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Ethnicity and reaccumulation : an ecological analysis

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ETHNICITY AND REACCUMULATION:
AN ECOLOGICAL ANALYSIS

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To: Arthur Herriott
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This thesis, written by Linda Beer, and entitled Ethnicity and Reaccumulation: An Ecological Analysis, having been approved in respect to style and intellectual content, is referred to you for judgement.

We have read this thesis and recommend that it be approved.

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I dedicate this thesis to my parents. Without their patience, understanding, support, and most of all love, the completion of this work would not have been possible.

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ABSTRACT OF THE THESIS

ETHNICITY AND REACCUMULATION:

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This study looks at the process of reaccumulation of resources in Miami following Hurricane Andrew. Emphasis is on differences between four major ethnic groups: Anglos, African-Americans, Cubans and non-Cuban Hispanics. Secondary data is used to analyze measures of housing recovery on a census block group level. Results indicate that, while there are ethnic consequences on a block groups level, support for enclave hypotheses are equivocal.

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INTRODUCTION

Hurricane Andrew struck South Florida in the early morning hours of August 24, 1992. The impact of the disaster was immediate and widespread. The most severely affected area was southern Dade County, an area which is largely unincorporated but includes two municipalities, Homestead and Florida City. The effects of disasters on social structures and processes, however, do not take place without reference to the context within which they occur. Research on Dade County, commonly referred to as the Miami area, has tended to focus on the structural integration of and relations between it's various ethnic groups, both native and immigrant. This study will examine indicators of structural housing restoration from the disaster, in order to compare differences between ethnic groups. The experience of Hurricane Andrew, then, affords us with yet another opportunity to analyze the dynamic processes and strategies at work within the social structure as different groups in the Miami area begin to recover from a natural disaster.

As it's uniqueness has emerged over the past three decades, the analysis of the social structure of Miami has increased. Various scholars from a wide range of disciplines have attempted to understand the dynamics at work within the area, as well as the conditions which gave rise to it's particular forms of social, economic, and political processes. The region has undergone a dramatic ethnic transformation, beginning with the first Cuban immigrants in the early 1960's,

which continues to this day. Successive waves of immigrants, Cubans, Haitians, and other Hispanics, continue to arrive on it's shores, insuring future change. Miami has the highest foreign-born population of any major U.S. city (Grenier & Stepick 1992), and is also one of the fastest growing cities in the nation. It's economy has shifted orientation toward Latin America and the Caribbean, developing into the commercial and financial capital of these regions (Grenier & Stepick 1992; Portes 1987).

What is essential about the changes in Miami is not that immigration is transforming it's society, but the direction that transformation is taking. Many of Miami's immigrants have not taken the place in social structure traditionally occupied by newly arrived groups, at the lowest rung economically and socially. Instead, they have transformed the native culture and altered fundamental social processes at work within the community. They are increasingly represented in business, industry and politics. Immigrant groups wield significant power in Miami, and all indications are that this influence will increase (Stack & Warren 1992). As will be shown later, certain immigrants groups are highly privileged, often surpassing native minorities in power and access to resources.

Grenier and Stepick (1992) have identified three trends taking place in Miami as a result of the increase in migration to the city. First, there has been a decrease in Anglo power in the social, political and economic realms, leading to,

among other things, a "white flight" out of the city. Second, they identify an acculturation-in-reverse process taking place within the society, with residents adopting aspects of the newcomer's culture, such as language. Third, and potentially most importantly, there has been an increase in ethnic tensions between minority groups, especially between the Cuban and African-American communities. While the changes have led to shifts in power among ethnic groups, they have not resulted in the simple replacement of one privileged group (Anglos) with another (Cubans). It has instead produced a situation of introducing many competing groups into the struggle for resources which has often led to varied and conflicting perceptions of social reality as it relates to events taking place in Miami and throughout the world (Portes & Stepick 1993). This competition is far from equal. The historically dominant Anglo group, while still retaining a significant amount of power, has lost some of its control to immigrant groups, mainly Cubans. Blacks have yet to make the gains in accumulation of resources that minorities in other cities have in the post-Civil Rights era. It is within this context that the struggle to recover from Hurricane Andrew has taken place.

THE SETTING

MIAMI: THE ENCLAVE

In recent years the most frequently studied aspect of change in Miami has been the emergence of the Cuban ethnic enclave. Portes & Jensen (1992) define an ethnic enclave as "...a concentration of ethnic firms in a physical space...that

employ a significant proportion of workers from the same minority." The development of this form of social structure in Miami by Cuban immigrants has been characterized by institutional completeness and highly differentiated entrepreneurial skills (Perez 1992). In this situation, social networks within the community can play a pivotal role in the development of an ethnic economy because intra-group informational and economic resources give enclave firms an advantage over other firms (Portes 1987; Portes & Stepick 1993).

Several factors have been found to be associated with the emergence of an ethnic enclave. It has been proposed that these types of economies form as a result of external structural forces, rather than solely as a result of internal human capital resources. The first of these forces is the existence of an ethnic market (Portes & Stepick 1993; Cobas; Portes 1987). In the case of Cubans in Miami, a staggered pattern of immigration resulted in a constantly replenished market for ethnic goods and services (Portes & Stepick 1993; Perez 1992; Portes 1987). It was also supplemented by the arrival of other Hispanic immigrants to the city (Portes & Stepick 1993). The continuing, episodic nature of immigration has aided the second characteristic associated with ethnic economies, cheap labor. Access to low wage immigrant workers gives businesses an advantage, and ethnic employers use social and cultural ties to procure them (Portes & Stepick 1993; Perez 1992; Wilson & Portes 1980; Cobas 1987). Entrepreneurial

skills have also been cited as being necessary in the development of ethnic enclaves (Wilson & Portes 1980).

Access to capital is also needed in the formation of an ethnic economy. Portes & Stepick (1993) note that many Cubans did not bring capital with them from Cuba, rather it became available to them from a number of sources. In the 1960's many Cuban entrepreneurs were provided with "character loans" from banks with Cuban loan officers based on their business experience and reputation on the island. They were also aided by the increase in investment of Latin American capital. Because of the similarity in their cultures, Latin American investments improved the chances of accessing this capital for Cubans, one of the ways in which the geographic location of Miami aided in the development of the enclave (Portes 1987). Small business loans were also made available to Cubans by the United States government because of their political refugee status. In addition to this, capital was provided by the savings of Cubans returning to Miami from the northern U.S. (Wilson & Portes 1980).

Portes (1987) identifies four additional structural conditions under which ethnic enclaves develop: 1) immigrants plan to stay in the county of destination; 2) the group is institutionally diverse; 3) migrants have a heterogenous class structure; and 4) immigration occurs in waves over a period of time. All of these factors, in addition to the conditions cited above, are present in regards to Cuban immigration and economic development in Miami, leading some researches to call

Cubans in Miami the foremost example of a true ethnic enclave (Perez 1992).

CONSEQUENCES OF THE ENCLAVE

Ethnic enclaves have often been studied in the context of segmented labor market theory. In response to dual-labor market hypotheses in which the market is divided into primary and secondary sectors, many theorists propose the enclave as a third category (Portes & Bach; Wilson & Portes 1980; Portes & Stepick 1985; Bailey & Waldinger 1991). Primary labor markets are characterized by high wages, opportunities for upward mobility, and positive working conditions, while the opposite of these conditions are found within the secondary sector. Traditionally, immigrants have been incorporated into these secondary labor markets. Research has indicated that the existence of an ethnic enclave has insulated Cubans from the poor conditions in the secondary sector and has created a third avenue of incorporation into the market (Portes & Bach; Portes & Stepick 1985; Perez 1992; Perez 1986). While this issue is still under debate, strong evidence exists, especially in the case of Miami, to support it. Proponents of the enclave as a third segment of the labor market have found it to provide benefits similar to those of the primary sector (Portes 1987; Bailey & Waldinger 1991). Research indicates that enclave employees receive as much return on their human capital, in terms of economic and occupational condition, as do primary workers (Wilson & Portes 1980). In some cases, enclave worker income is moderately higher than primary sector

income (Portes & Stepick 1985; Portes 1987). One proposed explanation is that the structure and training systems of the enclave sector are similar to those of the primary labor market (Wilson & Martin 1982; Bailey & Waldinger 1991). However, studies have found that, while employment and ownership have both direct and indirect benefits, the enclave sector has distinct characteristics from both central and peripheral markets (Wilson & Portes 1980).

The structure of the enclave and it's economic processes appear to benefit both the owners and workers within it. As new immigrants arrive, ethnic employers are provided with an inexpensive loyal labor force, and in return these immigrants accept low wages in exchange for job training and future upward mobility, either within the company or in entrepreneurship (Portes & Stepick 1993; Wilson & Portes 1980; Bailey & Waldinger 1991). While some have argued against the benefit of the enclave for workers (Sanders & Nie 1992), Portes & Jensen (1992) point out that the benefits of enclave employment are not evidenced solely in terms of income, but in future opportunities and access to resources. Employment within the enclave has been found to increase the likelihood of future entrepreneurial activity (Portes & Stepick 1985; Cobas 1987).

The existence of the enclave has had profound consequences on the development of the Miami area, both economically and socially. It led to a change in traditional patterns of immigrant behavior. Immigrants in Miami do not

need to assimilate in order to achieve social standing and access political and economic power (Portes & Stepick 1993). In this way, the enclave has interrupted usual assimilation processes (Wilson & Portes 1980). Social networks played a instrumental role, strengthened as they were by the reactive ethnicity created by the common experience of exile status. As a result of the ethnic economy, Cuban assimilation into American culture has occurred at a slow pace with many retaining their language (Perez 1992; Wilson & Portes 1980). In reality, Cubans in South Florida can meet all of their needs through the enclave.

THE ENCLAVE AND OTHER ETHNIC GROUPS

Studies have indicated that the presence of an enclave economy can account for differing conditions among immigrant and minority groups (Portes & Bach 1980). This is because it's presence provides immigrants within the enclave with more opportunity than minorities excluded from it (Wilson & Portes 1980). Perez (1986) suggests that the disparate circumstances of Cubans and Mexicans can be explained by the existence of the enclave. A relatively large proportion of Cubans are self-employed, a figure that is substantially higher than other Spanish-origin groups. Some studies have suggested this is a result of their participation in an ethnic economy and the skills attained therein (Portes 1987).

The benefit of the enclave to workers, however, does not extend beyond those of the same ethnicity (Portes & Stepick 1985). Because the success of an ethnic enclave lies in

structural, not individual characteristics, Cubans have benefitted while other immigrant and native minorities have struggled. The existence of Latin American capital, the favorable U.S. attitude toward their immigration, as well as other structural factors, created a positive environment within which Cubans could flourish, both economically and politically. In analyzing the differences between the labor market experiences of Cuban and Haitian immigrants to Miami in 1980, Portes and Stepick (1985) found that Haitians, lacking the enclave option, were incorporated into the secondary and informal sectors, while Cubans were much more dispersed. Despite some common group characteristics, such as exile, Cubans were much less likely to be unemployed and were more likely to own their own business three years after their arrival.

In a similar study comparing the Cuban and Black economies in Miami, Wilson and Martin (1982) attribute the prosperous condition of the Cuban economy to the existence of the enclave, citing it's highly interdependent industries and it's independence from major industry. They cite the failure of the Black economy to organize itself in this manner as a factor in it's unequal productive capabilities and smaller receipts. This inequality is analyzed and explained, not in light of historical racial discrimination, but in the context of the greater entrepreneurial skills and access to capital of Cuban immigrants.

As noted before, the enclave does not benefit all

participants equally. It is generally only co-nationals that are able to use the opportunities of the enclave to access resources. For minorities working within the enclave, the payoff is similar to that found in the secondary sector of the labor market (Portes & Stepick 1985). Some research indicates that the failure of black businesses in Miami to create their own ethnic economy lies in their inability to structure their businesses like the center economy, a factor related to the success of Cuban industry (Wilson & Martin 1982). Others attribute the differing circumstances of Cubans and other minorities to the governments failure to incorporate blacks into the power structure and provide them with adequate resources, indicating that the metro form of government found in Miami actually hinders the access of political power by minorities (Stack & Warren 1992). This has recently changed to district level elections and resulted in increased ethnic representation.

Gains for Cubans occurred in the context of a favorable U.S. immigration policy. The accommodating stance taken by the American government in the early phases of Cuban immigration was another factor contributing to their success in Miami (Portes 1987). While in other cities during the 1960's African-Americans were benefitting from civil rights reforms and aid, in Miami attention was focused on Cuban immigrants, who received most of the aid and funds for economic development (Grenier & Stepick 1992; Portes & Stepick 1993). This phenomena, while enabling Cubans to build a

thriving ethnic economy, has left African-Americans and other minority groups with fewer opportunities for growth and mobility, and created ethnic conflict.

Another factor associated with the economic inequality between Cubans and other minorities lies in the spacial distribution of the population, particularly with respect to African-Americans. Research has indicated that the spatially segmented nature of the African-American population hinder attempts at organizing politically and creating a power base (Stack & Warren 1992; Portes & Stepick 1993). There are areas of high Black concentration, but these are historically the poorest areas in metropolitan Miami. The two municipalities in which African-Americans constitute a majority, Opa Locka and Florida City, are among the most disadvantaged incorporated areas in the entire nation.

ETHNICITY AND ACCESS TO POWER

For Cubans, the existence of the enclave has translated itself into a distinct advantage in terms of access to resources, especially compared to other ethnic and racial minorities. The history of early Cuban immigration laid the groundwork for the relative ease with which latter Cuban immigrants have been incorporated into society. Portes, Clark and Bach (1982) found that the majority of Cuban immigrants to the U.S. had family and friends in Miami from which they expected access to kinship resources, at least initially. They have tended to concentrate in a single geographical location, Miami, unlike other Hispanic immigrants such as

Mexicans and Puerto Ricans, which tend to be more dispersed (Perez 1986). They also have a higher overall rate of educational attainment and have retained much of their native culture. These factors contribute to the persistence of the enclave, as well as it's growth.

Cuban family income is generally high in comparison to other "national" minority groups (Portes 1987). In a discussion of the 1980 census, Perez (1986) found that Cuban measures family income were closer to those of all U.S. families than to those of all Hispanic families. This situation has been partially explained in that Cubans tend to have a higher number of workers per family than do other families (Perez 1986; Portes 1987). Perez attributes the relatively high socioeconomic status of Miami Cubans in comparison to other Hispanic groups to three factors: 1) the SES selectivity of Cuban immigration, with wealthier immigrants arriving earlier 2) a high female labor force participation, translating into higher family income and 3) the existence of a strong ethnic enclave.

The enclave has not only positively enhanced Cuban family income, but their role in the power structure of Miami. Numerous studies have analyzed the enormous political and economic power held by Cubans in Miami (Portes & Stepick 1993; Grenier & Stepick 1992; Perez 1992). Many Cubans own their own businesses and, more significantly, these businesses tend to have comparatively higher sales and employ more workers than other immigrant enterprises (Portes & Stepick 1993).

Cubans also use ethnicity to their advantage in accessing markets and sources of labor.

It has been asserted that only in Miami has an immigrant group, Cubans, accessed political power at such a rapid pace (Grenier & Stepick 1992). This increase in political involvement began in the 1980's and has led to a significant Cuban power base, especially in local government (Perez 1992; Portes & Stepick 1993). Ethnic minority organizations, such as the Cuban-American National Foundation, donate substantial funds to politicians through their political action committees, through which political power is accessed (Portes & Stepick 1993). Were it not for the strong ethnic economy which funds these organizations, the political clout of the Cuban community would be considerably less. Hispanic, mostly Cuban, political power is on the increase and is considered by many to be a dominant force in the future (Stack & Warren 1992).

While non-Cuban Hispanics constitute a substantial proportion of metropolitan Miami's population, they are not a large part of it's power structure. The dominant non-Cuban Hispanic groups in the area are Nicaraguans, Colombians, and other South- and Central-American Hispanic groups. Literature on these groups in Miami is scarce. Portes and Stepick (1992) provide us with an analysis of Nicaraguan immigration to the U.S., in terms of the effect that previous Cuban immigration and the existence of the enclave have on non-Cuban Hispanic groups in Miami. They point out that Nicaraguan immigration

was similar to that of the Cubans in terms of makeup and pattern, but different in important ways. In both cases higher-class immigrants with higher levels of human capital arrived first, followed by gradually more and more disadvantaged migrants. Unlike Cuban immigrants, however, Nicaraguans were not as welcome by the U.S. government. Hence most were not offered aid in becoming citizens, gaining employment, and accessing capital. To their benefit, the Nicaraguan immigrants had Cubans as their allies, a union which was cemented by a common political ideology and exile experience. This provided Nicaraguans with access to jobs and political support. The immigration was beneficial to the enclave as well because it provided Cuban businesses with an expanded market. While many Nicaraguans found employment within the enclave by taking the place in the economy exited by upwardly mobile Cuban workers, for them it has not been significantly different in terms of benefits from the primary sector.

Although many non-Cuban Hispanics groups as a whole are better off than other minorities in Miami due to their access to Cuban held resources, they still are more likely to follow in the traditional path of immigrants to the U.S. and therefore have to struggle to gain access to political, economic, and social power. This is especially true for Hispanic migrant workers, many of whom are Mexican, who concentrate in the far southern portions of Dade County. These workers are removed from the enclave, with whatever

potential benefits it might give them. Research on non-Cuban Hispanic groups in Miami, however, is lacking and therefore their place in the social structure has not yet been analyzed in depth.

While upper and middle class Nicaraguan immigrants may have benefitted from the enclave in a limited fashion, other immigrants and minorities have not. This is particularly true for native minorities. The exclusion of African-Americans in Miami from political power has been documented by various researchers. Stack and Warren (1992), for example, define black political power in Dade County as "fragmented and diluted," and call for structural change to remedy the problem. They define the "Miami Syndrome" as being a situation in which there exists a political system that does not meet the needs nor answer the concerns of the black community. This in turn lead to riots, three of which took place in Miami in the 1980's, and other forms of protest in response to the frustration.

Other research has documented the effects of the "Miami Syndrome" on Blacks in Dade County as well. Dunn and Stepick (1992) examine the lack of African-American access to both political and economic power in Miami. They point out that in the 80's, despite the civil rights era, Miami's black community still had little power. Even the actions taken by local government after the riots of the 80's achieved only surface changes, no fundamental structural change was implemented. They show that African-American income in Miami

lags behind that of both Anglos and Hispanics as a whole, and this gap is evident in other areas as well, such as business ownership and the awarding of Small Business Administration loans and county contracts. Even though there is increasing diversity within the Black community, their economic status and political clout is still comparatively small in terms of that of Anglos and Hispanics, especially Cubans.

Not only are African-Americans in Miami disadvantaged compared with other ethnic groups in the area, they have less power than do Blacks in other U.S. cities. According to Portes and Stepick (1992), there are too few Black entrepreneurs and business owners, as well as too few political representatives. They are in concurrence with Dunn and Stepick that, despite improvements in some sectors, the situation of African-Americans is still vastly unequal to that of Anglos or Cubans. Blacks have been excluded from participation in the local power structure, and hence lack parity in terms of access to local resources. It has been asserted,

> Blacks continue to be a major factor in the city but not the builders of their own destiny. Riven by cleavages of class and culture, firmly at the bottom of the local hierarchy, Blacks continue to depend on outside initiatives to determine the shape of their community and it's future. (Portes & Stepick 1993 p.210)

While the situation for Cubans in Miami has improved and

mobility for African-Americans has stagnated, Anglos are still privileged in terms of access to power and political and economic control. The introduction of new groups into Miami has tempered this power somewhat, but Anglos still enjoy the benefits of their previous hegemony. Despite the increase in Hispanic economic and political participation, Anglos still dominate (Grenier & Stepick 1992). The majority of political power is still held by Anglos, and they are in control of the major economic and civic institutions in Miami as well (Stack & Warren 1992).

INTER-ETHNIC RELATIONSHIPS: CONFLICT AND COMPETITION

Because of this differing access to resources along ethnic and racial lines Miami is, according to Grenier and Stepick (1992) "...riven by two fundamental divisions: Black vs. White and U.S.-born vs. immigrant." In this section we will first examine relations between Anglos and Cubans, then Anglos and African-Americans, and finally Cubans and African-Americans. Portes (1984) has found that, with increasing inter-ethnic competition, such as is found in Miami, perceptions of social distance and discrimination are stronger. It has also been found that the presence of the enclave hinders inter-ethnic relations (Perez 1992). Other studies have attributed group conflict in Miami as a result of the metropolitan structure of government, which is seen to lead to frustration and tension between groups, as well as increasing polarization (Stack and Warren 1992).

For Anglos, relations with Cubans were initially

resistant, but have increasingly been more accommodating, as the enclave and the community's political clout has grown in strength. The Anglo backlash against the Mariel boatlift, in which thousands of Cubans came to Miami in the early 1980's, led to a "reassertive" Cuban ethnic identity which in turn had the effect of strengthening the community (Portes & Stepick 1993). Anglos have therefore had to struggle to maintain their traditional power base within the community.

The situation for African-Americans in the Miami area is a combination of the two divisions discussed by Grenier and Stepick. Blacks are doubly subordinate because they are on the loosing end of both struggles, White/Black and native/immigrant. Historically, patterns of interaction and communication between the Miami Anglo and African-American communities have followed the same path as other cities in the southeastern United States. With the increase in immigration to Miami, especially that of Cubans, Blacks and Anglos found common ground in their resistance to the immigrants and their emphasis on assimilating them to U.S. society (Portes & Stepick 1993). Serious differences between the two groups are still evident, however, mostly centering around the problem of lack of Black access to local resources still dominantly controlled by Anglos.

It is relations between the African-American and Hispanic populations in Miami, rather than the traditional white/black friction present in other cities, that has generated the most conflict in the past decade or so. While white/black

resentment still exists, it is tempered by the phenomenon of Hispanic immigration, and especially by the success of the Cubans. According to Grenier & Stepick (1992), Miami African-Americans resent the gains made by Cubans in the 1960's, while blacks in other cities benefitted from civil rights. The metropolitan system of local government, which pits African-Americans against Hispanics, has also been a source of conflict between the two communities (Stack & Warren 1992). Hispanic political power has increased, while that of Blacks has decreased. Conflict is also evident in competition over entry-level jobs, the enclave economy being closed to African-Americans (Stack & Warren 1992; Portes & Stepick 1993).

Portes and Stepick (1992) discuss the conflict between Cubans and Blacks by analyzing the Nelson Mandela affair which took place in the summer of 1990. Miami African-Americans wanted to welcome Mandela to the city, seeing him as a symbol of Black strength and unity. Cubans were opposed to his visit because of his ties to Castro and the Cuban government. What transpired became a kind of watershed for Cuban/Black resentment in Miami. Five Cuban-American mayors wrote a letter denouncing Mandela and the City of Miami did not offer him an official welcome, the only U.S. city he visited not to do so. The anger these actions raised in Miami Blacks led to the organization of a nationwide boycott of Miami hotels as convention sites. Not only did the Cuban mayors not apologize, a demand made by the African-American leaders of the boycott, but no other local official went on record as

opposing the actions of the mayors or the city.

Portes and Stepick explain these events in terms of access to political power, which is dependent on Hispanic, not Black votes. Even African-American politicians needed Hispanic support, and hence would not publicly defend Mandela. It is in light of these disparities that conflicts such as this emerge. The increase in the number of Cuban-American local representatives was made at the expense of African-American positions, leading to a situation in which the lack of equality between the two groups in terms of access to political clout could erupt in conflict.

The resentment by Blacks toward Cubans is also explained by Portes & Stepick (1993) in terms of the enclave and the sharp income and business ownership gap between the two groups. This tension is exacerbated because to African-Americans, the lack of assimilation to American culture by Cubans changes the rules of the game. For Cubans, the general feeling is that they hold no responsibility for the African-American situation in Miami, being only relatively recently arrived, and that Blacks should improve their situation in the same way that they as a group have. As Portes and Stepick surmise,

> Whatever advances Black entrepreneurs and professionals made occurred in the context of a rapid Cuban economic and political advance that threatened to confine Black success to a mostly symbolic status. (Portes & Stepick 1993 p. 182)

It is within this setting that forthcoming ethnic relations and power struggles will be played out in Miami. The declining dominance of Anglos, the increasing power of Cubans, and the double marginalization of African-Americans will continue to affect perceptions of local and global events as well as determining the direction Miami will take as in the future. It is evident that these trends affect the daily lives of the inhabitants of the city, but what consequences might they have in the context of a natural disaster? Disasters are, after all, extraordinary phenomena which disrupt the lives of those affected. The experience of disaster in Miami, through Hurricane Andrew, affords us with an opportunity to see how these social patterns play themselves out in times of social stress and what effect, if any, they have on the recovery process.

THE CONTEXT

ETHNIC PROCESSES IN DISASTER

Hurricane Andrew struck South Florida in the early morning hours of August 24, 1992. Although the area most severely affected was southern Dade County, even counties as distant as Lee and Collier Counties experienced electrical disconnections as a result of the storm. Disaster relief agencies, such as the Federal Emergency Management Agency, the Red Cross, and various religious groups moved into the area to aid victims of the storm and help repair infrastructure. The United States military was deployed to provide assistance such as security and the erection and maintenance of "tent cities"

for people displaced by the hurricane. Estimates are that total property damage due to the storm was approximately 30 billion, with 160,000 people left homeless, 86,000 people out of work, and 28,066 homes destroyed (Miami Herald 1993). It is within this context, the rebuilding and reaccumulation of previous levels of resources by those affected by Hurricane Andrew, that the experiences of different ethnic groups in Miami will be studied.

ETHNICITY AND DISASTER

Disasters, while specific to certain regions, would appear to be equal opportunity events. That is to say, hurricanes or earthquakes can strike regardless of the income or social standing of the members of the impacted community. The effects of disasters on both short and long-term recovery, however, are not so nondiscriminatory. Social factors, such as socioeconomic status and racial or ethnic group membership, affect the capacity to recover from a catastrophic life event.

Few studies deal with racial and ethnic differences in disaster experiences and recovery (Bolin 1986; Bolin & Klenow 1988; Bolin 1976; Perry 1987). Perry and Mushkatel (1986) cite an "empirical gap" in the study of ethnic differences in disaster context. There has been a call to take cultural diversity into account in disaster planning and response, as disasters have a strong negative impact on minorities (Phillips 1993). Indeed, Bolin and Stanford have argued that preexisting conditions of inequality are often accelerated after natural disasters, disproportionately affecting ethnic

and racial minorities. As a result, the recovery process has been found to coincide with existing class and racial divisions (Bolin & Stanford 1991).

Socioeconomic status tends to be lower among most minority groups. The negative effects on recovery of low SES have been documented in many disaster studies (Morrow & Peacock 1994; Phillips 1993; Miller et al 1981; Bolin & Klenow 1988; Bolin & Trainer 1978). However, further clarification is needed in the understanding of the relationship between ethnicity and SES and its consequences for disaster recovery (Perry 1987). Moore (1958) reported that the more vulnerable economic status of blacks hindered their recovery as a group. Low socioeconomic status has been associated with geographical displacement after a disaster (Morrow-Jones & Morrow-Jones 1991). Persons of high SES have been found to be more likely to report adequate aid and insurance than are those of lower SES (Bolin & Klenow 1988). Socioeconomic status has also been linked to the type of assistance received (Erickson et al 1976). In addition, Robert Bolin's research indicates that housing recovery is aided by high SES (Bolin 1976).

While intervening affects in the relationship between ethnicity and recovery need to be studied further, research indicates that, regardless of demographic variable such as SES, membership in a minority group affects the experience of disaster. Non-whites have been found to suffer greater losses after a disaster than whites (Moore 1958; Bolin & Stanford; Morrow & Peacock 1994). After Hurricane Andrew, for example,

non-Anglo households reported greater amounts of damage (Morrow & Peacock 1994; Peacock & Girard 1993). However, in a study by Bolin & Klenow (1988), there was no difference in the percentage of black and white homes destroyed after disaster impact, but whites lost more in terms of value, reflecting the higher SES of that group.

In terms of insurance and other financial assets which might temper the effects of disaster, differences between whites and minority groups are also evident. Ethnic and racial minorities tend to have fewer financial resources to depend upon after a disaster (Bolin & Klenow 1988; Bolin & Stanford). Erickson et al (1966) reported that whites have more internal resources than do non-whites. Minorities are less likely to have insurance than more privileged groups (Bolin & Stanford; Morrow & Peacock 1994; Moore 1958; Peacock & Girard 1993). Moreover, even when minority households do have insurance, they are less likely to report it being sufficient to cover their post-disaster needs (Morrow & Peacock 1994; Bolin & Bolton 1986; Peacock & Girard 1993).

Another factor important to recovery, external aid, has been found to be associated with minority status. Research indicates differential access to aid based on ethnic or racial group membership (Bolin 1986; Bolin & Stanford; Erickson et al 1976). Whites are more likely to receive aid from multiple sources (Bolin 1976; Moore 1958; Bolin & Bolton 1986), a variable positively associated with recovery (Bolin 1976). The impact of aid on recovery has also been found to be

correlated with race and ethnicity. That is, even when the aid received is equal, it seems to benefit minorities less (Bolin 1986).

Based on the relevant disaster literature then, there seems to be a relationship between economic recovery and racial and ethnic status (Bolin 1986; Morrow & Peacock 1994; Moore 1958). Disasters disproportionately affect minorities (Phillips 1993). Blacks are overrepresented among those displaced from their homes by disasters (Jones & Jones 1991; Bolin & Bolton 1986). Hispanics experience a greater decline in their standard of living after an earthquake than do anglos (Bolin & Stanford). In the area of post-disaster shelter and housing, group differences are even more marked. Hispanics have been found to have more problems reestablishing pre-disaster condition households than do anglos (Bolin & Stanford). Research has shown that both blacks and hispanics to be overrepresented in temporary housing after disasters (Bolin & Klenow 1988; Bolin & Stanford). The literature indicates that minorities, especially blacks, are slower to recover than are whites and other, more privileged racial and ethnic groups (Morrow & Peacock 1994).

DATA AND METHODS

This study focuses on economic indicators of recovery. The recovery process after a natural disaster has been seen by many as a process of reaccumulation of resources (Bates & Peacock 1993). Given the nature of Miami, along with the

ethnic and racial associations with recovery from disasters, the experience of Hurricane Andrew provides an opportunity to explore some of the differences between groups already documented by research in a post-disaster setting. If the existence of the enclave affords Cubans in Miami more opportunities and access to resources relative to other minorities, than it would be expected that this group would have an easier time in recovering from Hurricane Andrew. Like Anglos in Miami, Cubans as a group tend to have higher incomes and more political and economic power, in comparison to the other major ethnic groups in the area, African-Americans and non-Cuban Hispanics. It is assumed that victims of a disaster would use whatever resources in their possession, such as economic or political power, in order to accelerate their recovery process.

Based on the way in which access to resources is stratified by ethnicity in Miami, it would be expected that, other factors being equal, Anglos would have more resources at their disposal with which to recoup their losses after the Hurricane. Despite their "national" minority status, because of the advantage that the ethnic economy gives Cubans, it seems likely that the rate of recovery would closely follow that of Anglos and be far greater than that of Black or non-Cuban Hispanic groups. Blacks, because of their subordinate status in the accumulation of resources, would be expected to have an extremely difficult time in reaccumulating those resources. Therefore, their recovery level as a group is

predicted to lag behind those of Anglos and Cubans. Some non-Cuban Hispanic groups, because of their access to the enclave, would be expected to have an easier time in the reaccumulation of resources than African-Americans, but this relationship has not yet been specified by previous research.

The process of reaccumulation of resources after a disaster is a complex and multi-faceted variable. One aspect of this process is structural housing recovery, which entails the reattainment of pre-storm levels of structural integrity and provision of services. In the case of Hurricane Andrew, approximately 28,066 homes were destroyed. As evidence of the extent of dislocation, electricity was initially interrupted to 1.4 million customers (690,000 in Dade County), and 6 million pieces of mail were delayed or disrupted in the first two days after the storm (Miami Herald 1993).
Reaccumulation of housing resources after the storm, then, would entail, among other indicators, repairs to roofs and structural repairs, reconnection of electricity, and the delivery of mail to a structure whose mail service was previously disrupted.

This study will focus on the portion of south Dade County hardest hit by the storm, the area south of Kendall Drive. It is bordered by the Atlantic to the east, the Everglades to the west, and Monroe County to the south. A potential problem in the research is the relatively low numbers of Cubans and non-Cuban Hispanics in this area in relation to their distribution throughout the rest of the county. In addition, the non-Cuban

Hispanics found in the affected area are not represented in equal numbers to the majority of Hispanic groups throughout Dade County. In the more northern sections of the county the dominant Hispanic groups are Nicaraguans, Colombians and other South and Central American groups. While these groups are present in South Dade, there is also a large number of Mexicans, most of whom are employed in migrant labor. Mexicans are a Hispanic group which differs from other Hispanics, such as Nicaraguans, in their access to the enclave. Because of this, we might expect their recovery process to be more similar to or worse than African-Americans.

An ideal study of this hypothesis might be a longitudinal survey of a sample of households throughout the affected area. In this way recovery, through following the process of rebuilding and reaccumulation of resources, could be analyzed in the context of racial and socioeconomic factors. The course of recovery could then be compared across racial and ethnic groups and at different times, in order to assess the relationship between disaster recovery and ethnicity. At the present time a study of such magnitude is not feasible for this researcher.

While household data could not be accessed, a number of secondary data sets were available. Those included property tax assessment files, records of building permits issued, electrical utility data, and records of structures the post office could no longer deliver mail to. However, the electrical and postal datasets were the only sources available

for which complete records could be obtained. It was decided to use these data as indicators of recovery in the study. In addition, while the use of households as the unit of analysis is considered to be most useful in studying the problem proposed, the decision was made to use United States Census block groups. While the smallest geographical area for which information is offered by the Census is the block, block groups are the smallest level for which the Census provides breakdowns of Hispanic origin, information crucial for this study. Block groups are groups of these blocks, usually bounded by streets, political boundaries, or other visible features. Therefore, the unit of analysis in this research will be the block group, not the household. As a result of the use of block groups as the unit of analysis, discussion will be limited to indicators of structural housing recovery of block groups, not households.

The use of this level of measurement entails an ecological analysis. That is, recovery is analyzed as a spacial phenomenon. It is the progress of areas that are tracked, not individuals. While the research presented here is not ideal, it is hoped that it may provide at least some understanding of the ways in which ethnicity affects processes such as disaster recovery, an area which few have explored.

Previous disaster research has not been directed, as noted earlier, towards the study of ethnic differences. It is this "empirical gap" that the research presented here hopes to help fill. Even when ethnicity is examined in disaster

context, the vast majority of studies only focus on differences between African-Americans and Anglos or between Mexicans and Anglos (Perry 1987). Research on other ethnic groups is sorely lacking. Survey research is the most common methodology used in disaster studies, few attempts have been made at using secondary data sources. Dennis S. Mileti (1987) observed that these sources are potentially promising sources of information about the disaster recovery process.

The use of secondary data to address a neighborhood area of research has precedent in disaster literature. Moore (1958) attempted to use the issuance of building permits as an indicator of physical, emotional and economic recovery in his study of two communities affected by disaster. He compared the rate of building permits in five areas throughout one city. His hypothesis was that higher-class white areas would rebuild at a more rapid rate than lower-class minority areas. He found, however, that the areas picked for racial differences were not significantly different. His conclusion was that the statistics used were an imprecise measure of the effects of a disaster or of recovery. The results of Moore's study, however, may also in part be due to the small number of areas in the sample, as well as the subjective nature of the designation of the zones. While other studies have also used secondary data sources, those have been focused on comparisons of large areas such as census tracts or metropolitan statistical areas between cities affected by disasters (Wright et al 1979).

This research, then, is unique in it's methodology, in the sense of the units of analysis under study and the variables it proposes to analyze. No available studies were found to have used census block groups within one affected area as the unit of analysis. In addition, the measurements of the dependent variable, to be discussed next, are unprecedented by previous disaster research.

DEPENDENT VARIABLES

Although other variables contribute to a full measurement of structural housing recovery, such as issuance of certificates of completion of repair permits and the return to pre-storm tax assessed building values, the research here will focus on two aspects of the recovery process, 1) the reconnection of interrupted electricity to a structure and 2) the delivery of mail to a household. Recognizing that these variables do not give us a complete picture of housing recovery, they are two significant indicators of the reaccumulation process. If a household has its electricity reconnected after having it disconnected in the period of time after the storm, this implies some form of recovery having taken place. Likewise having the ability to receive mail after being unable to either receive or retrieve mail indicates some form of reaccumulation of previous services. First, a discussion of the electrical data is provided, followed by the post office data.

ELECTRICAL DATA

The measures of electrical reconnections are derived from

Florida Power and Light's (FPL) and Homestead Electric's (HE) electrical disconnects records. These companies provide electrical service to the area south of Kendall Drive. A combination of these datasets is needed in order to give a complete picture of electrical service in the area under study. The data are collected by these utilities in similar ways. Every month a database is generated listing all of the utility's customers with disconnected electricity in the service area for that month, along with the date of disconnection.

Complete disconnect files from both utilities were obtained for January 1994, 17 months after the hurricane, and May 1994, 21 months post-Andrew. Again, a disconnect file consists of all households which do not have electrical service at the time of the files creation. This file includes the actual data on when a household's service was disconnected which allows for the creation of a subfile containing only those households disconnected over a specific time period. In order to establish a file containing structures who were likely to have lost their electrical service due to Hurricane Andrew, a subfile was created that included only those structures disconnected between August 23, 1992 and December 31, 1992. This is a conservative estimate of the time, based on personal observation and media coverage, when dislocation from uninhabitable households and the undertaking of initial repairs were taking place which would necessitate the disconnection of electricity. Therefore, those structures in

the subfile created for the January 1994 database were households which had been disconnected between August and December 1992 and were still disconnected twelve months later. Another subfile was created in the same way for the May 1994 database. The absence of the households present in the January database in the May database indicates reconnection of electrical service, and would represent recovery.

These data were utilized to create two measures of structural housing recovery at the block group level. Numbers of disconnects within each block group at both points in time were manipulated in order to arrive at a measure of improvement between the two periods. In the first measure, the difference between the number of disconnects at time one (T1) and the number of disconnects at time two (T2) within each block group was divided by the number of occupied housing units within each block group. This measure is an indicator of the difference in the proportion of disconnections within each block group.

The second measure of electrical reconnection was created by taking the difference between the number of disconnections at time one and those at time two within each block group and dividing by the total number of disconnects at time one for each block group (T1-T2/T1). This variable is an indication of the proportion of improvement over the time, based on the level of disconnects at the start of the measure. The first measure will be referred to as the absolute proportion change because it is an indicator of the absolute difference in

electrical disconnections between block groups. The second will be referred to as the relative change measure because it looks at the proportional improvement of recovery across block groups.

Caution must be used in making conclusions based on these measures because of the aggregation of the data. Using Geographic Information System software, structures were placed within geographic areas, block groups. Again, because measurements are on this level, no statements can be made about household recovery of electricity, only block group recovery. In addition, there is a temporal component to the analysis. Because of the length of time between the storm and the measurement of this variable, short-term patterns of electrical recovery are not available for study. However, long-term recovery is a area in which disaster research is lacking, and those disconnected 17 and 21 months after the disaster are precisely those individuals in the process of long-term recovery.

POST OFFICE DATA

Data from the United States Postal Service (USPS) were obtained for August 1993, 12 months after the storm, and May 1994, 21 months post-Andrew. The time of the two measurements provides us with wider view of the process of this aspect of housing recovery than does the electric data. However, due to the form in which the data are collected, it is impossible to determine how long a particular structure has been undeliverable. Determination of which structures are

undeliverable are made by the individual postal carriers on their various routes. If no mail is being picked up at a unit for longer than three weeks, or, if as in many instances after Hurricane Andrew, the structure is no longer there, having been completely destroyed, the address is deemed undeliverable and it is placed in the database. Every three months assessments of these units are made in order to redetermine deliverability. Although it is not possible to determine which of the structures in the database are undeliverable due to the hurricane, in the calculation of the post office dependent variables modifications to the numbers of undeliverables in each block group were made. Modifications were made to the base number of units within each block group using estimates of occupied housing from the 1990 Census in order to account for those structures that would be undeliverable regardless of the disaster event. Again, as in the case of the electrical data, rates of undeliverable addresses between the two points in time are based on aggregation to the block group level.

The postal service data were manipulated in much the same way as the electrical disconnects files. To arrive at the absolute difference in proportion of deliverables measure, rates of undeliverables at time two were subtracted from those at time one and divided by the number of units. As previously mentioned, the base number of units in each block group was modified using estimates of occupied housing provided by the 1990 Census. This is the absolute delivery measure. The

relative improvement measure of mail deliverability was created by taking the difference between the numbers of disconnects at both times and dividing that figure by the number of disconnects within the block group at time one.

INDEPENDENT VARIABLES

The independent variables included in the analysis were derived from the 1990 census and the Dade County Tax Assessor's files. All measures are at the block group level. Control variables include: percentage of building value lost, aggregate house value, percentage of owners, average household size, and number of household units. These control variables are used to develop a base model which is hypothesized to have consequences for structural recovery.

As a measure of damage, percentage of building value lost, was calculated from the Dade County Tax Assessor's database. Two determinations of residential building value were compared, a pre-Andrew assessment done in April 1992, and a post-Andrew assessment done in April 1993. All values were aggregated to the block group level. By calculating the difference between the tax assessed value at time one and time two and dividing that difference by the value at time one, a proportion of value lost within each block group was determined. This variable is included as a measure of damage, which obviously affects rates of recovery.

Recovery has also been found to be consistently positively associated with income (Morrow & Peacock 1994; Phillips 1993; Miller et al 1981; Bolin & Klenow 1988; Bolin

& Trainer 1978). Aggregate house value is included as an indirect measure of income. Percentage of owners is added as another indirect measure of income and as an indicator of insurance. Owners are more likely than renters to have insurance, especially to cover household contents. According to research, insurance is one of the strongest predictors of recovery, and an indirect measure is not available for the area under study. In addition, renters are less in control of their structural housing recovery than are owners. Many renters were forced to move after the hurricane because landlords either failed to make repairs, sold structures outright to developers, or moved their tenants out in order to house friends or relatives displaced by the storm.

Average household size is included because of it's potential effect on recovery and its association with ethnicity (Bolin 1988). Minorities are more likely to have a greater number of residents per household. Large numbers of dependent children have been found to be associated with lower rates of recovery. However, large numbers of adults in households raises the potential number of workers, increasing the income potential of the household (Perez 1986). While the nature of this variables effect on the dependent variables is not yet defined, it is included because of its potential influence on structural recovery. Number of household units was included in the model in order to take into account how many structures could have been affected by the disaster. The potential for damage increases with the greater number of

structures in an area.

The critical, theoretically important variables for the analysis of the effect of ethnicity are the percentages of each of the four dominant ethnic groups in metropolitan Miami: Cuban, non-Cuban Hispanic, Black, and non-Hispanic/non-Black, a residual Anglo category. Ethnic categories were calculated by manipulation of the 1990 Census database, which distinguishes between different ethnicities and races but does not calculate them into the categories needed for this research. Percentage Cuban was taken directly from the Census block group database, while non-Cuban Hispanic was derived by adding the percentages in the residual Hispanic categories. Percentage Black was taken from the census but modified based on the percentage non-Hispanic Black. In this way all Hispanics, regardless of color of skin, are included in either of the two Hispanic variables. Percentage Anglo was determined from the residual categories of non-Black categories, modified by the percentages of non-Hispanics in each of the categories.

Again, because of the way access to resources determined in large part by ethnicity and race in Miami, we would expect that the recovery process of different groups will vary. Anglos would be expected to have the easiest time reaccumulating housing resources, followed by Cubans. African-Americans and non-Cuban Hispanics, because of their exclusion from political and economic power, would be expected to recovery more slowly. Therefore, we would assume that

block groups with higher percentages of Anglos would also have higher indicators of improvement of electrical reconnection and postal deliverability. Block groups with high percentages of Cubans would have levels of recovery of these services almost approaching those of Anglos. The recovery measures are expected to be lower for those block groups with high levels of Blacks and non-Cuban Hispanics. Therefore, the hypothesis is that in terms of models predicting household structural recovery, Anglos should have a significant positive effect, Blacks should have a significant negative effect, Cubans should have a significant positive effect, and non-Cuban Hispanics should have a significant negative effect. An analysis of the post office undeliverable variables is presented first, followed by the electrical disconnect data.

ANALYSIS AND RESULTS

The area south of Kendall Drive consists of 152 block groups. Information for 134 of these block groups was available for the post office dataset, and the electrical data only included information on 123. This difference is because many of these block groups contained few or no structures within them. General descriptives of these 134 block groups reveal a post-Andrew average dollar value loss of approximately $13,000,000, representing an average loss of 55% of the property value across block groups (see Table 1). The block groups under study contained a average number of 890 housing units, with a mean household size of 3.04 persons. The data also show an average 65% of households within each

block groups to be occupied by owners.

POST OFFICE DATA

For the post office data, descriptive of the dependent variables reveal some interesting phenomena. For the absolute difference measure, the average absolute difference in the proportion of mail deliverability for each block group was 9%. Descriptives also reveal a wide range, with the maximum being a 94% improvement and the minimum a -42% improvement in undeliverables[1] (see Table 2). In the relative measure, there was a mean 15% improvement in the proportional improvement of deliverability. The range for this measure was also wide, showing a maximum improvement of 100%, contrasting a minimum improvement of -800%[2] (see Table 3).

One-tailed tests of correlations between the variables in the post office undeliverables database revealed some significant correlations (see Table 4). Many of the control variables were found to be associated with the ethnic composition variables. For example, percentage of Cubans was positively correlated with both number of housing units and aggregate housing value. Percentage of non-Cuban Hispanics, however, was negatively associated with percentage of owners within each block group. An interesting picture of the inequality between Blacks and Anglos can be seen in the correlations for these two variables. The percentage of Blacks within a block group is positively associated with household size and negatively associated with percentage of homeowners, average house value and percentage of loss after

the hurricane. The statistics on Anglos, in contrast, indicate the opposite relationships. There is a negative association with size and positive correlations with percentage of homeowners, average house value and percentage of value lost. This concurs with much of the literature on differences in socioeconomic status between Blacks and Anglos.

None of the critical or control variables was found to be significantly associated with either of the two dependent variables, with the exception of percentage of value lost, which was found to negatively correlated with proportional improvement. This is an indication that, the more structural value lost in a block group, the less likely that block group would show proportional improvement of mail deliverability. The two dependent variables, absolute difference in improvement and proportional improvement, however, were found to be positively associated with one another.

Regressions of absolute difference in proportion of improvement of post office non-deliverables were run for seven different models (See Table 5). First, a base regression model was run which includes only the control variables: percent housing value lost, number of housing units, average household size, percent owners and aggregate housing value. Following this two sets of models including various permutations of ethnic composition variables were run. It was necessary to run multiple sets of models due to the intercorrelation among the ethnic variables and because it was necessary to create theoretically significant ethnic group

pairings in order to confirm the consequences of ethnicity on block group recovery. Specifically, in the first set of models ethnic variables were introduced one at a time to the base in regression models two through five. In the second set of models ethnic variables are added based on similar status characteristics. In model six both percent Black and percent non-Cuban Hispanic are added to the base in order to evaluate the effect of minority groups. In model seven, percent Anglo and percent Cuban are included with the base variables to determine the effect of dominant groups.

The base regression model was not found to be significant. When critical variables are introduced into the base regression one at a time, some significant models are present. In models three and four, the regression models are not significant overall. Model two, however, accounts for a significant proportion of the variance in the dependent variable. The significant variables in this model are housing units, percentage of value loss, aggregate house value, and percent Anglo. Percent Anglo in this model has a positive relationship with the dependent variable, meaning that with an increase in the percent of Anglo within a block group, absolute proportion of deliverability increases as well. The overall model including non-Cuban Hispanics, model five, is significant as well, indicating significant associations with housing units, aggregate house value, and non-Cuban Hispanics. In this case, as expected, the non-Cuban Hispanic variable has a negative association with the dependent variable, reflecting

the decrease of percentages of this ethnic group results in increases in the proportion of deliverable addresses within a block group. The regression run including both Blacks and non-Cuban Hispanics, model six, proved to be significant. Results indicate that housing units, percentage loss, house value, percentage African-American, and percentage non-Cuban Hispanics are the critical variables. In this model both ethnic variables have negative associations with the dependent variable, although the negative relationship is stronger for non-Cuban Hispanics. This indicates that an increase in the percentage of minority groups inhabiting a block group has consequences for the recovery of mail deliverability in the area. The seventh model was also found to be significant. In this case, the Anglo variable was again significantly positively associated with the dependent variable. The Cuban variable had sign consistent with the expectations of the hypothesis, but was not significant in the model.

These same seven regression models were also analyzed for the other dependent variable, proportional improvement in post office deliverables (see Table 6). Results indicate that, while all models account for a significant proportion of the variance in the dependent variable overall, none of the ethnic variables have any significant effect. Although they are associated with the dependent variable in the predicted ways, they are not significant to the model. The Anglo and Cuban variables have positive relationships with the relative measure of post office deliverability. It seems, however,

that the percentage of Cubans within a block group has a stronger positive contribution than does the percentage of Anglos, although neither are significant. Both the Black and non-Cuban Hispanic variables have negative relationships with the dependent variable and, as in the regression models predicting the absolute measure, the negative effect of non-Cuban Hispanics is greater than that of Blacks. The critical variables for the proportional improvement variable seem to be percentage of value loss, number of housing units, percentage of owners, and aggregate house value.

ELECTRICAL DATA

We now turn to the Florida, Power & Light and Homestead Electric data, which measures the reconnection of electricity to structures. In aggregating the data to the block group level, problems were encountered with the electrical data. Despite having extracted a discrete number of records from the database, only those disconnected between August 23 and December 31, 1992, seven block groups were found to have a higher number of disconnects at time two than at time one. Because of the nature of the construction of the database, this is not logical and potentially indicates an error of some sort. A visual inspection of the block groups in question determined that all but two fell within a contiguous geographical area in northern Homestead, where some areas are serviced by FPL and others by HE. These five block groups were possibly important because they included areas of African-American concentration, and therefore might affect the

test of the hypotheses were they to be excluded. A decision was made to set the number of undeliverables at time one equal to time two. This was because the error is potentially due to data collection processes at the electrical companies. The fact that the number of cases went up indicates that, not only did the area not improve substantially in electrical reconnections, but that the number in fact actually increased, with perhaps more people being added to the dataset who were originally overlooked. It was felt that the manipulation of these cases to show no recovery of electrical disconnects was true to the reality of the situation while at the same time reducing the error introduced by faulty data collection procedures . The other two block groups whose number of electrical disconnects went up were located on the far western edges of southern Dade County. As these only indicated one additional disconnect at time two compared to that at time one and no logical explanation could be found for the error, they were not manipulated.

Descriptive statistics on the electrical database were not significantly different from those of the post office data. They indicate the average post-Hurricane Andrew dollar value loss for the block groups in question was $14,000,000 (see Table 7). This translates to an average percentage loss of 57% across block groups. The average number of housing units per block group was 984, with a mean household size of 3.02 persons.

Descriptives of the electrical dependent variables

indicate an average absolute difference in the proportion of improvement of 2%, with a maximum difference of 28%. The proportional improvement variable had a mean of 32%, ranging from 100% improvement to -50% (see Table 7). This reflects that proportional improvement of electrical service ranged anywhere from completely recovered to a 50% increase in the number of disconnections. This is due to problems with the data previously discussed and results were not affected by the presence of these cases.

A test for correlations between the variables in the electrical database indicated that, for the critical and control variables, the same associations were present as were in the post office analysis (see Table 8). Percent Cubans were positively associated with number of housing units and aggregate house value. Percent non-Cuban Hispanics had a negative relationship with percentages of home owners within a block group. Blacks and Anglos again had opposite relationships with the control variables. Percent Black was positively associated with household size and negatively associated with percent owners, aggregate house value and percentage of value lost. Percent Anglo had a negative relationship with household size and positive associations with percent owners, aggregate house value and percentage of value lost. The two dependent variables were again positively associated with one another. In addition, the proportional improvement measure had a positive correlation with aggregate house value, as well as a positive association with percentage

of housing value lost.

The same seven regression models were run on the electrical variables as were on the post office data (see Tables 9 & 10). No significant results were found in regards to the critical, ethnic category variables in either of the two dependent measures. In the model predicting absolute difference in proportion of disconnects, percentage of housing value lost, percent owners, and household size seem to be the most important variables in predicting reconnection of electricity. In the proportional difference measure, however, it is percentage of housing value lost, aggregate house value, and number of housing units that appear to be the best predictors.

DISCUSSION AND CONCLUSION

Based on the results of the tests presented above, it appears that, except for the absolute difference in proportion of post office undeliverables measure, there are no ethnic effects on the other three dependent variables. While it may be that ethnicity or race plays no part in the electrical indicators of structural recovery of block groups, it is more likely that these results are due to problems with the data discussed previously.

These problems, while present in the post office database, do not seem to have obscured the effect of ethnicity from appearing in at least one of the measurements of the dependent variable. In the absolute measure of improvement of mail deliverability, there does appear to be an ethnic effect.

It seems as if a high percentage of Anglos within a block group positively affects the rate of mail deliverability. High percentages of Cubans also have a positive influence, albeit insignificant. For Blacks and non-Cuban Hispanics, the effect on the dependent variable is negative, but less so than for Anglos. Higher percentages of these ethnic groups within block groups seem to have a negative affect on the improvement of mail deliverability within those areas. These same associations, positive for Anglos and Cubans and negative for Blacks and non-Cuban Hispanics, appear in the proportional improvement variable, although they are not significant.

While these results do not prove the research hypothesis, they seem to support it in a general way. If Anglos are the most privileged and powerful group in Miami, we would expect to see a strong positive affect on recovery in those block groups in which they are present in large numbers. Likewise, the lack of opportunity and access to resources afforded to African-Americans is evident in the much lower rates of recovery present in the block groups in which they are dominant.

The questionable element in the results revolves around the Hispanic issue. Percentage of Cubans have no significant effect when introduced into the regression model predicting absolute difference in the proportion of improvement of mail deliverability. This lack of significance, however, may be due to the relatively small number of Cubans in the sample and the aggregation of the data to the block group level. The

areas of high Cuban concentration in Dade County, Little Havana and Hialeah, are not within the population under study. It is possible that, if these areas were within the zone most severely impacted by Hurricane Andrew, the effect of the Cuban enclave in the process of reaccumulation of resources might be more evident. The same is true of the non-Cuban Hispanic groups under study. As previously mentioned, Hurricane Andrew disproportionately affected Mexicans because of their concentration in the southern portion of Dade County. These non-Cuban Hispanics are not in large numbers employed within the enclave. Other non-Cuban Hispanic groups such as Nicaraguans and Colombians, whose recovery might have been aided by their incorporation into the ethnic economy, are not represented in large numbers in the area of study. What the results indicate is that non-Cuban Hispanics affected by the disaster fare even worse than do African-Americans. This is potentially a result of the large numbers within the non-Cuban Hispanic group in the area who are employed in migrant labor, where they lack adequate resources not solely in the process of recovery, but in their everyday lives as well.

One potential reason for the lack of an ethnic component to the recovery of electric is related to the level of analysis used in the research. The use of U.S. Census block groups rather than households was a necessary one because of data collection procedures already discussed. However, their effect on the results cannot be ignored. The problem this research addresses is whether or not the differences in access

to resources and power in Miami among ethnic groups translate themselves into differences in structural recovery after the common experience of a natural disaster. The problem is that the dependent variables were originally measured at a household level, and then the data was aggregated to the block group level. Variation within each block group was lost, and no analysis of the way in which households of different ethnicities recover could be done.

As was mentioned before, in five block groups in the electrical data errors in data collection were evident and modifications were made in an attempt to minimize this error. However, it is possible that the same types of problems are present in the other block groups in the analysis, and there is no way to detect this. The five block groups in the electrical data were identified because the number of disconnects at time two were greater than those at time one. It was determined from this that there was an undercount at time one. However, due to the aggregate nature of the data, it is possible that there were undercounts at time one in other blocks which were undetectable because there were equal or greater counts present at time two.

The time of collection of the electrical data may also be an issue in the absence of ethnic effects on reconnection variables. Data was only available, as previously mentioned, for January and May 1994, 17 and 21 months after Hurricane Andrew, respectively. This limits the analysis of reconnection of electric to a four month period. In an ideal

situation, data would be collected at times closer to the event, with more regular intervals between datasets. In this way processes in the initial stages of recovery could be assessed. While such a study might prove to reveal no ethnic variation in electrical recovery, it would be a more reliable indicator of the event under study.

In summary, it seems that for one indicator of structural recovery, absolute differences in the proportion of improvement of mail deliverability across block groups, there is an ethnic component to the recovery process. As expected, block groups with higher concentrations of Anglos were able to reattain mail deliverability at a faster rate than were Blacks and non-Cuban Hispanics. The results seem to support the premise that the pre-existing distribution of resources and power differentials between certain ethnic groups in the Miami area affect the disaster recovery process. The relatively high levels of recovery for block groups with large proportions of Cubans as compared with other immigrants and native minorities can be seen as an indication of the positive economic and political consequences of the ethnic enclave. Membership in an ethnic group appears to have implications for the ability to achieve recovery in terms of reaccumulation of resources. Due to the number of problems in the data collection, decisive conclusions cannot be reached, but the potential for using this type of secondary data has hopefully been shown. This type of secondary, objective data source can be, if carefully planned for, an important source of

information about the way victims reaccumulate their pre-disaster levels of housing.

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TABLE 1
Block Group Descriptives

N=134

Variable Label	Mean	Std Dev	Minimum	Maximum
Housing Units	890.21	1237.66	4.0000000	11305.000
Avg Household Size	3.04	.43	1.7300000	3.9100000
%Owner	65.06	24.65	.5000000	100.00000
Agg House Value	56134.36	72455.45	162.50000	513971.50
%Value Loss	-.55	.24	-.9433030	.0038215
%Cuban	.09	.08	.0000000	.3670000
%Non-Cuban Hispanic	.17	.13	.0070000	.6200000
%Black	.19	.26	.0000000	.9903266
%Anglo	.56	.27	.0026774	.9727742

TABLE 2
Post Office Absolute Measure Descriptives

N=133

Variable Label	Mean	Std Dev	Minimum	Maximum
Housing Units	896.16	1240.41	4.0000000	11305.00
Avg Household Size	3.04	.43	1.7300000	3.9100000
%Owner	64.86	24.63	.5000000	100.00000
Agg House Value	56455.48	72633.61	162.50000	513971.50
%Value Loss	-.55	.24	-.9433030	.0038215
%Cuban	.09	.08	.0000000	.3670000
%Non-Cuban Hispanic	.17	.13	.0070000	.6200000
%Black	.19	.26	.0000000	.9903266
%Anglo	.56	.27	.0026774	.9727742
Absolute Difference	.09	.18	-.4259271	.9492298

TABLE 3
Post Office Relative Measure Descriptives

N=131

Variable Label	Mean	Std Dev	Minimum	Maximum
Housing Units	881.71	1250.04	4.0000000	11305.000
Avg Household Size	3.05	.43	1.7300000	3.9100000
%Owner	64.89	24.74	.5000000	100.00000
Agg House Value	54545.53	71276.85	162.50000	513971.50
%Value Loss	-.56	.24	-.9433030	.0038215
%Cuban	.09	.08	.0000000	.3670000
%Non-Cuban Hispanic	.17	.13	.0070000	.6200000
%Black	.19	.26	.0000000	.9903266
%Anglo	.55	.27	.0026774	.9727742
Relative Difference	.15	.94	-8.000000	1.0000000

TABLE 4
Post Office Correlations

Correlations:	Housing Units	Avg HH Size	%Owner	Agg House Value	%Loss	%Cuban
Housing Units	1.00	-.2012*	-.1338	.7423**	.1528	.2501*
Avg HH Size	-	1.00	.1436	-.0782	-.2039*	.0901
%Owner	-	-	1.00	.2921**	.2174*	.1238
Agg House Val.	-	-	-	1.00	.4408**	.2068*
%Loss	-	-	-	-	1.00	.1036
%Cuban	-	-	-	-	-	1.00
%Non-Cuban Hispanic	-	-	-	-	-	-
%Black	-	-	-	-	-	-
%Non-Cuban Non-Black	-	-	-	-	-	-
Absolute Difference	-	-	-	-	-	-
Relative Difference	-	-	-	-	-	-
N=134	1 tailed significance: * -.01 ** -.001					

TABLE 4 (cont.)
Post Office Correlations

Correlations:	%Non-Cuban Hispanic	%Black	%Non-Cuban Non-Black	Absolute Diff.	Relative Diff.
Housing Units	.1563	-.0695	-.0766	.0145	-.0630
Avg HH Size	.1602	.3015**	-.3940**	-.0151	.0882
%Owner	-.3568**	-.4591**	.5774**	.0566	-.0097
Agg House Val.	.1068	-.2602	.2439*	-.0560	-.2281*
%Loss	-.1581	-.2952**	.3315**	-.1682	-.1543
%Cuban	.1932	-.2934**	-.0901	-.0423	.0831
%Non-Cuban Hispanic	1.00	-.1490	-.3748**	-.1720	.0037
%Black	-	1.00	-.8212**	-.0569	.0715
%Non-Cuban Non-Black	-	-	1.00	.1473	-.0949
Absolute Difference	-	-	-	1.00	.2401*
Relative Difference	-	-	-	-	1.00

N=134 1 tailed significance: * -.01 ** -.001

TABLE 5
OLS Regression Models Predicting
Post Office Absolute Measure

Variables	Model1	Model2	Model3	Model4	Model5
%Loss	-.1012 -.1336	-.1145* -.1512	-.1040* -.1373	-.0991 -.1309	-.0941 -.1242
Housing Units	.2984+ .2066	.4381+** .3034	.2968+ .2055	.3138+ .2173	.4689+** .3247
Avg. HH Size	-.0403 -.0976	.0245 .0594	-.0355 -.0861	-.0388 -.0940	-.0109 -.0265
%Owner	7.9992+ .1100	-.3611+ -.0497	6.8368+ .0940	8.3487+ .1148	3.3657+ .0463
Agg House Value	-.0040+ -.1639	-.0061+* -.2463	-.0041+ -.1646	-.0042+ -.1696	-.0064+* -.2607
%Non-Cuban Non-Black	-	.2072** .3121	-	-	-
%Black	-	-	-.0228 -.0336	-	-
%Cuban	-	-	-	-.0506 -.0219	-
%Non-Cuban Hispanic	-	-	-	-	-.3859** -.2707
F	1.1663	1.8882*	.9807	.9739	2.3469**
R2	.0439	.0825	.0446	.0443	.1005
Adj R2	.0063	.0388	-.0009	-.0012	.0577
N=133	1 tailed significance: * -.10 ** -.05 + = b x 10^{-4}				

TABLE 5 (cont.)
OLS Regression Models Predicting
Post Office Absolute Measure

Variables	Model6	Model7
%Loss	-.1147*	-.1155*
	-.1514	-.1525
Housing Units	.5478+**	.4324+**
	.3793	.2994
Avg. HH Size	.0461	.0243
	.1117	.0589
%Owner	-9.2480+	-3.8432+
	-.1272	-.0529
Agg House Value	-.0079+**	-.0060+*
	-.3200	-.2443
%Non-Cuban Non-Black	-	.2086**
		.3142
%Black	-.1980**	-
	-.2912	
%Cuban	-	.0222
		.0096
%Non-Cuban Hispanic	-.5964**	-
	-.4183	
F	2.8493**	1.6073*
R2	.1376	.0826
Adj R2	.0893	.0312

N=133

1 tailed significance: * -.10 ** -.05

+ = b x 10^{4}

TABLE 6
OLS Regression Models Predicting
Post Office Relative Measure

Variables	Model1	Model2	Model3	Model4	Model5
%Loss	-7542**	-.7671	-.7554**	-.7769**	-.7353**
	-.1902	-.1934	-.1904	-.1959	-.1854
Housing Units	1.8882+*	2.0372+*	1.8875+*	1.7258+*	2.2251+**
	.2515	.2713	.2514	.2299	.2963
Avg. HH Size	.0672	.1372	.0691	.0518	.1271
	.0309	.0630	.0317	.0238	.0583
%Owner	.0127**	.0114**	.0127**	.0124**	.0118**
	.3353	.3013	.3340	.3257	.3111
Agg House Value	-.0441+**	-.0463+**	-.0441+**	-.0428+**	-.0489+**
	-.3352	-.3513	-.3352	-.3247	-.3715
%Non-Cuban Non-Black	-	.2255	-	-	-
		.0650			
%Black	-	-	-.0090	-	-
			-.0026		
%Cuban	-	-	-	.5600	-
				.0464	
%Non-Cuban Hispanic	-	-	-	-	-.7523
					-.1012
F	3.7498**	3.1467**	3.1000**	3.1518**	3.3184**
R2	.13043	.13221	.1304	.1323	.1384
Adj R2	.0957	.0902	.0884	.0903	.0967
N=131	1 tailed significance: * -.10 ** -.05				
	+ = b x 10^{-4}				

TABLE 6 (cont.)
OLS Regression Models Predicting
Post Office Relative Measure

Variables	Model6	Model7
%Loss	-.7670**	-.7961**
	-.1934	-.2007
Housing Units	2.3558+**	1.8749+*
	.3137	.2497
Avg. HH Size	.2219	.1324
	.1018	.0608
%Owner	.0097**	.0108**
	.2551	.2825
Agg House Value	-.0513+**	-.0450+**
	-.3898	-.3421
%Non-Cuban Non-Black	-	.2684
		.0774
%Black	-.3296	-
	-.0930	
%Cuban	-	.6573
		.0545
%Non-Cuban Hispanic	-1.1016*	-
	-.1482	
F	2.9125**	2.7352**
R2	.1422	.1347
Adj R2	.0934	.0855
N=131	1 tailed significance: * -.10 ** -.05	
	+ = b x 10^{4}	

TABLE 7
Electrical Descriptives

N=123

Variable Label	Mean	Std Dev	Minimum	Maximum
Housing Units	984.81	1278.54	10.000000	11305.000
Avg Household Size	3.02	.43	1.7300000	3.9100000
%Owner	63.57	24.04	6.3000000	98.300000
Agg Household Value	58135.85	75225.35	427.50000	513971.50
%Value Loss	-.57	.23	-.9433030	-.0427340
%Cuban	.09	.08	.0000000	.3670000
%Non-Cuban Hispanic	.17	.12	.0070000	.6200000
%Black	.22	.28	.0000000	.9903266
%Anglo	.53	.28	.0026774	.9727742
Absolute Difference	.02	.03	-.0086948	.2899095
Relative Difference	.32	.30	-.5000000	1.0000000

TABLE 8
Electrical Correlations

Correlations:	Housing Units	Avg HH Size	%Owner	Agg House Value	%Loss	%Cuban
Housing Units	1.00	-.2022	-.0723	.7782**	.2414*	.2611*
Avg. HH Size	-	1.00	.1404	-.1011	-.2479*	.0867
%Owner	-	-	1.00	.3004**	.1392	.1586
Agg House Val	-	-	-	1.00	.4458**	.2258*
%Loss	-	-	-	-	1.00	.1417
%Cuban	-	-	-	-	-	1.00
%Non-Cuban Hispanic	-	-	-	-	-	-
%Black	-	-	-	-	-	-
%Non-Cuban Non-Black	-	-	-	-	-	-
Absolute Difference	-	-	-	-	-	-
Relative Difference	-	-	-	-	-	-

N=123 1 tailed significance: * -.01 **-.001

TABLE 8 (cont.)
Electrical Correlations

Correlations:	%Non-Cuban Hispanic	%Black	%Non-Cuban Non-Black	Absolute Diff.	Relative Diff.
Housing Units	.1954	-.1235	-.0326	-.0549	.1071
Avg. HH Size	.1803	.3050**	-.4478**	-.1099	-.1273
%Owner	-.4168**	-.4379**	.5846**	-.2058	.2028
Agg House Val	-.0352	-.2809**	.2391*	-.1246	.2861**
%Loss	-.0618	-.2852**	.2793**	-.1735	.3293**
%Cuban	.2732*	-.3513**	-.0450	-.1315	.0693
%Non-Cuban Hispanic	1.00	-.2127*	-.2907**	.0012	-.1086
%Black	-	1.00	-.8367**	.0963	-.1567
%Non-Cuban Non-Black	-	-	1.00	-.0614	.1879
Absolute Difference	-	-	-	1.00	.2268*
Relative Difference	-	-	-	-	1.00

N=123 1 tailed significance: * -.01 *-.001

TABLE 9
OLS Regression Models Predicting
Electrical Absolute Measure

Variables	Model1	Model2	Model3	Model4	Model5
%Loss	-.0316**	-.0319**	-.0312	-.0303**	-.0311**
	-.2041	-.2055	-.2014	-.1957	-.2003
Housing Units	-.0427+	-.0399+	-.0424+	-.0355+	-.0372+
	-.1564	-.1461	-.1554	-.1300	-.1365
Avg. HH Size	-.0121*	-.0104	-.0128*	-.0114*	-.0108*
	-.1492	-.1281	-.1581	-.1404	-.1335
%Owner	-3.0258+**	-3.3434+*	-2.8581+*	-2.8439+**	-3.3014+**
	-.2085	-.2304	-.1969	-.1960	-.2275
Agg House Value	.0006+	.0006+	.0006+	.0006+	.0006+
	.1357	.1279	.1363	.1207	.1240
%Non-Cuban Non-Black	-	.0048	-	-	-
		.0380			
%Black	-	-	.0030	-	-
			.0246		
%Cuban	-	-	-	-.0236	-
				-.0538	
%Non-Cuban Hispanic	-	-	-	-	-.0150
					-.0509
F	2.2131*	1.8401*	1.837*	1.8864*	1.8712*
R2	.0864	.0869	.0868	.0889	.0882
Adj R2	.0474	.0397	.0396	.0418	.0411
N=123	1 tailed significance: * -.10 ** -.05				
	+ = b x 10^{-4}				

TABLE 9 (cont.)
OLS Regression Models Predicting
Electrical Absolute Measure

Variables	Model6	Model7
%Loss	-.0313**	-.0356**
	-.2020	.1971
Housing Units	-.0356+	-.0337+
	-.1303	-.1236
Avg. HH Size	-.0096	-.0102
	-.1179	-.1254
%Owner	-3.5879+*	-3.0834+*
	-.2473	-.2125
Agg House Value	.0006+	.0005+
	.1191	.1156
%Non-Cuban Non-Black	-	.0035
		.0278
%Black	-.0034	-
	-.0275	
%Cuban	-	-.0226
		-.0516
%Non-Cuban Hispanic	-.0204	-
	-.0693	
F	1.5947	1.6082
R2	.0885	.0892
Adj R2	.0330	.0337
N=123	1 tailed significance: * -.10 ** -.05	
	+ = b x 10^{4}	

TABLE 10
OLS Regression Models Predicting
Electrical Relative Measure

Variables	Model1	Model2	Model3	Model4	Model5
%Loss	.2637** .1985	.2693** .2027	.2711** .2040	.2592** .1951	.2630** .1979
Housing Units	-.4986+* -.2132	-.5731+* -.2451	-.4941+* -.2113	-.5235+* -.2239	-.5056+ -.2162
Avg. HH Size	-.0682 -.0980	-.1134* -.1631	-.0810 -.1164	-.0707 -.1016	-.0698 -.1004
%Owner	9.1907+ .0739	.0018 .1416	.0012 .0976	8.5593+ .0688	9.5446+ .0767
Agg House Value	.0132+** .3315	.0141+** .3555	.0132+** .3327	.0134+** .3375	.0132+** .3332
%Non-Cuban Non-Black	-	-.1277 -.1175	-	-	-
%Black	-	-	.0534 .0506	-	-
%Cuban	-	-	-	.0819 .0218	-
%Non-Cuban Hispanic	-	-	-	-	.0192 .0076
F	4.6179**	3.9490**	3.8601**	3.8267**	3.8165**
R2	.1648	.1696	.1664	.1652	.1649
Adj R2	.1291	.1267	.1233	.1221	.1217
N=123	1 tailed significance: * -.10 **-.05 + = b x 10^{4}				

TABLE 10 (cont.)
OLS Regression Models Predicting
Electrical Relative Measure

Variables	Model6	Model7
%Loss	.2720**	.2666**
	.2047	.2006
Housing Units	-.5647+*	-.5859+*
	-.2414	-.2505
Avg. HH Size	-.1146	-.1139*
	-.1648	-.1638
%Owner	.0020	.0017
	.1581	.1372
Agg House Value	.0140+**	.0143+**
	.3534	.3585
%Non-Cuban Non-Black	-	-.1250
		-.1150
%Black	.1195	-
	.1133	
%Cuban	-	.0473
		.0126
%Non-Cuban Hispanic	.2101	-
	.0833	
F	3.3382**	3.3589**
R2	.1689	.1689
Adj R2	.1183	.1192
N=123	1 tailed significance: * -.10 ** -.05	
	+ = b x 10^{4}	

ENDNOTES

1) While an increase of such high percentages in the number of undeliverables between the two times of measurement in both of these dependent variables is possible, it is not logical because of the time of the measurements, the first being 12 months post-Hurricane Andrew. Smaller increases are possible, but the large increases found in a few of the block groups are potentially explained by either errors in the original data collection by the United States Postal Service or by large apartment buildings in some areas being razed or condemned. However, no significant differences were found when tests were run with these cases being equal at time one and two.

2) An analysis of these two different post office indicators of structural recovery indicated the presence of outliers. One case was excluded from tests of the absolute difference in proportion of improvement measure, and three were removed from tests of the other variable, proportional improvement. No significant differences were revealed in descriptives of the data with these cases removed (see Table 2 and Table 3). The decision to exclude these cases was made on the basis of regression run both with and without outliers. Results indicated that effects of such variables as number of housing units and aggregate house value were diluted because of these presence of extreme cases.

3) Regressions were run with these five cases removed and with the value at time two equal to that at time one. An analysis of these tests indicated no significant difference between the results of the tests, with the exception that, with the five cases removed, family size and housing value become significant in the model.