not restricted to acute hazards. A broader issue here has to do with communities living with risk and, more specifically, communities living with risk of severe, repeated, or chronic exposure to hazards. This is a discussion that is pertinent to natural disasters and that also has relevance when considering the issue of forced relocation due to climate change, a phenomenon that has been coined *climigration* (Bronen, 2009). On the one hand, it is critical that we increase our understanding of the process and impacts of relocation for communities that are faced with a *choice* of whether or not to relocate. On the other hand, it is equally imperative that we increase our understanding of the factors that reduce the negative impacts of relocation and facilitate the successful reintegration of communities that either choose to or are forced to relocate (noting that the distinction between “forced” and “voluntary” relocation is up for debate). In either case, resilience, as has been shown in the literature and in the present study, can play an important role in this process by equipping communities to decide and act should they be faced with the prospect of relocation.
Limitations

This study had a number of limitations. Survey participants were not randomly selected, though efforts were made to reduce bias in the data collection process. Still, the participation of a number of residents was obtained through convenience sampling at buyout-related community events. In spite of this, the samples obtained in each community were reasonably representative of the community, the main exception being the oversampling of females in Rockaway Park. Another issue that influenced the sample was the relatively large number of homes for which no one answered when approached. It is possible that there were differences between those individuals who answered their doors and those who did not, which could have influenced this study’s findings.

The relatively small sample size and homogeneity of the sample were also limitations. The small sample size resulted in concerns about statistical power, thus influencing the specification of the regression models. In addition, the size and homogeneity of the sample limit the generalizability of these findings.

Timing of the data collection was another challenge. At the time of data collection, the state’s buyout program had been approved, but not implemented. As such, participants could only report on their intent to accept or reject a (possible) future buyout offer. A related complication came in the form of a program launched by New York City that was similar in many ways to the state’s program, and included a program for purchasing homes in the city (this was not technically a buyout plan, as the city intended to redevelop any homes purchased through this program). The politics of these programs are convoluted, and the introduction of the city’s program did cause confusion among
residents about who was eligible for which programs. However, both of the communities involved in this study were technically eligible for both the city and state programs, and from the residents’ perspective (which was the focus of this study), it made little difference whether they were bought out by the city or the state. In addition, to my knowledge, neither the city nor the state ever released a timeline or plan of when or how buyouts would be implemented in the eligible communities, though Oakwood Beach was designated as a pilot community for the buyout fairly early in the process.

The design and adaptation of the CART survey caused complications in the analysis of these data. In hindsight, a better balance could have been struck between general questions and those that were asked retrospectively. Ideally, the resilience measures should have been composed either of general questions, or of before/after questions, but not both. This combination likely resulted in an underestimation of the effects of change between the before and after measures. Relatedly, the before and after questions do not accurately measure change over time, since all data were collected at a single time point. Still, the organization of the survey did help to create an ordering of events, and it provided insight into shifts that had occurred in residents’ perspectives of their communities. Finally, separate measures could have been included for Sense of Community and Sense of Place, which would have simplified the analyses of the effects of resilience (though other adjustments would have been required to limit the length of the survey).
Future Directions

This section describes several lines of future research suggested by this study, including additional analyses with these data, follow-up studies with residents from Oakwood Beach and Rockaway Beach, and future studies with other communities that face buyout decisions. To begin, the results presented here represent a limited portion of the data that were collected in the course of this study. Future analyses will include a full examination of the qualitative interview data and further exploration of the survey results. As examples, a number of topics that emerged as important themes over the course of the data collection process need to be examined, including: the experience of the buyout process for residents of Oakwood Beach, the importance of communication and information sharing related to the buyout, the role of trust in buyout administrators and other public officials, the influence of stressors related to the context of the disaster (Norris, Murphy, Kaniasty, Perilla, & Ortis, 2001), the role of local leadership, residents’ attributions of the storm, and the role of policy-level initiatives in each community.

Further, there are two groups of participants that deserve closer analysis. First, there were a considerable number of individuals in each community whose decisions about the buyout did not reflect the majority opinion in their community (residents who planned to reject the buyout in Oakwood Beach, and who wished to take a buyout in Rockaway Park). The perspectives of these “dissenters” could provide valuable insight into the individual- and community-level processes at play in the buyout decision. For example, while it appears that community-level factors played a role for homeowners who made the majority decision in each of their communities, it is possible that
individual-level factors or circumstances played a more important role for those who made the minority decision. Understanding the differences between these two groups would be helpful in understanding the nuances of this decision-making process. Second, in each community there were a number of residents who were undecided about the buyout. While some results for this group were presented in this study, a full analysis of undecided residents requires running a separate set of multinomial regressions that compares the “undecided” group to the “yes” group (results presented here only compare the “undecided” group to the “no” group). Future phenomenological studies, in which the experiences and perceptions of residents are explored in-depth, could increase our understanding of both of these groups. For example, studies could analyze characteristics of these groups as a whole, and could also provide insight into whether there were important differences between the undecided residents in each of the two study communities.

The second line of research suggested by this study involves follow-up studies with the residents of Oakwood Beach and Rockaway Park. The present study was designed to be the first phase of a longitudinal study on the impacts of postdisaster relocation in the context of community-wide buyout programs (of the participants in this study, approximately 60% agreed to be contacted for follow-up studies). A follow-up study could address a number of important questions about postdisaster relocation that remain unaddressed in the literature. For example, in Oakwood Beach, it would be important to investigate whether relocatees are able to reestablish their lives in their new neighborhoods, what factors facilitate or hinder their integration, and how remaining
residents of the original community fare after a large number of residents relocate.

For residents of Rockaway Park, important questions surface regarding the process of adaptation after a disaster, the impacts of disaster-related policy changes, and the effect of future hazards, should they materialize. These questions would be best addressed using a mixed-methods approach similar to the one used for the present study. The use of a quantitative survey instrument would allow for an assessment of change over time in measures of resilience and other valuable indicators. The inclusion of in-depth interviews, particularly with participants from the present study, would provide invaluable data on the experience of the relocation or rebuilding process from the residents’ perspective.

In addition to these important questions related to the future of these communities and their residents, there are some questions about the buyout decision that may be better addressed retrospectively. One such issue is the role of income and wealth on the buyout decisions. The literature has suggested that people with higher incomes may be more likely to rebuild after a disaster (Hunter, 2005). While these were both working class communities with comparable incomes (according to census data), it is possible that residents of Rockaway Park had greater wealth. It is difficult to explore this issue in the immediate postdisaster period (participants in this study, for example, were sensitive about questions related to money, as they were constantly being asked to submit financial

29 Residents of Rockaway Park mentioned, with some frequency, that they had drawn on personal savings and retirement savings in the process of repairing or rebuilding their homes. At the same time, several participants mentioned that homeowners in the neighborhood often rent out illegal apartments in their homes to help with the mortgage payments.
documents to their mortgage holders, insurance agencies, FEMA, and other groups, and this raised concern about fraud and the security of their private information), but it is an important question for future studies as it investigates the question of whether there is a true distinction between “forced” and “voluntary” relocations.  

The results of this study also provide some insight into approaches and directions that may be beneficial in studies of future buyout programs. In terms of measures, the CART survey instrument proved, in many ways, to be a useful data collection tool for this study. The survey instrument itself is accessible and easily administered in a community setting, and the resilience domains proved valuable in understanding the buyout decisions in Oakwood Beach and Rockaway Park. At the same time, the measures used for Sense of Community (SOC_C) and Sense of Place proved to be valuable additions to this study, while some of the CART subscales were not well suited to research on buyout programs. Future studies on buyout programs may do well to focus more explicitly on Sense of Community and Sense of Place. In addition, the exploratory analyses included in this document provided interesting information about the role and structure of postdisaster resilience measures. While the nature of these data limit the conclusions that can be drawn from the comparisons of measures that included before and after Sandy items, results indicate that pre-event resilience measures (in this case, items assessed retrospectively after Sandy) may be stronger predictors of postdisaster decisions (the buyout, in this case) than post-event resilience measures. Additional

30 It is possible that limited personal resources contributed to the decision by residents of Oakwood Beach to accept the buyout (though no one stated this, and I did not probe this possibility as it might have caused people to question their own narratives, and potentially added to their duress).
research is needed to explore this issue in more detail, but it is consistent with the existing literature on community resilience. Resilience is a dynamic process built on a history of actions and interactions (Cutter et al., 2008; Pfefferbaum & Whyche, 2008), and resilience at the community level can be disrupted by major events, such as disasters (Bonanno et al., 2010; Norris et al., 2008). As such, postdisaster measures of resilience may be an artifact of the disruption, rather than a true measure of a community’s baseline resilience level (to which, ideally, they will return to or exceed, in time, after the disaster).

An additional consideration for future research that emerged from this study was the suggestion that acceptance of a buyout, at the community level, may be one phase in a cycle of relocation. When comparing the narratives of Oakwood Beach and Rockaway Park, some of the similarities suggest a cyclical pattern leading to the buyout decision. In Oakwood Beach, the community experienced a significant disaster (the ’92 nor’easter). After the disaster, they decided to rebuild, a decision that was based, in part, on a belief that mitigation measures (a berm and seawall) would protect them from future harm. The community then experienced a second major disaster (Sandy), after which they lost faith in the efficacy of mitigation measures, and decided to relocate out of the area. Interestingly, this is the same pattern of events that predicated the relocation of Valmeyer, IL (as described in the literature review). The residents of Valmeyer experienced a large flood, and responded by working with the Army Corps of Engineers to install a levee system. Eventually the levee system failed and the town experienced a second major disaster, which prompted their relocation. This pattern is reflective of
Speare’s (1974) “threshold of dissatisfaction” (p. 175) and Perry and Lindell’s (1997) conclusion that relocation eventually becomes the most desirable course of action once the “negative consequences of an environmental threat are high and measures which yield significant protection are limited in efficacy, safety, and feasibility…” (p. 49). These examples suggest that the decision to relocate is the culmination of a series of events, but that there may be common points on the path to relocation. Now, for example, looking at Rockaway Park, we can see a repetition of the early stages of this pattern: the community experienced a major disaster (Sandy), and decided to rebuild, based in part on their faith in the efficacy of community-scale mitigation measures. While this is just an observation based on a small number of cases, it may be something to note for future studies.

More generally, findings from this study indicate that future research on postdisaster relocation should take an ecological approach that integrates an understanding of the role of local contextual factors. Additionally, multilevel analyses may be useful in exploring the relationship between individual-level characteristics and community-level conditions as they relate to buyout decision and impacts.

**Conclusion**

This study explored the relationship between resilience and postdisaster relocation in two communities in New York City that were eligible for a home buyout program after Hurricane Sandy. While both communities exhibited characteristics of resilience and resilient responses to Sandy, the role of resilience varied by community. The results suggest resilience is not a factor that necessarily moves communities toward or away from a specific decision regarding relocation; rather it moderates the relationship between
contextual factors (such as the community’s history of disaster, local cultural norms, and attachment to place) and the relocation decision. Specific characteristics of resilience that were found to play a role in the buyout decision included Connection & Caring, Transformative Potential, Resources, Sense of Community (at the community level), and Sense of Place. Further, this study suggests that relocation decisions are based on community-level factors, more so than individual-level factors.

While some communities may conclude that participation in a buyout program is their best option, a clear understanding of the issues that surround these decisions, and the potential implications of these decisions, is critical both from community and policy perspectives. From the community perspective, it is clear that relocation decisions are complex and marked by uncertainty. While there may be some benefits to relocating, community members must weigh those potential benefits against the potential financial, emotional, and social costs of leaving their homes for a new and unfamiliar location. From a policy perspective, buyout programs can only be considered effective if the situation of the affected homeowners and communities are truly improved as a result of their relocation. To achieve this goal, decisions about when, where, and how to offer home buyouts must be based on a thorough understanding of the process and context of relocation, from inception to reintegration.
References


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New York State Homes and Community Renewal. (2013). *State of New York action plan for Community Development Block Grant program disaster recovery* (p. 61).


U.S. Department of Housing and Urban Development. (2002). *State Community Development Block Grant Program.*


Appendix A: Maps of Study Locations

Map of Study Sites
Oakwood Beach and Rockaway Park Study Areas
Appendix B: Survey Instrument

University of Hawai‘i
Community survey:
*Resilience and postdisaster relocation: A study of New York's proposed home buyout plan in the wake of Hurricane Sandy*

This survey has been adapted from the Communities Advancing Resilience Toolkit (CART) survey (Pfefferbaum, Pfefferbaum, & Van Horn, 2011) which is designed to assess resilience.

**Core Community Resilience Items**

The following statements are possible descriptions of your community. In responding to these statements, think about how you would describe or characterize your community in general (rather than just since the hurricane).

**Response Options:** 1 Strongly Disagree 2 Disagree 3 Neither Disagree Nor Agree 4 Agree 5 Strongly Agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>1. People in my community feel like they belong to the community.</td>
<td>1</td>
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<td>2. My community treats people fairly no matter what their background is.</td>
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<td>3. My community has effective leaders.</td>
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<td>4. People in my community are able to get the services they need.</td>
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<td>5. My community works with organizations and agencies outside the community to get things done.</td>
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<td>6. People in my community communicate with leaders who can help improve the community.</td>
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<td>7. People in my community discuss issues so they can improve the community.</td>
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<td>8. People in my community work together to improve the community.</td>
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<td>9. My community develops skills and finds resources to solve its problems and reach its goals.</td>
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<td>10. My community has priorities and sets goals for the future.</td>
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<td>11. My community tries to prevent disasters.</td>
<td>1</td>
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<td>12. My community actively prepares for future disasters.</td>
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<td>13. My community can provide emergency services during a disaster.</td>
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<td>14. My community has services and programs to help people after a disaster.</td>
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<td>15. My community keeps people informed about issues that are relevant to them.</td>
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<td>16. If a disaster occurs, my community provides information about what to do.</td>
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<td>17. People in my community trust public officials.</td>
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<td>18. Necessary health care services are available to people who live in my community.</td>
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<td>19. Good educational opportunities are available to people who live in my community.</td>
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<td>20. Good work opportunities are available to people who live in my community.</td>
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## Personal Relationship to Community

The following statements are possible descriptions of you and your relationship to your community **BEFORE Hurricane Sandy**.

**Response Options:** 1 Strongly Disagree  2 Disagree  3 Neither Disagree Nor Agree  4 Agree  5 Strongly Agree

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<td>21. I feel like I belong to my community.</td>
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<td>22. I have hope about the future.</td>
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<td>23. I live in good housing.</td>
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<td>24. I can get the services I need.</td>
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<td>25. I work with people in my community to solve our problems.</td>
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<td>26. My family and I have a disaster plan.</td>
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<td>27. I have friends in my community.</td>
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<td>28. I would get involved in trying to improve my community.</td>
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<td>29. I am an active member of my community.</td>
<td>1 2 3 4 5</td>
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The following statements are possible descriptions of you and your relationship to your community **AFTER Hurricane Sandy**.

**Response Options:** 1 Strongly Disagree  2 Disagree  3 Neither Disagree Nor Agree  4 Agree  5 Strongly Agree

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<td>30. I feel like I belong to my community.</td>
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<td>31. I have hope about the future.</td>
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<td>32. I live in good housing.</td>
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<td>33. I can get the services I need.</td>
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<td>34. I work with people in my community to solve our problems.</td>
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<td>35. I have friends in my community.</td>
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<td>36. I would get involved in trying to improve my community.</td>
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<td>37. I am an active member of my community.</td>
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## Community Renewal

The following statements are possible descriptions of your community **BEFORE Hurricane Sandy**.

**Response Options:** 1 Strongly Disagree  2 Disagree  3 Neither Disagree Nor Agree  4 Agree  5 Strongly Agree

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<td>38. My community is a safe place to live and work.</td>
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<td>39. Good housing is available for people who live in my community.</td>
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<td>40. People in my community have friendships with their neighbors.</td>
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<td>41. Leadership opportunities are available to people who live in my community.</td>
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<td>42. My community has the resources it needs to take care of community problems (resources include money, information, technology, tools, raw materials, and services).</td>
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<td>43. People in my community are committed to the well-being of the community.</td>
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44. People in my community have hope about the future. 1    2    3    4    5
45. People in my community help each other. 1    2    3    4    5

The following statements are possible descriptions of your community **AFTER Hurricane Sandy.**

**Response Options:** 1 Strongly Disagree 2 Disagree 3 Neither Disagree Nor Agree 4 Agree 5 Strongly Agree

46. My community is a safe place to live and work. 1    2    3    4    5
47. Good housing is available for people who live in my community. 1    2    3    4    5
48. People in my community have friendships with their neighbors. 1    2    3    4    5
49. Leadership opportunities are available to people who live in my community. 1    2    3    4    5
50. My community has the resources it needs to take care of community problems (resources include money, information, technology, tools, raw materials, and services). 1    2    3    4    5
51. People in my community are committed to the well-being of the community. 1    2    3    4    5
52. People in my community have hope about the future. 1    2    3    4    5
53. People in my community help each other. 1    2    3    4    5

**Hurricane Sandy**

**Response Options:** 1 Strongly Disagree 2 Disagree 3 Neither Disagree Nor Agree 4 Agree 5 Strongly Agree

54. People in my community were prepared for a disaster like Hurricane Sandy. 1    2    3    4    5
55. People in my community received the help they needed after Hurricane Sandy. 1    2    3    4    5
56. People in my community helped each other after Hurricane Sandy. 1    2    3    4    5
57. Hurricane Sandy negatively affected people’s relationships with each other. 1    2    3    4    5
58. At this point, life is back to normal. 1    2    3    4    5
59. Hurricane Sandy made my community stronger. 1    2    3    4    5
60. My community will completely recover from Hurricane Sandy. 1    2    3    4    5
61. Since Hurricane Sandy, I have still been able to participate in social activities that I enjoy. 1    2    3    4    5
62. Since Hurricane Sandy, I have experienced more conflict with my neighbors. 1    2    3    4    5
63. Since Hurricane Sandy, I have experienced more conflict with my family. 1    2    3    4    5
64. I am more stressed or anxious now than I was before Hurricane Sandy. 1    2    3    4    5
65. Did you ever feel like your life was in danger during the hurricane? Yes  No
66. Were you or one of your family members injured during the storm? Yes  No
67. Did you know anyone else who was injured in the storm? Yes  No
68. Was your home severely damaged by the storm? Yes  No

**The Proposed home Buyout Plan**

**Response Options:** 1 Strongly Disagree 2 Disagree 3 Neither Disagree Nor Agree 4 Agree 5 Strongly Agree

69. Leaders in my community have done a good job educating people about the buyout plan. 1    2    3    4    5
70. It makes sense to return the land in this area to natural space. 1    2    3    4    5
71. If people have the option of taking the buyout, they should. 1    2    3    4    5
Most people in my neighborhood will take the buyout if they are eligible.

The buyout plan is bad for my community.

I am concerned about my neighbors moving away because of the buyout plan.

Participation in the buyout plan is optional.

The people in charge of the buyout plan have my community’s best interests in mind.

How many adults currently live in your home? ___________

How many children currently live in your home and what are their ages? __________, __________

How many of the adults living in your home are older adults (65 years of age or older)? __________

Where are you currently living? □ In my original home (where I was living before Hurricane Sandy) □ With a relative □ In a rented apartment □ Other: ______________________

Are you currently employed? Which of the following best describes you? □ I am not currently employed and I am not looking for a job □ I am not currently employed but I am looking for a job □ I am working part time □ I am working full time □ I am not any of these. I am (please specify): __________

Other than you, how many people in your household are employed? ______

Have you ever had a personal emergency or crisis while living in your community? □ Yes □ No
(For example, you might have had a major illness, been fired from a job, had a house fire, been the victim of a crime, experienced the death of a family member or neighbor.) <<If yes, continue to question 7. If no, go to question 8.>>

Please think of the most significant emergency or crisis you have experienced while living in this community. Who helped you? (Check all that apply.) □ no one □ family member □ friends □ someone else from the community □ faith-based organization □ a local agency or organization □ co-workers □ other (please specify): ______________________

What is the source of your greatest connection to your community? (Check only one response.) □ civic club □ faith-based organization □ family □ friends □ military □ school □ work □ other (please specify): ______________________

How long have you lived in this community? ______________________

What is your sex? □ Male □ Female □ Transgendered □ Intergender

What is your current marital status? □ Married □ Separated □ Divorced □ Widowed □ Never Married □ Other (please specify): __________

What is your age? __________

What is your race or ethnic identification? Check the one with which you most identify: □ American Indian / Alaska Native □ Asian / Asian American □ Black / African American / Afro-Caribbean □ Hispanic / Latino □ Native Hawaiian / Other Pacific Islander □ White / Caucasian, not of Hispanic origin □ Other: __________

Are you eligible for the buyout plan?

If you were eligible for the buyout plan, would you take the buyout offer?
   a. Why or why not?
   b. If you did move, where would you move to?

If this policy is implemented, how do you think it will impact your community?

What is your biggest concern about the buyout plan?
Appendix C: Interview Protocols

Community Interviews: Sample Questions for Community Members

1. How long have you lived in this neighborhood?
2. How would you describe this neighborhood to someone who had never been here?
   a. How would you describe the people in this neighborhood?
3. What would you say you like the best about your neighborhood?
   a. What do you like the least?
4. I would like to ask you a few questions about Hurricane Sandy.
   a. Were you here when Sandy struck?
      i. If yes, can you describe your experiences during the storm?
      1. If not, where were you? Did you evacuate?
   b. Was your home damaged by the storm?
   c. Was anyone you know injured by the storm?
5. In what ways do you think Hurricane Sandy has changed this neighborhood?
   a. Can you tell me what life was like in the days after the storm?
   b. How are things the same or different now?
6. How has life changed for you since the hurricane?
   a. How have your social activities changed?
      i. Changes in church activities?
   b. How have your relationships with your family changed? With your neighbors/friends?
7. Why do you think this happened to your community? [attribution]
   a. [Does your religion help you understand what happened?]
8. Have you experienced other disasters while living in this community?
9. Are you familiar with the home buyout plan that Governor Cuomo has proposed?
   a. Can you tell me what you know about the home buyout plan?
   b. Where/how did you learn about it?
10. How do you think people here feel about the plan?
    a. Are they in support of it? Or opposed to it? Why?
11. Before Hurricane Sandy struck, were people in the community talking about moving away because of all the storms?
12. If this policy is implemented, do you know anyone who would take the buyout money and move away?
    a. If yes, can you explain why you think they would move?
    b. Do you know anyone who would not take the buyout money? If so, can you explain why?
13. (For residents already participating) How would you describe the process of participating in the buyout so far?
14. If you were offered a (fair) buyout, would you take the buyout offer?
    a. Why or why not?
       i. What do you think has influenced your decision
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Key Informant Interviews: Sample Questions for Government Representatives

1. I would like to ask you about this community’s experiences with storms and natural disasters.
   a. Other than Hurricane Sandy, how many major storms (storms that resulted in significant damage or injury) has this community experienced over the past 5 years?
   b. How did people in the community respond to those events?
2. I would like to ask you some questions about Gov. Cuomo’s home buyout plan. Please describe the home buyout plan to me.
   a. What are the key components of the plan?
   b. What about the more detailed or nuanced components of the plan. Are there any details that people should be aware of?
3. How would you describe the origins of this policy? What factors or events prompted it?
4. What impacts do you expect this plan to have on the community?
   a. Please describe any social, economic, or environmental impacts.
5. How would you describe the community’s response to the plan?
   a. Who has voiced support? Who has voiced opposition?
   b. Do any groups come to mind as being silent on the plan? What groups have you not heard from?
      i. Why do you think these groups have been silent?
   c. Before Hurricane Sandy struck, were people in the community talking about moving away because of all the storms?
6. How is the NY buyout plan different from FEMA’s standard buyout plan?
7. I understand that they buyout plan is voluntary. However, if homeowners with substantially damaged homes can’t afford to mitigate, do they have other options available to them?
8. Were/are there any moratoria on rebuilding in place in the damaged areas? What did these entail?
9. Is registration for the buyout program the responsibility of homeowners, or are you actively contacting eligible homeowners to encourage participation/inform them of the program?
10. If this happens again, what would you like to see done differently?

Key Informant Interviews: Sample Questions for Community Leaders

1. How long have you lived in this neighborhood?
2. How would you describe this neighborhood to someone who had never been here?
   a. How would you describe the people in this neighborhood to someone who had never been here?
3. I would like to ask you about this community’s experiences with storms and natural disasters.
   a. Other than Hurricane Sandy, how many major storms (storms that resulted in significant damage or injury) has this community experienced over the past 5 years?
   b. How did people in the community respond to those events?
4. Now I would like to ask you some questions about Gov. Cuomo’s home buyout plan. Please describe the home buyout plan to me.
   a. What are the key components of the plan?
   b. What about the more detailed or nuanced components of the plan. Are there any details that people should be aware of?
5. How would you describe the community’s response to the plan?
   a. Who has voiced support? Who has voiced opposition?
   b. In general, are people planning to take the buyout plan, or to stay in the community? Why?
6. Before Hurricane Sandy struck, were people in the community talking about moving away because of all the storms?
7. Please tell me about your organization.
   a. How was the buyout committee formed?
   b. What is its purpose?
   c. Please describe the main activities of the committee.
8. I would like to ask you about your members and other community members who are planning to take the buyout offer if the plan is implemented.
   a. For people who are planning to leave, why do you think they are leaving?
      i. Where are they planning to move to?
   b. For people who are not interested in participating in the buyout plan, why do you think they are choosing to stay?
9. If this plan is implemented, what impacts do you expect it to have on the community?
   a. On the people who stay? On the people who move?
10. Please tell me about the history of the buyout movement in this community.
    a. When did people first start talking about leaving?
Appendix D: Survey Consent Form

University of Hawai‘i

Consent to Participate in Research Project: Survey
Resilience and postdisaster relocation: A study of New York’s proposed home buyout plan in the wake of Hurricane Sandy

My name is Sherri Brokopp Binder, M.A., and I am a graduate student at the University of Hawai‘i at Mānoa (UH), in the Department of Psychology. I conduct research on how communities recover after natural disasters. The purpose of my current research project is to evaluate the impacts of Hurricane Sandy on communities in New York and to understand residents’ perspectives on Governor Cuomo’s home buyout plan. I am asking you to participate in this survey because you live in or near one of the areas that are included in the home buyout plan, and because you are at least 18 years of age.

**Project Description - Activities and Time Commitment:** If you participate, I will ask you to complete a survey in which I will ask you questions about your community and about Hurricane Sandy. I will ask you the questions from the survey in person, and the survey will take 20 to 25 minutes to complete. With your permission, I will audio-record your responses to four open-ended questions at the end of the survey so that I can later transcribe and analyze the responses. If you participate, you will be one of a total of 300 people who will complete the survey. If you would like to read through the survey questions before you decide whether or not to participate, I will give you a copy of the survey to review. When we have completed the survey, I may also ask if you are willing to participate in a more in-depth interview in the next few weeks.

**Benefits and Risks:** I believe there are no direct benefits to you in participating in my research project. However, the results of this project might help me and other researchers learn more about how programs and policies that are put in place after disasters occur impact communities. I believe there is little or no risk to you in participating in this project. If, however, you are uncomfortable or stressed by answering any of the survey questions, we will skip the question, or take a break, or stop the interview, or withdraw from the project altogether. You can refuse to answer any question without giving an explanation, and you can end the interview at any time.

**Confidentiality and Privacy:** During this research project, I will keep all data from the surveys in a secure location. Only my faculty advisor and I will have access to the data, although legally authorized agencies, including the University of Hawai‘i Human Studies Program, have the right to review research records. This survey is anonymous. I will not put your name or any other identifying information on your survey form, nor will I report the names of people who participated in the survey. When I report the results of my research project, I will not use your name. If you would like a summary of the findings from my final report, please contact me at the number listed near the end of this consent form.
Voluntary Participation: Participation in this research project is completely voluntary. You can choose freely to participate or not to participate. In addition, at any point during this project, you can withdraw your permission without any penalty.

Questions: If you have any questions about this project, please contact me at by phone (617) 817-8340 or e-mail (brokopp@hawaii.edu). If you have any questions about your rights as a research participant in this project, you can contact the University of Hawai‘i, Human Studies Program, by phone at (808) 956-5007 or by e-mail at uhirb@hawaii.edu.

Please keep the prior portion of this consent form for your records.
If you agree to participate in this project, please sign the following signature portion of this consent form.

Signature for Consent:

I agree to participate in the research project entitled, Resilience and postdisaster relocation: A study of New York's proposed home buyout plan in the wake of Hurricane Sandy I understand that I can change my mind about participating in this project, at any time, by notifying the researcher.

Your Name (Print): _____________________________________________
Your Signature: _____________________________________________
Date: _________________________________

I consent to having my responses to the open-ended questions audio recorded.

Possible participation in a future study: It is possible that I will do a follow-up study on the long-term impacts of the home buyout plan. If you agree to participate in this survey, I would like to ask permission to contact you again in the future to ask if you would like to participate in the follow-up study. If you are willing to be contacted in the future, I will ask you to give me your name, phone number, and email address. I will keep this information in a secured location, and I will not give your information to anyone else.

If you provide me with this information, it does not mean that you are obligated to participate in a future study. It only means that you are giving me permission to contact you and request that you participate in a future study. There is no penalty if you decide not to participate. You can also request to be removed from the contact list at any time.
Project Description - Activities and Time Commitment: If you agree to be contacted for a future study, I will contact you by phone and/or email in the next 6 to 12 months. If, at the time, you agree to participate in the study, I will ask you to complete a survey in which I will ask you questions about your community and about Hurricane Sandy. I will ask you the questions from the survey in person or over the phone, and the survey will take 45 minutes to 1 hour to complete.

Consent to be contacted for participation in a future study:

By completing this form, you are agreeing to have the researcher contact you to ask about your interest in participating in future research. I understand that I can change my mind about participating in this project, at any time, by notifying the researcher.

Name: ________________________________

Phone number: _________________________

Email address: _________________________
Appendix E: Interview Consent Form

University of Hawai‘i

Consent to Participate in Research Project: Interview

Resilience and postdisaster relocation: A study of New York's proposed home buyout plan
in the wake of Hurricane Sandy

My name is Sherri Brokopp Binder, M.A., and I am a graduate student at the University of Hawai‘i at Mānoa (UH), in the Department of Psychology. I conduct research on how communities recover after natural disasters. The purpose of my current research project is to evaluate the impacts of Hurricane Sandy on communities in New York and to understand residents’ perspectives on Governor Cuomo’s home buyout plan. I am asking you to participate in this project because you live in or near one of the areas that are included in the home buyout plan or because you have specific knowledge of the buyout plan, and because you are at least 18 years of age.

Project Description - Activities and Time Commitment: If you participate, I will meet with you for an interview at a location and time convenient for you. The interview will consist of 10-15 open-ended questions, and will take 45 minutes to an hour. Interview questions will include questions like, “In what ways do you think Hurricane Sandy has changed this neighborhood? How are things the same or different now?” Only you and I will be present during the interview. With your permission, I will audio-record the interview so that I can later transcribe the interview and analyze the responses. You will be one of about 50 people whom I will interview for this study.

Benefits and Risks: I believe there are no direct benefits to you in participating in my research project. However, the results of this project might help me and other researchers learn more about how programs and policies that are put in place after disasters occur impact communities. I believe there is little or no risk to you in participating in this project. If, however, you are uncomfortable or stressed by answering any of the survey questions, we will skip the question, or take a break, or stop the interview, or withdraw from the project altogether. You can refuse to answer any question without giving an explanation, and you can end the interview at any time.

Confidentiality and Privacy: During this research project, I will keep all data from the interviews in a secure location. Only my faculty advisor and I will have access to the data, although legally authorized agencies, including the University of Hawai‘i Human Studies Program, have the right to review research records. After I transcribe the interviews, I will erase/destroy the audio-recordings. When I type and report the results of my research project, I will not use your name or any other personally identifying information. Rather I will use pseudonyms (fake names) and report my findings in a way that protects your privacy and confidentiality to the extent allowed by law. If you would like a summary of the findings from my final report, please contact me at the number listed near the end of this consent form.
**Voluntary Participation:** Participation in this research project is completely voluntary. You can choose freely to participate or not to participate. In addition, at any point during this project, you can withdraw your permission without any penalty.

As compensation for time spent participating in the research project, I will provide you with a $20 gift certificate to Target.

**Questions:** If you have any questions about this project, please contact me at by phone (617) 817-8340 or e-mail (brokopp@hawaii.edu). If you have any questions about your rights as a research participant in this project, you can contact the University of Hawai‘i, Human Studies Program, by phone at (808) 956-5007 or by e-mail at uhirb@hawaii.edu.

Please keep the prior portion of this consent form for your records.

If you agree to participate in this project, please sign the following signature portion of this consent form.

----------------------------------------------------------------------------------------------------------------

**Signature for Consent:**

I agree to participate in the research project entitled, *Resilience and postdisaster relocation: A study of New York's proposed home buyout plan in the wake of Hurricane Sandy* I understand that I can change my mind about participating in this project, at any time, by notifying the researcher.

**Your Name (Print):** _____________________________________________

**Your Signature:** _____________________________________________

**Date:** ________________________________

I consent to having my interview audio recorded.