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# Hispanic Communities and Environmental Justice: A Comparative Study of Mobility and Exposure to Air Toxics in Houston

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HISPANIC COMMUNITIES AND ENVIRONMENTAL JUSTICE: A  
COMPARATIVE STUDY OF MOBILITY AND EXPOSURE  
TO AIR TOXICS IN HOUSTON

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2014

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TO AIR TOXICS IN HOUSTON

by

MARICARMEN HERNANDEZ, MA

THESIS

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for the Degree of

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## **Abstract**

Environmental justice research has focused too little attention on immigrant communities. This study extends from the premise that themes of immigration and mobility among racial/ethnic minority communities must be more carefully analyzed by environmental justice (EJ) scholars. By clarifying why Hispanic people live where they live, and what factors shape their exposures to cancer risks from hazardous air pollutants, this study aims to contribute to the existing EJ body of knowledge. The analysis employs qualitative methods, implemented as part of a larger National Science Foundation-funded study. In-depth semi-structured phone interviews were conducted with randomly selected Hispanic individuals, some of whom were immigrants and some of whom were born in the United States, who lived in areas at both high and low risk to hazardous air pollutants in Greater Houston, Texas. By comparatively examining the experiences of different Hispanic groups, this study moves beyond the monolithic treatment of the US Hispanic population. Interviewees were drawn from a sample of 633 participants in a previously completed structured survey, which is representative of the Greater Houston population. Transcribed interview data were examined to clarify and compare factors affecting Hispanic subgroups' mobility and risk exposure. Interviews focused on understanding factors that people considered to be important when choosing their current homes, if they had considered moving, and the barriers they have faced in seeking safer living spaces. The main determinants of risk for U.S.-born and foreign-born Hispanics were financial constraints and the social incentives of living near ethnic enclaves. Protective factors included having experienced upward social mobility for U.S.-born individuals and living in relative social isolation within less than ideal rental units for immigrants. The pernicious nature of environmental injustice experienced by Hispanic immigrants in Houston is encapsulated by the fact that their pursuit of affordable and

comfortable residential settings leads to the reproduction of their disproportionate air toxics exposures.

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## **Chapter 1: Introduction**

Many studies within the field of environmental justice (EJ) have demonstrated that certain social groups are disproportionately exposed to urban environmental risks (Bullard, 1990; Brown, 1994; Linder, 2008; Mohai, et al 2009). Studies of distributional justice have provided evidence that disadvantaged groups are indeed over-burdened by technological hazards, but there is also a need to further our understanding of the problem through the use of novel methods as well as examination of new contexts and understudied social groups (Boone, 2008; Sze and London, 2008). As noted by Boone (2008), environmental justice research should turn its attention to social variables beyond race and class and the household scale. These are aims of my thesis research.

There is great value in the work that comprises the field of EJ, yet there are also two limitations that must be addressed in order to deepen understanding. First, while quantitative studies provide powerful evidence for the inequalities that certain social groups face (Hunter, 2000; Linder et al., 2008; Grineski et al., 2012), they cannot fully explain the processes that produce distributional patterns of environmental injustice. Quantitative spatial studies have provided the groundwork for using qualitative methods to uncover the processes that generate uneven patterns. Qualitative research is valuable for revealing the workings of micro and macro processes in the production of unequal risks, as well as illuminating the mechanisms underlying the quantitative empirical findings that orient much of the literature on EJ (Ragin et al., 2004).

In this study, I intend to use qualitative methods to examine pattern-process linkages in the production of distributional injustices by focusing the role of residential decision-making processes among Hispanic immigrant groups living at risk to air toxics in the Houston, Texas Metropolitan Statistical Area (MSA). Houston is a city in which the Hispanic population has

suffered disproportionately from environmental injustices associated with toxic exposures (Linder et al., 2008; Sexton, 2007; Chakraborty et al., 2014; Grineski et al., 2014). While there are analytical and interpretive benefits to treating immigrant status as a variable or suite of variables in quantitative spatial studies (e.g., to provide simplicity and clarity for descriptive purposes, or support for generalized, population-level inferences), results of such studies do not provide an adequate foundation for generating novel explanatory insights regarding sociospatial processes that produce unjust patterns (e.g., contextual processes that may relegate specific immigrant subgroups in particular places to unhealthy and/or hazardous living arrangements). Thus, my thesis research focuses on two key themes: sociospatial processes in relation to subgroups that comprise the Hispanic population of greater Houston, such as foreign born vs. U.S. born, and forms of environmental marginality that have been co-produced through migrant families' decision-making as shaped by their social and economic networks, barriers to mobility and experiences of discrimination.

A second limitation of EJ work that this study will address is the tendency to categorize Hispanic populations into a single homogenous group (see Grineski et al. 2013 for an exception). By making assumptions of within-group homogeneity, EJ analysts have not adequately taken into consideration how racial and ethnic status (as well as immigration status) have intersected with other axes of social inequality in contributing to unequal risks (Collins et al., 2011). By systematically examining foreign and U.S. born Hispanics living at high and low risk of exposure to air toxics, this study seeks to move beyond the monolithic treatment of the diverse and rapidly expanding US Hispanic population by accounting for the role of within-group heterogeneity in the production of risk disparities. By taking into account key axes of social difference, the diversity of the Latino/a community will be a focus of examination. This will

provide a basis for deepening understanding of how axes of social difference – including (but not limited to) US residency status, English-proficiency, chain migration, social networks, and socioeconomic barriers in the housing market (among other factors that affect mobility and residential decision-making practices) – play roles in shaping Hispanic immigrants’ exposures to air toxics risks.

Most importantly, this study is premised on the belief that themes of (im)migration and mobility among racial/ethnic minority communities must be more carefully analyzed by environmental justice scholars. By clarifying why Hispanic immigrants live where they live, and what factors shape their exposures to cancer risks from hazardous air pollutants, this study aims to make significant contributions to the existing EJ body of knowledge, which has surprisingly little focus on migration and mobility (for exceptions, see Crowder and Downey, 2010; Ethan and Ma, 2012; Collins and Grineski, 2010; Raddatz and Mennis, 2013). The main research questions to be addressed are: Why do Latino/a immigrants and individuals of Latino descent in Houston tend to live in areas with relatively high levels of ambient exposure to hazardous air pollutants? What factors have led them into these risky living situations and what factors have kept them there? And, finally, what factors are protective for Hispanic people who live in ‘safer’ areas, at relatively low risk to air toxics?

## Chapter 2: Literature Review

### 2.1 ENVIRONMENTAL JUSTICE AND IMMIGRANT COMMUNITIES

The bulk of EJ research shows that minority groups of lower socioeconomic status face generally greater risks of exposure to toxic hazards. The Toxic Waste and Race Study conducted in the United States in 1987, which concluded that race was the most important factor in determining where toxic waste sites would be located (Commission for Racial Justice, 1987), was the first to document such injustices. Also pioneering in the field was Robert Bullard's *Dumping in Dixie* (1990), in which he found empirical evidence that people of color and low-income communities suffer disproportionately from facility siting decisions involving municipal landfills and incinerators. Ultimately, it has been established that the poor, and especially the non-white poor, generally bear a disproportionate burden of exposure to suboptimal-unhealthy environmental conditions (Brulle and Pellow, 2006).

Academic research on the issue of inequality in the distribution of environmental risk continues to progress as well as become more methodologically refined (see Mohai and Saha, 2007; Chakraborty, 2011; Collins et al., 2011; Sze and London, 2008). However, there are some areas within the field that are underdeveloped, including work that examines immigrant communities (and mobility more generally). There are clear reasons why it is important for EJ scholars to take immigrant communities into closer consideration. There are socioeconomic similarities between immigrants to the US and racial/ethnic minority groups more generally (which have received primary attention in the EJ literature). Immigrants face similar prejudices, discriminatory practices and economic hardships to those experienced by U.S.-born minority groups. Therefore, it stands to reason that similar environmental injustices confronting minority populations are also faced by immigrant groups (Hunter, 2000). Considering that Hispanic

immigrants in particular contribute to the most rapidly growing segment of the US population, much more attention by EJ scholars is warranted.

Only a handful of spatial EJ studies have focused on immigrant populations, and most of those have analyzed this group quantitatively based on variables associated with immigrant status available in census datasets (see Collins et al., 2011; Hunter, 2000; Ma, 2010; Viel, 2011). The variables examined have ranged from language proficiency, citizenship, and nativity (Collins et al., 2011; Hunter, 2000), to others that relate to race (ethnic minorities) as recorded in census data (Viel, 2011). Studies have also used variables for the percentage of people who have recently moved into an area as a way of identifying migrant populations. In one study, recent migrants were defined as proportion of people not living in an area a number of years (in this case 5) before the 2010 census (see Grineski and Collins, 2010); in another, China's *Hukou* household registry system was used to differentiate between rural and urban households and measure internal migrant population rates (Schoolman, 2012).

The findings in the extant literature most relevant to Hispanic immigrant communities show statistically significant associations between linguistically-isolated households and both large quantity waste generators and proposed Superfund sites at the US national level (Hunter, 2000). They also reveal a link between households isolated by language—those highly likely to face evacuation problems during an actual chemical disaster—and a tendency to reside in areas facing significantly greater exposure to high-impact acute events (Chakraborty et al., 2014).

This indicates that environmental injustices are shaped by forces other than the race and class factors traditionally emphasized; they are also influenced by immigrant presence generally and the associated lack of English-proficiency in particular (Hunter, 2000). Additionally, to better understand patterns of environmental injustice in relation to immigrant communities, a few

EJ analysts have focused on contextually-relevant axes of social inequality, such as English-language proficiency, US nativity and US citizenship status of individuals living in immigrant communities (Collins et al., 2011). This approach avoids lumping people with substantial differences in terms of social class, age and gender into a monolithic group, as is implicitly done by EJ scholars in their quantitative spatial analyses of the aggregated Hispanic/Latino category (Collins et al., 2011). This work demonstrates that examining differences *within* the traditional racial/ethnic categories can uncover significant intra-group patterns of environmental injustice (Collins et al., 2011).

While there is a clear need for more careful examination of mobile populations like Hispanic immigrants and their emplacement in marginal socio-environmental situations, the themes of mobility and migration have not been adequately examined in the EJ literature. In the 1990s and early 2000s, EJ discussions of mobility coalesced (and dissolved) with the “chicken-or-egg debate” (Been, 1994; Boerner and Lambert, 1994; Anderton et al., 1994; Rees, 1992), which focused on ‘which came first, the disadvantaged racial/ethnic minority population or the toxic hazard?’ In a classic example, Been (1994) argued that, when the siting of environmentally-noxious facilities in neighborhoods occurs before the influx of poor/minority residents, one may not attribute the disproportionate toxic burden to racism or classism (Been, 1994). As Pulido (1996) explained, many of those emphasizing the salience of the ‘minority move-in’ thesis sought to challenge the existence of environmental racism as part of a competing racial project to the one being advanced by EJ social movement organizations and scholars. Drawing on critical race theory, Pulido (1996) persuasively argued that it does not matter whether people or a pollution source arrive in a given place first or whether toxic industrial siting decisions intentionally target minority communities, because the end result is the same: The



exposure of disadvantaged racial/ethnic social spaces to pollution and the reproduction of a racist sociospatial order (Pulido, 1996). Thus, at the core of the “chicken-or-egg” debate were competing interpretations, both of how racism operates in society (e.g., via intentional individual acts, or historical-geographical suffusion throughout institutions in society) and how causality in socially disparate patterns of exposure to risks should be evaluated. Little focus, however, was placed on advancing understanding of how processes of mobility and migration might reinforce and/or undo socio-spatial patterns of environmental injustice.

An unfortunate consequence of the “chicken-or-egg” debate was the analytical abandonment of mobility and migration in EJ research. There are obvious reasons why EJ scholars might collectively avoid mobility and migration as topics of inquiry. Aside from the theoretical cul-de-sac of the debate, EJ scholars, who tend to adopt strong normative positions, typically avoid conducting research that might be harnessed by others to support erroneous interpretations regarding racism’s absence and/or justice’s presence. Case studies highlighting racial/ethnic minority group movement and settlement within the production of environmentally unjust urban landscapes would certainly be amenable to such erroneous interpretations. It is important to clarify that I do not condemn EJ scholars for neglecting to focus attention on mobility and migration; in fact, I am in fundamental agreement with Pulido’s (1996) core argument. I recognize that the politicized nature of the debate justified retracting focus from the movement of socially disadvantaged groups into hazardous spaces. Rather, my contention is that EJ scholars must not limit inquiry according to the “chicken-or-egg” debate any longer, and that they must begin to more carefully examine the roles of mobility and migration in the production of unequal urban environmental risk.

The limited EJ focus on mobility and migration as a consequence of the “chicken-or-egg” debate is especially relevant when speaking of immigrant communities. Since analysts can generally assume that most individuals who comprise these communities ‘moved in’ subsequent to the emplacement of sources of toxic pollution, immigrant communities represent a case type that EJ scholars systematically diverted their analytical attention from in reaction the debate. This is unfortunate, since it is especially true in the case of immigrant communities that underlying sociospatial structures must be carefully analyzed in order to clarify processes of racial/ethnic marginalization, including the role of white-Anglo privilege, in the production of distributional injustices. For example, Pulido (2000) argues that historical-geographical processes of suburbanization and decentralization in US cities have reflected the prevailing system of white privilege, and have contributed to the contemporary raced and classed patterning of environmental injustice (Pulido, 2000). Thus, following World War II, societal institutions facilitated mobility for advantaged social groups, enabling “white flight” from city centers to the suburbs, in effect, providing white-Anglos with privileged access to safer living spaces away from pollutants, leaving minority racial/ethnic groups to bear the brunt of exposures to hazardous pollutants (Pulido, 2000). Meanwhile, those same societal institutions imposed structural barriers to mobility among disadvantaged racial/ethnic minority groups, virtually entrapping them in polluted spaces (Bullard et al, 1994).

## **2.2 IMMIGRANT SETTLEMENT DISTRIBUTION**

From a general migration perspective, the problem of disproportionate exposure of immigrants to toxic pollutants results in part from minority racial/ethnic group settlement patterns and the tendency for such groups to cluster in highly polluted and hazardous urban spaces. However, the roots of this problem cannot be explained simply by determining which

came first, the population or the toxic hazard (although this determination may inform an explanation). A complete explanation can only be achieved through contextual examination of the social structural dynamics that channel people into toxic spaces and keep them living there.

Through their urban ecological spatial models, early 20th century urban sociologists from the Chicago School established that immigrant settlement processes are not spatially random within cities (Gottodiener and Hutchison, 2006). In earlier years of industrialization migrants tended to settle near places of employment, which offered lower housing and transportation costs (Massey, 2003). Immigrant communities have long been established in cities that have a history of receiving immigrant populations. Due to the process of chain migration, more immigrants continue to arrive in these cities, and for practical reasons, they tend to settle in these ethnic communities. The problem is that many of these communities are located near the central business districts of urban areas, which prior EJ research suggests are likely to pose relatively high risks from technological hazards (Hunter, 2000).

Theories of immigrant conflict and accommodation such as the “melting pot” theory, argued that “assimilation” would occur gradually and over several generations. It was believed that this “assimilation” would also bring upward economic and social mobility, which would prompt immigrants to leave these high-risk communities. Challenges to this argument have suggested that there are institutional impediments that may prevent certain immigrant groups from realizing their full potential, such as economic and political constraints; also important to note is that mobility and success are often functions of business cycles (Gottodiener and Hutchison, 2006). When the economy is slow, upward social mobility is extremely difficult for newly arrived residents; concomitantly, outward spatial mobility to lower risk (and higher cost) residential environments is made difficult (Gottodiener and Hutchison, 2006).

Portes and Rumbaut (2008) note that it is most common for immigrants to arrive where a community already exists. Ethnic communities cushion and protect immigrants against outside prejudice and initial economic difficulties (Portes and Rumbaut, 2008). Ethnic enclaves tend to buffer the arrival of new immigrants (Valdez, 2011), which may ultimately trap individuals into living comfortably in hazardous environments by discouraging them from moving into communities with different racial/ethnic composition. Immigrants may also experience discrimination when they journey outside of their ethnic community. Thus, there are beneficial internal group factors that lead to residential congregation among co-ethnics, but there are also negative external factors, such as discrimination, that influence the segregation of ethnic immigrant groups in US cities. In this way, environmental justice issues become intertwined with social justice issues that affect immigrants. On the one hand, research shows that immigrants who have access to co-ethnic networks in their places of arrival fare better socially and economically than those who do not (Portes and Rumbaut, 2008); on the other hand, due to historical-geographical processes of enclave formation and racial/ethnic segregation, these communities may be located in hazardous urban zones (Bullard et al, 1994).

### **2.3 HOUSTON MSA: THE STUDY AREA**

Greater Houston (i.e., the Houston-Sugar Land-Baytown MSA) is appropriate for this research study because of its racial/ethnic diversity, which includes a substantial number of Hispanic residents, as well as the high levels of air pollution found in the area. Greater Houston is the sixth largest MSA in the United States with a total population of 5.9 million (2010). According to the 2010 census, Latinos comprised 35.3% of the population, while non-Hispanic whites were 39.7%, and non-Hispanic blacks, 16.8%. Airborne emissions from numerous point, area, and mobile sources contribute to elevated levels of ambient exposure to hazardous air

pollutants in Greater Houston (Sexton, 2007). The two counties facing the greatest cumulative cancer risk from air pollution in Texas are located in this 10-county MSA (EPA 2009).

Air toxics are a significant health threat in Greater Houston because the area is home to the world's largest petrochemical complex (Linder et al., 2008) and is notorious for being the “plan-less, free enterprise city” (Feagin, 1988). The Houston MSA carries a quarter of the nation's refining capacity, and a large part of this industry (approximately 200 facilities) lies along a ship channel that flows 50 miles into the Gulf of Mexico (Linder et al., 2008). Heavy local economic reliance on the production, processing and shipment of oil and natural gas endow the city with a distinctive identity within the national economy – it is the self-proclaimed “energy capital of America” – and also create very high levels of air, ground, and water pollution (Melosi and Pratt, 2007). Houston is also the only major city in the United States without zoning as an element of land use planning; thus, the city has been historically-geographically structured according to a laissez-faire philosophy in which zoning is seen as a violation of private property rights (Qian, 2011). This is a city in which seemingly haphazard market forces instead of social planning have determined urban growth, which has resulted in serious socio-environmental problems (Bullard, 1994; Feagin, 1988). Such an urban development approach prioritizes minimizing costs for potential investors to locate in the city, while at the same time creating less than ideal living conditions, especially for socially marginalized groups (Vojnovic, 2003). For example, due to the lack of zoning, numerous communities are located in dangerously close proximity to the ship channel (Linder et al., 2008). Acute toxic releases are of particular concern since they frequently occur as a result of petrochemical industrial activities. The free-enterprise approach to urban development instituted by Houston's elite, has also led to deficient infrastructure and problems with everyday social life (Feagin, 1988).

There is a significant body of EJ work focused on Houston. Pioneering in the field is Bullard's "Dumping in Dixie" (1991) indicated that people of color and low-income communities in Houston suffer disproportionately from facility siting decisions involving municipal landfills and incinerators. Bullard et al. (1994) also focused on residential segregation in Houston, finding that homes owned and occupied by African American residents are of lower value than other Houstonians.

Relationships between immigrants and risks from technological hazards have not previously been examined in greater Houston. However, studies have documented environmental injustices faced by Hispanic populations there. Linder et al. (2008) found that Houston neighborhoods (within Harris County) in the highest quartile for percent Hispanic were 6.4 times more likely to be at highest risk from air toxics (top 10%) than neighborhoods in the lowest quartile for percent Hispanic. There is also evidence indicating that neighborhoods with higher percentages of Hispanic residents face significantly greater exposure to both chronic and acute pollution risks, adjusting for other covariates (Chakraborty et al., 2014).

On the other hand, there are also studies that challenge the existence of environmental racism in Houston (see Been 1993; Denq, 2000; Yandle and Burton, 1996), either by highlighting methodological inconsistencies in prior studies or through "market forces" arguments that point toward the movement of poor (and incidentally) minority populations into hazardous areas subsequent to industrial establishment. Most EJ studies of Houston have focused on municipal landfills and solid waste management, and only a few studies have examined chronic exposure to hazardous air pollutants (Sexton et al. 2007; Linder et al. 2008; Grineski et al. 2014; Chakraborty et al. 2014).

### **Chapter 3: Methods**

This study seeks to gauge the factors that lead Latino/a individuals into risky living situations; their willingness, ability, and desire to move to safer areas; and their perceptions of the air pollution to which they are exposed at home. It also aims to provide insight into the protective factors shaping the relative safety experienced by Latino/as who live at lower risk to air toxics exposures. In terms of research methods, semi-structured interviews were employed to help account for human-environment interactions, such as people's capacities to perceive risk, assign meaning and take action in their urban environments (Grineski, 2009). In-depth phone interviews were conducted with residents of the greater Houston Metropolitan Area, which consists of 10 counties.

The interview sample was selected from 633 individuals living in the Houston Metropolitan Area, who participated in a phone survey conducted in June of 2011. NATA information provided by the EPA was linked to participants' addresses using GIS as a tool for interview sample selection. The sample was selected to include individuals based on the following characteristics: Hispanic immigrants and U.S. born individuals of Hispanic descent, and, within those two groups, those at the highest (top 25% of all survey respondents) and lowest (bottom 25% of all survey respondents) exposure to cancer risk from air toxics (see Table 1). Selecting individuals with these characteristics allowed for a comparison taking nativity into consideration, which provided insight into the effects of immigrant generational status on social and residential mobility. Interviewing people at the highest and lowest risk of exposure created a basis for comparisons to help explain why some Hispanics live at higher risk than others. This strategy is not only useful as a way to expose differences between groups, but also as a way to

clarify specific factors that have influenced certain groups of individuals not only exhibit greater/lesser mobility, but be more/less exposed to toxic environments.

Table 1 shows the total number of survey participants who consented to be follow-up interviewed over the phone in each group, with the numbers inside parentheses representing the number of people who were actually interviewed (n=29) in each group. I used purposive quota sampling with the goal of 12 completes in “Foreign-Born, High Risk”, 8 in “U.S.-Born, High Risk”, and 5 in both “Low Risk” groups, based on the numbers of potential respondents in each quadrant. I achieved these quotas except in the case of “U.S.-Born, Low Risk,” where I was unable to complete the final interview due to declines, no answers, and disconnected numbers. The first quadrant, foreign-born individuals at high-risk, contained the largest number of participants and thus provided the largest number of interviews; for this reason, emphasis was placed on this quadrant in the results. It was expected that the quadrants for U.S.-born individuals at high risk and low risk would provide insights into the role of intergenerational mobility (or lack thereof) that children of immigrants have experienced. The last two quadrants for individuals at low-risk of exposure provided a point of comparison in order to clarify understanding of why some immigrants are at lower risk than others (e.g., living near agriculture-based livelihood opportunities) and why some US-born Hispanics live at lower risk (e.g., enhanced intergenerational socio-spatial mobility).

**Table 3.1: Interviewee Sampling Quadrant**

	<b>High Cancer Risk from Air Toxics</b>	<b>Low Cancer Risk from Air Toxics</b>
<b>Foreign Born Hispanic</b>	37 (12)	10 (5)
<b>U.S. Born Hispanic</b>	26 (8)	17 (4)

Total Number of Interview Declines: 13



### **3.1 DATA COLLECTION: SEMI-STRUCTURED INTERVIEWS**

Interviews were conducted over the phone in both English and Spanish, depending on the language that the respondent was most comfortable speaking. Interviews were recorded and transcribed (and translated if necessary) in order to facilitate systematic analysis of the data. All participants had already expressed interest in participating in a follow-up interview (when they completed the original survey), and they received a \$20 monetary incentive as a compensation for their time. Interviews lasted an average of 55 minutes and followed a semi-structured format, which provided opportunities for respondents to freely talk about their experiences without the constraints of structured questions.

The interview schedule was approved by the UTEP Institutional Review Board (IRB) and is organized into the following modules: (1) Residential decision making; (2) Risk perception, hazard experiences, and hazard mitigation; (3) Policy support for hazard reduction (see Appendix 1). Each module is separated into sections focusing on air pollution and flooding hazards (since these interviews are being conducted as part of a larger, National Science Foundation project focused on both air pollution and flooding). Questions are open-ended and followed by probes that were used as needed. Each interview schedule was modified according to the information that was previously provided by the respondent in the original survey. Modifications were made prior to contacting the potential respondent. This included adding different questions for foreign-born and U.S-born individuals of Hispanic descent, as a way to understand the experiences of each particular population. An interview protocol was followed in order to keep the interviewing process organized, systematic and consistent. Individuals were called between 5 and 10 times if there was no answer; no messages were left. Each call was

logged into a database in order to keep an exact count of total calls made. Declined interviews were logged, and that person was not contacted again.

The most important parts of the interview schedule for the purpose of this specific study were the residential decision making, risk perception and hazard experience sections. The residential mobility section addressed participant's residential history, what they perceive to be the benefits and drawbacks of their current location, perception of air pollution, desire to move, and barriers to residential mobility. The questions in this section helped get a sense of people's ability to move to safer areas and if they had even considered it. It also provided insight into what people considered to be benefits of enclave living, such as shared cultural norms and familiarity. The section on risk perception and hazard experience focused on the risk that people believe they face, considering their high or low risk status. This was helpful in order to find out if residents of high-risk areas were somewhat oblivious of their risky situation, or well-aware of it (and/or have had negative experiences due to air pollution exposure), yet face other constraints that keep them from moving to safer areas. These sections of the interview also provided information regarding why some immigrant groups are able to live in safer areas, and what factors shape residential safety (e.g., socioeconomic or educational differences, incidental residential choices based on other factors, etc.). Clarifying differences between low-risk and high-risk immigrant groups increased my understanding of the distribution of immigrant populations in relation to hazardous air pollution.

Interviews were conducted with the same person who completed the original survey, thus assuring that all respondents are over 18 years of age, as per the approved UTEP IRB protocol. The information that interviewees' provided was kept confidential, and their names, addresses or other identifying information was not used. A statement of consent was read at the beginning of

the interview which provided the respondent with necessary information on how to contact us, in case she/he may have any questions, as well as assuring the respondent that they can decide not to participate at any time without repercussions. This consent statement also asked for the respondent's permission to record the conversation.

Once interviews were completed, audio files were saved in multiple secured locations in order to prevent loss of information. One copy of each set of interview files was kept in a locked office on a password-protected hard drive, on a password-protected flash drive, and on a secured online storage space. The same back-up process was followed for transcribed interview documents.

### **3.2 ANALYSIS APPROACH**

Interview transcripts were systematically analyzed using qualitative analysis software (NVivo). After having transcribed the interviews, major themes were identified (e.g. residential preferences, factors affecting mobility), and these were used to guide the initial phase of coding. Use of the qualitative analysis software helped in identifying emerging and unexpected themes across all interviews. In the first phase of coding, I identified broad themes and coded from all interviews. After having identified the broad themes, the "matrix query" tool in the NVivo analysis software was used to examine each theme in relation to the four groups identified in the sampling quadrant (Foreign Born- Low Risk, Foreign Born- High Risk, U.S. Born-Low Risk, U.S. Born- High Risk), thus allowing for the themes to be systemically analyzed by group. This method allowed for direct comparisons to be made in the analysis phase of the research, which enabled systematic documentation of similarities and differences between the groups in terms of the factors influencing their relative risk to (or safety from) air toxics..

## Chapter 4: Results

### 4.1 Respondent Characteristics

The interviewees are generally representative of the larger subset of survey respondents (refer to Table 4.2), which is representative of Hispanic immigrant or U.S. born people of Hispanic descent living at high and low risk in the Houston Metropolitan Statistical Area. Although respondents live throughout Greater Houston, they are spatially concentrated in the most populated and polluted county in the metro area, Harris County (refer to Figure 4.1). The tables below describe the interview respondent characteristics. Table 4.2 shows that foreign-born respondents have relatively low average income as well as low average educational achievement (both at high and low risk); also living in single-family homes is much more common for all groups except foreign-born people at low-risk who tend to live in apartments for reasons to be discussed in section 4.3.2.

**Table 4.1: Respondent Characteristics**

Name	Years in the U.S.	Owner/ Renter	High/ Low Risk	Interview Language	Median Income	Age	Sex	Ed.*	Kids in House**
Mariana	17	Rent	High	Spanish	20k-30k	35	F	12	3
Yadira	12	Own	High	Spanish	10k-20k	44	F	17	2
Albert	U.S. Born	Own	Low	English	n/a	70	M	14	0
Ilse	19	Rent	Low	Spanish	20k-30k	56	F	16	1
Samuel	U.S. Born	Own	Low	English	30k-40k	42	M	18	0
Maria del Rosario	36	Own	High	Spanish	Less than 10k	59	F	14	2
Omar	U.S. Born	Own	High	English	20k-30k	77	M	9	0
Annie	U.S. Born	Own	High	English	150k-250k	55	F	16	0
Magdalena	38	Own	High	English	40k-50k	62	F	16	0
Guadalupe	7	Rent	High	Spanish	20k-30k	33	F	12	3

**Table 4.1 Continued: Respondent Characteristics**

<b>Name</b>	<b>Years in the U.S.</b>	<b>Owner/ Renter</b>	<b>High/ Low Risk</b>	<b>Interview Language</b>	<b>Median Income</b>	<b>Age</b>	<b>Sex</b>	<b>Ed.*</b>	<b>Kids in House**</b>
Eloisa	18	Own	High	Spanish	20k-30k	61	F	12	2
Raul	U.S. Born	Own	High	English	10k-20k	37	M	12	1
Lucia	7	Rent	Low	Spanish	10k-20k	40	F	14	2
Luke	U.S. Born	Own	Low	English	100k-150k	67	M	16	0
Maria Elisa	30	Rent	Low	Spanish	40k-50k	60	F	16	3
Joel	U.S. Born	Own	Low	English	10k-20k	33	M	18	0
Luis	12	Rent	High	Spanish	20k-30k	48	M	16	3
Betty	13	Own	High	Spanish	20k-30k	34	F	12	3
Dora	8	Rent	High	Spanish	20k-30k	44	F	14	2
Veronica	U.S. Born	Own	High	English	30k-40k	56	F	12	3
Aida	4	Rent	High	Spanish	20k-30k	n/a	F	12	0
Brianna	U.S. Born	Rent	High	English	Less than 10,000k	53	F	9	1
Edith	U.S. Born	Own	High	English	10k-20k	77	F	14	0
Luz	35	Own	High	English	40k-50k	52	F	12	0
Juan	23	Rent	High	Spanish	75k-100k	62	M	12	0
Araceli	U.S. Born	Own	High	English	10k-20k	68	F	12	3
Mario	12	Rent	High	Spanish	40k-50k	60	M	8	0
Mika	9	Rent	Low	Spanish	20k-30k	31	F	12	3
Anahi	7	Rent	Low	Spanish	10k-20k	37	F	8	4

\*Highest number of years of formal education of any person living in the house that is 18 years of age or older. No Formal Education= 0Elementary= 1-5 Middle School= 6-8 High School= 9-12 Some College/Technical School= 13-16 University Graduate= 17-21

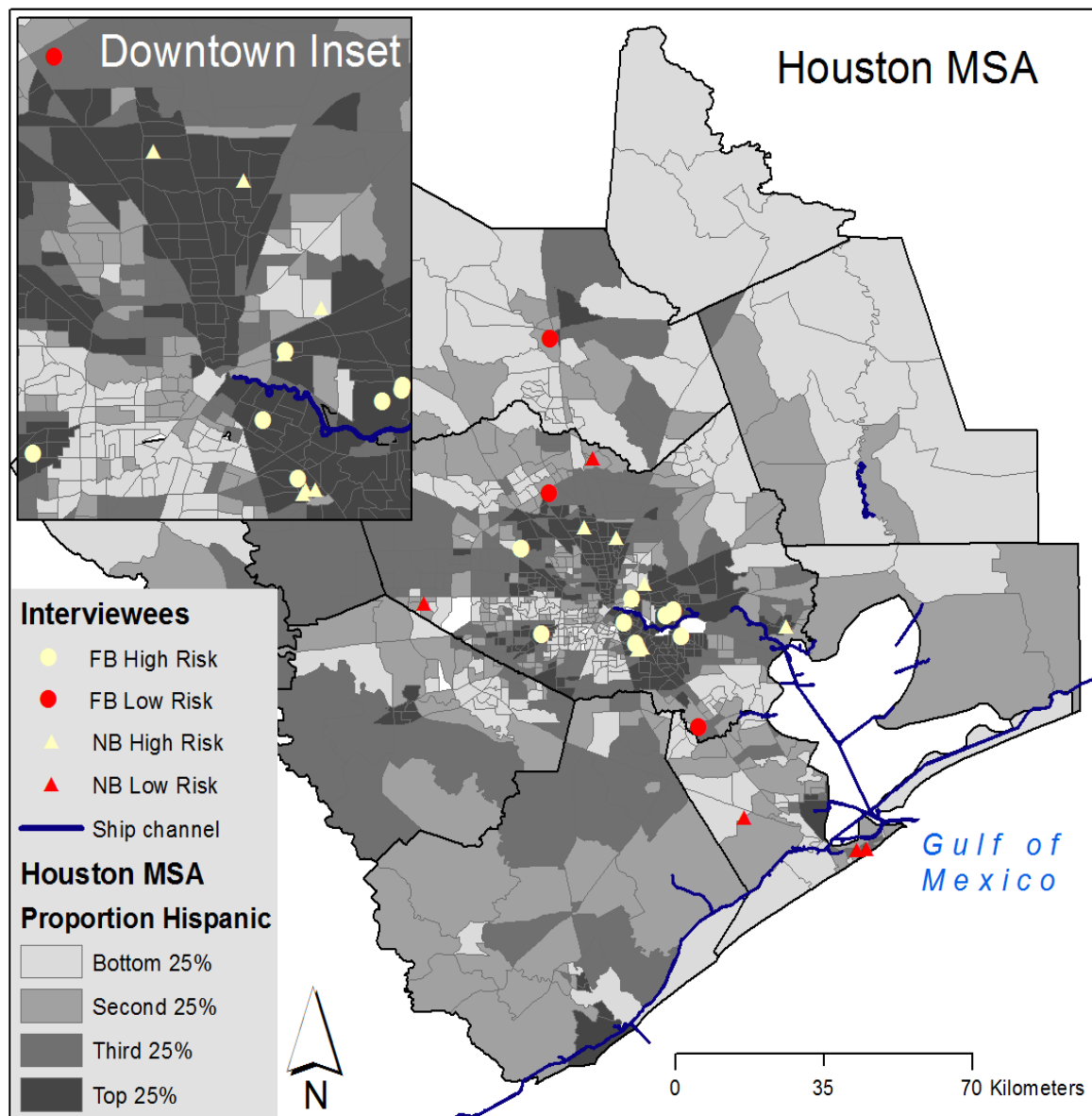
\*\*Residents of the house under 18 years of age

**Table 4.2: Descriptive Data by Group**

	Foreign Born/ High-Risk	U.S.-Born/ High-Risk	Foreign-Born/ Low-Risk	U.S.-Born/ Low-Risk
Spanish Interview	81.1% (91.7%)	7.7% (0%)	76.9% (100%)	6.2% (0%)
Average Household Income	29k (28k)	38k (49k)	26k (25k)	85k (94k)
Average Age	48 (48)	52 (61)	51(45)	49 (63)
Female Respondent	75.7% (75%)	60.5% (75%)	76.9% (100%)	37.5% (0%)
Apartment Living	25.7% (33%)	3.8% (0%)	69.2% (100%)	0% (0%)
Children in Home	70.3% (66.7%)	52% (50%)	83.3% (100%)	46.7% (0%)
Average Education	12 <sup>th</sup> (12 <sup>th</sup> )	Some College (12 <sup>th</sup> )	12 <sup>th</sup> (Some College)	College Grad. (College Grad.)
Average Years in the U.S.	24 (20)	--	22.58 (18)	--

\*The number outside the parenthesis represents the total number of survey respondents in the group, while the number inside the parenthesis represents data for the interviewees analyzed in this thesis.

**Figure 4.1: Houston Respondent Residential Location Map**



## **4.2 Explanations for Living at High Risk to Air Toxics**

Why do Latino/a immigrants and individuals of Latino/a descent in Houston tend to live in areas with relatively high levels of ambient exposure to hazardous air pollutants? What factors have led them into these risky living situations and kept them there?

Five main factors were identified as the main contributors to risk of exposure to air toxics for people of Hispanic descent (both foreign and U.S. born). These are: *financial constraints*, *chain migration*, *comfort*, *more pressing concerns*, and *central location*. While differences exist between the foreign born and U.S. born respondents, the factors that put them at risk are generally similar. Thus, results for these two groups will be reported together; important distinctions between the two groups will be elaborated as part of the analysis. It must be noted that most respondents articulated multiple reasons for why they chose to move to and stay in their place of residence. Most people experience a complex combination of factors that emplace them at risk, and make them less able and/or willing to move to locations at less risk to air toxics.

Table 4.3 shows the five factors contributing to risk of exposure to air toxics for both foreign and U.S.-born respondent groups. The first column shows the total number of people in each group, while the rest of the columns represent the number of people who identified the risk factor as being present in their lives. Table 4.3 indicates that foreign-born people at high-risk face more barriers to safety than do U.S.-born people, although both groups share the same types of risk factors (except for chain migration, which applies only to foreign-born respondents).

**Table 4.3: High-Risk Coded Nodes**

	<b>Number of Respondents in Group</b>	<b>Financial Constraints</b>	<b>Chain Migration</b>	<b>Comfort</b>	<b>More Pressing Concerns</b>	<b>Central location</b>
<b>Foreign-Born/ High Risk</b>	12	9	6	11	5	11
<b>U.S.-Born/ High Risk</b>	8	4	--	8	1	7



#### **4.2.1 Financial Constraints**

Ten out of the twelve foreign-born people at high-risk who were interviewed were well aware of the risk they faced, and three out of the five U.S.-born respondents at high-risk shared this awareness. They mentioned refineries and chemical plants as being the most dangerous to their families' health; however they were confronted with barriers to being able to move to safer areas. The most important barrier to moving identified by respondents was financial constraint. Monthly rents and home prices proved to be more affordable in high-risk areas, and, considering that money was tight for many of these families, the prospect of covering the price of a move was inconceivable. Such was Guadalupe's case.

Guadalupe is a Mexican immigrant from Monterrey who believed she was at much higher risk of exposure in Houston than where she lived in Mexico: "Oh, well, if it was up to me, I would like to live outside of the city. Less pollution and more fresh air, but well- it does not matter what I want, it's what we can afford" (translated from Spanish). Guadalupe is a stay at home mother of two and her husband works in construction. She has been living in the United States for 7 years, and 5 years in her current home. Her family migrated to Houston from Monterrey because her husband had lost his job and was informed of employment possibilities in Houston by relatives already living there. At the time of the interview, they were renting a two bedroom home in a highly-polluted neighborhood in Houston; this is the only neighborhood where they have ever resided in Houston.

Homeownership proved to be one of the most important financial constraints that kept people living in high risk areas. Respondents who owned homes (in high-risk areas expressed that they had worked very hard in order to buy a home, and were particularly proud of being homeowners. However, they were well aware of how polluted their residential areas were, and

they often expressed that they wished their homes were located in safer environments; yet the prospect of selling their home, searching for a home in a different area, arranging another mortgage and paying for a move was out of the question. Such was the case for Mariana, an immigrant from Aguascalientes, Mexico. Mariana and her husband bought a home 11 years ago and are still paying off their mortgage. She stated that while she wanted to move because her children were ill with asthma and allergies, she could not, since they lacked the financial stability to do so. They were in debt with their current home; and she felt that they were not in a good position to attempt to sell it and purchase another. Mariana is a stay at home mother, taking care of her three children, of which two suffer from severe allergies. Mariana has developed asthma in the 16 years since her arrival in Houston, she mentioned not having any allergies or being asthmatic when living in Mexico. Her husband is employed laying train tracks, and their home is located in Galena Park, about one mile away from several chemical plants. As illustrated in the following quote, her experience living so close to chemical plants had been truly dreadful, and although she wanted to move, she was unsure if and when they would be able to afford it.

**Mariana:** it feels like at night they are allowed to open up wherever they are releasing that chemical smell, and at night the smell gets really bad.

**Interviewer:** and so at night the smell does reach your house?

**Mariana:** yes, at night it does, and in fact I have asthma, and that is the reason why we are considering looking for a home elsewhere where chemical plants are not around. One day, about a year ago, there was a big explosion in a nearby plant, and we had to leave because it was releasing chemicals.

**Interviewer:** really? So you had to leave because there was an accident?

**Mariana:** yes, you could hear a really loud explosion, and then the sky was illuminated with a really big fire, and it was all very yellow.

**Interviewer:** wow! Was it during the night?

**Mariana:** yes, it was during the night, and so we were taking a walk outside, and we saw all that, and so we just got in the truck and left, because, because... I mean we knew that there was a danger that it was going to continue exploding and releasing chemicals.

**Interviewer:** right... and did they announce anything – you know, officials from the plant, or something?

**Mariana:** yes, yes, they turned on the alarms, and they did say that we had to evacuate the area.

(Translated from Spanish)

When asked if she had considered moving, she responded with the following:

We're planning on moving. We've been discussing it for a while now... no, well we've just talked about it, my husband and I, but we do not yet have anything for sure. Since we bought our house, we would have to sell it, and search for another, I don't even know what the cost of that would be- but I'm sure we can't afford that right now. (Translated from Spanish)

Both foreign-born and U.S.-born people of Hispanic descent expressed a desire to move away from highly contaminated areas. The difference between these two groups was their level of familiarity with other, more desirable and less polluted neighborhoods. Foreign born individuals spoke about wanting to move to less polluted areas such as “out in the country,” yet they did not mention specific areas to which they would ideally move. Immigrants typically expressed desires to live in less polluted zones, but when money is generally tight – as it was for

most all immigrant interviewees – the option of moving is considered outside the realm of possibility and rarely seriously explored. On the other hand, U.S. born individuals of Hispanic descent had more specific ideas of where they would like to move, such as to the suburbs north of the city. Since most had lived in Greater Houston throughout their lives, they were much more familiar with the metropolitan area, and they were attuned to where relatively more desirable residential settings were located. While they aspired to live in those higher status settings, they also knew that they could not afford the housing prices in those areas.

Some U.S. born individuals had not experienced upward mobility and faced financial difficulties, which oftentimes led them to continue to live at home with their immigrant parents in a high risk neighborhood. Such was the case for Raul, who was born in Houston to immigrant parents and had lived there his entire life. The house where he lived with his parents (the owners of the home) is located a few miles from the Houston ship channel, which contributes to the high levels of pollution in the area. Raul worked remodeling houses and, considering his own and his parents' tight budgets, living at home was a mutually convenient arrangement. He mentioned that the main reason why his parents chose to buy that particular house was due to its affordability. Consider Raul's reflection on air pollution in his residential location:

That's the only thing sometimes – that's the only thing I don't like... 'cause you go to the store or something, you can smell chemicals burning, or whatever they're burning. You can smell that air pollution. Air pollution is a big thing here. I mean, we are probably about- we're probably about 5 miles from that ship channel, four or five miles.

#### **4.2.2 Chain Migration**

Another major factor amplifying Hispanic people's risk to air toxics is the process through which immigrants have settled in certain zones of the city, zones which tend to be near

industrial centers and thus more polluted. Through chain migration, more and more immigrants arrive in these areas in order to join family members or friends from their places of origin. The vast majority of individuals living in high-risk areas reported having relatives and close friends living in the same area, and also having initially been referred to the area by those same people. They also mentioned that they found out about affordable housing in the area through relatives and friends, and would rather stay in the area because they were very comfortable due to the social support they received from their community.

Such is the case for Maria del Rosario, an immigrant from Nuevo Laredo, Mexico. She had been living in Houston for 18 years, and now owns her home. Maria was informed that the house was on sale for a good price by her brother-in-law, who already lived in Houston, soon after she and her family arrived. Her brother-in-law and his family lived a couple of blocks down the street, and Maria noted that the mutual support she and her sister-in-law provided one another in terms of child-care and even financial assistance has been irreplaceable for both families. She said:

Well, the truth was just that, when we came from Mexico, we chose this area because of the family, because we were coming to a place that we were not familiar with, and so we were looking for that support, having someone's help, as opposed to arriving in a new place without knowing anybody. (Translated from Spanish)

While Maria really values living close to her family and people of her same ethnic background, she also recognizes that her neighborhood has many problems. For example, she said that there is a slow-moving stream three blocks away from her home that is poorly maintained by the city and a source of pollution, since it is filled with garbage from a nearby factory. She continued:

I even went over to the city offices to file a report, and then they came by all angry saying that I reported that bayou [slow-moving stream]. No – you wouldn't even believe me – they've even laughed at me. Once some guy came by and said it was the county's responsibility, and then another guy came by and blamed the city. Things like that... And what really upsets me is that the bayou goes all the way towards the west side, but by the time it reaches that side, it is pretty clean. I think it is because there are wealthier people living on that side, and so they keep it clean over there. (Translated from Spanish)

Maria complained that the stream smelled terrible and that she had reported this to city officials multiple times, yet nothing had been done to remediate the issue, at least in her neighborhood. Maria noted that this stream has been getting worse over time, and that when she moved into her home 12 years ago, it was not a problem at all. However, she felt conflicted since she was comfortable living in her home and neighborhood; instead of moving, she would rather call her city council representative to report problems, with the hope that they might one day be addressed.

Yes, as long as God continues to give me life, I will be here. I would not be happy if I had to move elsewhere; maybe I would move, but it would have to be in this same neighborhood because this is where my people are, and there should be no reason why we have to leave our homes to be safe from air pollution. (Translated from Spanish)

The case of Mario, a Mexican immigrant from Monterrey, is also representative of the ways in which chain migration and the desire to have family support affect the residential decisions of immigrants. Mario has been living in Houston for twelve years, but in his most recent home for only 7 months. Mario migrated to Houston in search of work and a better life for his family. He initially moved to a majority Hispanic community and later to a less polluted,

more expensive area, which he and his family liked much better than their most recent residence. However, Mario and his family made the decision to move in with his sister seven months prior to being interviewed in order to be closer to family for support and also due to affordability. His sister's house is located in a highly polluted area of the city in which there is heavy traffic. He reported not knowing if his residential arrangement was going to be long-term, but he did foresee staying there for at least one more year. Like other respondents, Mario's residential choices were determined by a tight budget and familial bonds that pulled his extended family to an undesirable location. Mario was renting a small apartment built in his sister's backyard, and so he was less tied to the area than if he had bought a home there.

The reason [why we ended up living where we live] was that—like I told you—we came to live here with my sister—because I came to live with her and be close to her—she charges us a more reasonable rent—cheaper, and we also share the bills. It's smaller than before, but it's fine. Either way, we are not planning to stay here forever. As soon as we save up for a house, we will look in a different area.

Again, I refer to Mariana's case, introduced in the previous section, to illustrate the ways in which immigrants tend to be channeled into communities where their family and friends are already present. She and her husband are paying a mortgage on their home, and so financial constraints have kept them from moving to a cleaner area; however, the reason why they moved to Galena Park in the first place was because they were referred by relatives and friends:

My husband's brother lives right next door, and he was the one who told us that the house was on sale. There are also many people living in this neighborhood who come from the same town in Mexico as we do. That is why we feel like we are back home, because of the people. But the main reason why we moved here was because my husband's brother

already lived here, and coming from Mexico, we did not know any other area. Now I wish we would have chosen a different place. (Translated from Spanish)

Similar to Mariana, there are many immigrants who are pulled to their places of residence by previously-arriving relatives who offer to help them find places to live. It is culturally assumed that new immigrants would prefer to live close to family members and friends who can help them navigate a new city, a new language and a new culture. The majority of foreign-born respondents living at high risk reported having a rather strong social network that could provide support in the event that they needed help at any given time (from childcare, to borrowing a vehicle in case their own broke down, and even financial assistance from people in the neighborhood). This is a major positive aspect of living among people with a shared background; one clear downside is the undesirable location with very high air toxics exposures.

#### **4.2.3 Comfort**

Seeking comfort in an area goes hand in hand with chain migration, since immigrants report feeling more comfortable if they are among people they know and who make them feel safe in an otherwise unsafe or uncomfortable situation. Respondents living in areas at high-risk to air toxics reported feeling very comfortable in their neighborhoods because they found people who spoke Spanish, as well as religious services provided in Spanish, and grocery stores that sold products from their home countries. Their neighborhoods provided an overall sense of security that sheltered them from an oftentimes threatening outside environment. Consider the following quote from Gabriela, an immigrant from Michoacán, Mexico who has been living in Houston for seven years. Gabriela was asked if she thought that being an immigrant to the



United States had in any way influenced her decision to live where she does, and if it also influenced her choice to stay in that area. She stated:

Well maybe, the truth is that- that is another reason for- for not moving elsewhere, or not going out because you always have that fear in the back of your mind – that worry, and here (in the United States) we always try to do the right thing and to be lawful, and in this neighborhood it is very peaceful. We feel at ease. We have been told about other areas where immigration officers are much stricter and ever-present. We wouldn't want to move into the wrong area and then face those problems. We have never been asked anything here, so we might as well just stay. It is safer. (Translated from Spanish)

Although we did not ask about immigration status, it can be inferred that someone in Gabriela's household is undocumented.

Her case provides insight into factors at play when immigrants (documented or not) make residential decisions, and it is clear that familiarity with an area is of utmost importance.

Gabriela understood that her family was at high risk to air toxics in the neighborhood, and while she mentioned feeling uneasy about that, the level of unease she felt about the quality of the local air paled in comparison to the strength of her feeling at ease in that space socially. Later in the interview, Gabriela added that she and her family looked like many other people in the neighborhood and that if they moved elsewhere, they might call unwanted attention to themselves.

There were other instances, not directly tied to immigration status, in which feeling comfortable operated as a factor that kept people at risk. For example, in Dora's case, a language barrier was the primary reason for not wandering outside of her familiar area. Dora is a Mexican immigrant from Monterrey, Mexico and has been living in Houston for 8 years. Dora moved to

Houston in order to join her husband who had migrated a year prior to her migration and found a well-paying job (compared to his salary in Mexico). Dora mentioned that she liked her neighborhood because she felt comfortable there and knew most of the people. She went on to explain that she always shopped at the same grocery store because everyone at the “Fiesta” (grocery store that sold Mexican and other Hispanic foods) spoke Spanish. Since she was not a highly proficient English speaker (she had taken a couple of English classes at a community center, but did not consider herself fluent), she was afraid of people being frustrated with her if she did not understand what they said. Dora stated:

I would rather just stay in my area. It is nice here, and I don’t have to constantly worry about communicating with white people who do not speak Spanish. I am afraid of getting in trouble and not being able to defend myself because people only speak English, and what if I can’t make them understand what I want? I’d rather just avoid all that.

Eight out of the twelve foreign-born, high-risk respondents had never lived in any other neighborhoods in Greater Houston. Most had temporarily resided in different places (usually smaller apartments or with relatives) after arrival, but had then proceeded to either rent or buy homes in the same neighborhoods. When asked if they would like to live in a different neighborhood, most responded that they did not know their way around any other neighborhoods in the city; they lived and worked within their own neighborhood, and so they would rather just stick to the familiar.

#### **4.2.4 More Pressing Concerns**

Many people living at high-risk to air toxics said that, while they were worried about air pollution and the effect it might have on their own and their family’s health, there were more pressing concerns that required their immediate attention. Having more pressing concerns to

deal with goes hand in hand with financial constraints as factors keeping people at risk because most of the ‘more pressing concerns’ people reported involved making ends meet, finding better-paying employment and getting children successfully through school. It is important to stress that these people were typically aware of the acute air pollution in their neighborhoods, especially foreign-born people who sometimes compared their currently noxious environments to the relatively cleaner air in their places of origin. However, interviewees tended to rank priorities in their lives, and feeding and educating their children, not to mention concealing their own or a family member’s undocumented status, tended to rank much higher than priorities they may have also had to protect themselves against air pollution. Having more pressing concerns in their lives applied to both foreign-born and U.S.-born respondents living at high risk; while the more pressing concerns mentioned by immigrants were related to fear of immigration authorities, and feeding their children, U.S.-born individuals spoke about being concerned with the neighborhood “going down” and neighbors not keeping up their houses.

Luis’ case is illustrative. Luis is a Mexican immigrant who had been living in Houston for 13 years prior to being interviewed. He moved there in search of a better future for his children; he is a strong believer that whoever works hard enough (in the United States) will achieve the ‘American Dream.’ Luis made reference to things of higher importance than air pollution:

Well, all of those things are circumstantial- you talk about your own situation, if you do not have a job, then your concern is going to be about work, and you are not going to care about air or water pollution. All you are going to care about is having an income to support your family. I do worry about air pollution, but what concerns me the most right now is moving to a larger home, where my family is more comfortable, and making sure

that my children attend good schools, that they are not constantly exposed to drugs and gangs at school. So when we move from this apartment, my priority is a larger home at a good price and good schools for my children.

Luis noted that although he was concerned about air pollution, there were other more important things for him to work for. Such was the case of many people who were interviewed. It was difficult for them to say that air pollution was not a high concern, since it affected their family's health, but as Guadalupe, a Mexican immigrant from Monterrey, Mexico put it: "It is more important to first worry about my children getting proper nutrition and attending school in order to later worry about the harm that air pollution has done to their health."

#### **4.2.5 Central Location**

The last factor identified as a main contributor to risk of exposure to air toxics for both foreign and U.S. born people is the common desire to reside in a central location in relation to one's place of work, children's schools, affordable grocery stores and access to public transportation. More than half of the people interviewed (both foreign- and U.S.-born) cited the proximity of their children's schools as a benefit of living in their home. They typically preferred to avoid moving and enrolling their children in different schools, because such moves would force them (the children as well as the parents) to adjust to new places, new people, and new systems. Again, results of the analysis point toward the fact that people often prefer to stick with the familiar, especially when it comes to children's schools.

Central location was of critical importance for Aida, a Honduran immigrant. She is not very close to people in her neighborhood, nor does she have a strong social support network in the United States. The most important factor shaping Aida's choice of home location is her dislike of long commutes:

Well, the benefits [of where I live] are that there are hospitals nearby. I can't really say much more, because the truth is that- well, what I am looking for is hospitals and schools nearby, and that my workplace is also close, because I don't like driving long distances.

(Translated from Spanish)

Residing in a central location was of utmost importance to individuals who either did not drive, or who shared an automobile with another person in their household. For example, Maria del Rosario did not drive since there was only one automobile in her home, which was used by her husband to commute to work. Maria del Rosario was unemployed at the time of the interview, but before she lost her job, she worked for a company that cleaned office buildings in downtown Houston. Maria relied on public transportation to get to and from work, as well as to go wherever she needed during the day when her husband was working. Maria described the benefits of living in her neighborhood:

Actually, the benefits would be that the schools are close, and that we are also close to the downtown area. On the bus we can be downtown in just 10 minutes, and it is also very convenient that there is a bus stop two blocks away from my house. (Translated from Spanish)

Easy access to nearby roads and highways was another reason why people valued central locations for their homes. Rather than viewing nearby roads and traffic purely negatively in terms of air pollution risks, some people, such as Luis, saw clear accessibility benefits in association with their central home locations. Luis explained:

We are in a good central area. Everything is close. We have the freeways about 1 or 2 minutes—5 minutes away is another freeway, the Galleria (mall) is 5 minutes away, and the downtown area. How can I put it? Wherever you want to go, there is an option...

there are lots of restaurants- there are lots of options for everything. (Translated from Spanish)

While some may view heavily-trafficked roads and freeways as hazardous near homes, other people, such as Luis, see them as conveniences that save time on commutes and money on gas.

### **4.3 Explanations for Living at Low Risk to Air Toxics**

The five factors discussed in the above section are the main contributors to risk for foreign-born Hispanics and U.S.-born individuals of Hispanic descent. As was shown by the examples provided, these two groups (U.S. and foreign born) share relatively similar risk factors with some minor between-group differences. However this is not the case for factors keeping people safe. The differences between foreign-born and U.S.-born respondents were distinct to the extent that it only makes sense to report themes separately for the two groups. The four factors that were found to be most important in keeping foreign-born Hispanics safe were *proximity to work, not living close to family and friends from 'back home,' living in a less than ideal home, and feeling comfortable in a diverse environment.*

Table 4.4 shows the coded factors contributing to safety for foreign-born people living at low risk. The number in the first column represents the total number of respondents in that group, while the rest of the columns show the number of people who identified the factors contributing to safety as relevant to their lives. Table 4.4 reveals that the most important factor was living in a less than ideal home, since all respondents identified this factor as important for them. All respondents in this group lived in apartments and at \$25,0000 per year, they had the lowest average income of all 4 groups.

**Table 4.4 Foreign-Born, Low Risk Coded Nodes**

	<b>Number of Respondents in Group</b>	<b>Proximity to Work</b>	<b>Not living close to family/friends</b>	<b>Less than ideal home</b>	<b>Comfortable with Diversity</b>
<b>Foreign-Born/ Low Risk</b>	5	3	4	5	2

In contrast to the foreign-born group described above, the most important factors contributing for safety among U.S.-born individuals of Hispanic descent were *not identifying closely with the Hispanic community*, and *having experienced upward social mobility*. Table 4.5 shows the coded factors that have kept U.S.-born people of Hispanic descent safe from exposure to air toxics. The most important factor was not identifying closely to the Hispanic community since all respondents mentioned this factor, while being upwardly mobile was of importance for three out of four respondents. This group has the highest average income, at \$94,000 annually, and also has the highest average educational achievement, with three respondents having a college degree and one having finished two years of college.

**Table 4.5: U.S.-Born, Low Risk Coded Nodes**

	<b>Number of Respondents in Group</b>	<b>Does not Identify with Hispanic Community</b>	<b>Upwardly Mobile</b>
<b>U.S.-Born/ Low Risk</b>	4	4	3

The different types of safety factors affecting these two groups show that most foreign-born respondents had to compromise some aspect of their life (e.g., living in smaller homes and living away from family members) in order to live in an area that was relatively safe from air

pollution, while U.S.-born individuals at low risk were much more active in the residential decision-making process because of their increased access to resources (financial, cultural, etc.).

#### **4.3.1 Why Some Hispanic Immigrants Live at Low Risk**

##### **4.3.1.1 Proximity to Work**

The first factor identified as being protective for foreign-born individuals was proximity to work. In most of these cases, that the respondent moved to an area at low-risk to air pollution was a coincidental result of a work-related move. For example, consider the case of Lucia, a Mexican immigrant who had been living in Houston for 7 years. Lucia had only been living in her current residence for the past 3 years, before that she lived in a more polluted area of the city. The reason why she moved from her prior residence was because she separated from her husband, with whom she shared a house. The reason why Lucia moved to her current residence was to be close to her job, since she had been working there before the divorce.

**Interviewer:** how far away is your place of work?

**Lucia:** In car, I would say about 3 or 4 minutes

**Interviewer:** Oh well that's pretty close, and what type of work do you do?

**Lucia:** [I am a] stocker in a store... putting merchandise on the shelves, you know?

**Interviewer:** Oh, all right, I see. Would you say that your work life has influenced your choice to live where you do? If yes, in what ways?

**Lucia:** Yes, definitely, that was the sole reason why I decided to come to this area after I separated from my husband...

(Translated from Spanish)

Although Lucia is aware that the area where she now lives is cleaner and has less traffic, that was not the reason for her move there. She mentioned that she does not like driving very



much and that she values the convenience of being so close to work. Lucia reported liking the residential area for its peace, tranquility and very low crime rate; she also noted distinct drawbacks (such as having to pay higher rent for a smaller space). So, for Lucia, moving to a less polluted area was a tradeoff.

Maria Elisa also had been living in an area at low risk to air pollution in Houston at the time of the interview. Maria Elisa is a Mexican immigrant from Tamaulipas. She immigrated to Houston over 30 years ago, but has been living in her current home for less than a year. She and her family lived in a rented house in the Rolling Creek area of Houston for a little over 10 years before moving to the apartment where they now live. The reason they moved from their rented house was due to her husband's job. Maria Elisa noted that it is a very convenient arrangement for them, since her husband is a maintenance and landscape worker in the same apartment complex where they live. Not only does he not have to commute to work but they get a good discount on their rent. Maria Elisa explained that her husband was previously employed in construction, and their rented house was close to the sites where he worked. He later lost his construction job, and began working in an apartment complex that was much further from their house. As a consequence, moving into that same apartment complex where he was employed was the best option for them.

Maria Elisa was well aware that her current home is in a more environmentally desirable area. She also reported being very happy living there because it was much more peaceful and quiet compared to her previous home. Maria Elisa's move to this location was a consequence of her husband's job, and it would not have happened under different circumstances. She and her family were not active in the process of choosing the area; in fact, she noted that if it had not been for the job, they would still be living in the house they rented before. Maria Elisa is happy

with her current area, but not so happy with the residential arrangement itself due to the small apartment unit. This negative factor will be discussed in the following section.

#### **4.3.1.2 Less than Ideal Home**

Accepting life in a less than ideal home is a common factor that unites foreign born individuals at low risk for air pollution hazards. Four of the five foreign born people at low-risk who were interviewed lived in apartments, while one lived in a trailer that she and her family owned. All five interviewees reported that their ideal living arrangement would be a house in the same area, but they could simply not afford the cost of buying or renting a house there. Some people, such as Maria Elisa, whose case was described in the previous section, had lived in rented houses in more affordable areas of the city. These people expressed feeling conflicted about having to choose between a clean/peaceful area versus a more and spacious home. Both of the respondents whose cases were outlined above compromised their desires to live in more spacious single family homes in order to live closer to work, in safer and cleaner locations. Maria Elisa was the woman whose husband did maintenance work for the apartment complex where they also lived. Before moving to that apartment complex, they had lived in a rented house, which she discusses in the following excerpt:

**Interviewer:** How about the house itself? How does your current home compare to the house where you used to live before?

**Maria Elisa:** [laughs] No, that one was much better.

**Interviewer:** Why would you say that? Was it bigger and nicer?

**Maria Elisa:** Yes, yes a lot bigger. We had more space, and a house is just so much nicer. There's more privacy.

**Interviewer:** And if you had your choice, regardless of cost, where would you ideally like to live?

**Maria Elisa:** So if money was not a barrier, I would definitely prefer a house, but in this same area where we now live. That way my husband could be close to his job, and we could also stay here where it is nicer, but at the same time have more space.

(Translated from Spanish)

Maria Elisa does not think it is possible for her family to afford the cost of a house in the area where they currently live. Although she likes that it is clean, if it were not for the proximity of her husband's job, she would prefer to move back to the area where rents were more affordable. For her, it is nice to live in a cleaner area, but it is not worth having to compromise her living space. She also mentioned that, although they do not have any immediate plans to move, she also does not want to think of her current living arrangement as being completely permanent.

Lucia is in a very similar predicament to Maria Elisa. After having separated from her husband, Lucia moved to her current area in order to be close to her job. It is also a tranquil and clean area, but she cannot afford the price of a house with her salary as a merchandise stocker. The following is an interview excerpt in which she compared her current apartment to the house where she previously lived in:

**Interviewer:** So how would you compare the place where you live now to the place where you used to live before – like the house or apartment itself?

**Lucia:** Living in a house is much more comfortable because of the space. The kids had more space to play and, here in this apartment, well, the space is much more reduced

**Interviewer:** And if cost was not an issue, where would you ideally like to live?

**Lucia:** I think that around here. I still think the same thing, in this same area, without having to go to areas with lots of traffic. I would prefer a house in this same area. My apartment is fine for now, but I do wish I had more space and a yard for the kids...

(Translated from Spanish)

As is evident from the interviews, these women's situations are similar. For them, having adapted to a more confined living space has operated as a protective factor in relation to air toxics exposures. Neither views their current apartment as a permanent residence. So, it is unclear how long either will continue to live in a low-air pollution location.

#### **4.3.1.3 Not Living Close to Family and Friends from “Back Home”**

As was discussed in the high-risk section, chain migration leads many immigrants to settle proximate to people of their own ethnic background. However, these enclaves tend to be located in areas with relatively high exposure to hazardous air pollutants. Thus, a third factor that protects foreign born individuals from exposure to air toxics is not living very close to family and friends from their place of origin. This protective factor may also be seen as a tradeoff, because many people living within Hispanic ethnic communities spoke of relying on social networks and family ties for social and financial support, while those who live in low-risk areas tend to not be as close to their neighbors.

Take for example the case of Anahi, an immigrant from the state of San Luis Potosi in Mexico, who arrived in Houston seven years before the time of her interview. She had lived with her husband and two daughters in an apartment for the past two years. Anahi reported having found the apartment on her own, and not knowing anybody from the neighborhood when she moved in. The reason Anahi moved from her prior dwelling was because she and her family did not feel safe in that high-crime area. They are now much happier because their current area

is very peaceful and she believes the schools her daughters attend are much better. When Anahi first moved to her area, she did not know anybody who lived there. She later told a friend, whom she knew from her prior neighborhood, about how peaceful and well-kept her new neighborhood was; so her friend moved to the same apartment complex, and has been living there for a couple of months. Anahi spoke of having family and friends from San Luis Potosi living in Houston, but not in her area.

**Interviewer:** So do you have family and friends from Mexico, and more specifically from San Luis Potosi living in your neighborhood?

**Anahi:** Very few, almost none.

**Interviewer:** And do you know anyone from San Luis Potosi living in a different part of Houston?

**Anahi:** Yes, there are some, but they are a bit farther away from here. There were some in my last neighborhood, but not here.

**Interviewer:** In general, do you feel comfortable or uncomfortable where you live? Do you feel like a member of the community?

**Anahi:** Well, sometimes both – sometimes I feel like a part of the community, but sometimes I feel like a stranger because I don't have any family here. If I had family here then maybe- sometimes one feels lonely.

It is clear that for Anahi, the tradeoff was living far from friends and relatives from Mexico. She reported feeling very safe in her neighborhood and being satisfied with the education her daughters were receiving in their local public schools. She did not specifically refer to environmental hazards as a particular concern; Anahi defined risk in a variety of ways, mostly related to the crime and the less peaceful environment in the community where she lived

before. The fact that she and her family are at lower risk of exposure to air pollution appears to be an unintended result of their move.

#### **4.3.1.4 Feeling Comfortable in a Diverse Environment**

The last factor that is influential in keeping foreign-born Hispanics safe from air pollution hazards is feeling comfortable living in an ethnically diverse environment. As was shown in the high-risk section, many immigrants prefer to live among people of their same ethnic background, who also speak Spanish. Many even expressed fear of interacting with people who may discriminate against them for being immigrants, or of venturing into areas of the city where they may call attention to themselves for looking or acting a certain way (based on their skin color or by speaking Spanish); thus, feeling comfortable in a diverse environment increases Hispanic immigrants' residential options and mobility.

Mika is a Mexican immigrant who had been living in Houston for 8 years at the time of her interview. She had moved to her current apartment one year ago, and reported feeling very comfortable there. She moved there in search of a peaceful place to raise her kids; she disliked her last neighborhood because it was 'dirty and noisy'. When asked if she believed that being an immigrant to the United States had influenced her choice to live where she does, she responded:

I don't think so. No, I don't think so. Well, we can live anywhere, right? In Houston one is free to choose where to live. I was not told by anybody where I should go, and I really don't think it matters if one is undocumented. They may still go wherever they please.

Mika reported living in a very diverse neighborhood where there were Whites, Blacks and Hispanics (from different countries). She mentioned liking the neighborhood for its diversity, and for her it was not a tradeoff at all.

However, Mika is different from other immigrants who were interviewed in that she was not afraid to stray from the familiar. She had been attending English classes, and if she encountered a person who did not speak Spanish, she was not afraid of using her recently learned English to communicate. For her, feeling comfortable enough in the city to move away from the Hispanic community has been protective in terms of air pollution risks. All five foreign-born respondents at low-risk of exposure to air pollution said their neighborhoods were diverse, with the majority being black (in one case) and white (in two cases), while the remaining two believed their neighborhoods had a little bit of everything.

#### **4.3.2 Why Some U.S.-born Hispanics Live at Low Risk**

As noted above, the factors keeping U.S. born respondents safe were vastly different from those keeping immigrants safe; therefore they will be discussed separately. Four interviews were conducted within this group, and three of the four reported being much more active in their residential decision-making process when compared to respondents from all other interview strata (both immigrant groups and U.S.-born people at high risk). Three of the four interviewees were third generation Hispanic immigrants (with a grandparent born in Mexico) while one of them was second generation (with a mother was born in Mexico). All four interviewees were homeowners. Three of the four had a high level of control over their residential locational choices and made decisions taking into consideration environmental amenities, including good air quality, among other factors. One respondent did not have such control because he inherited the house from his father. Two respondents lived in Galveston City and had lived there all of their lives; one had built his house near Santa Fe (TX); and the other had inherited a home near Santa Fe. Santa Fe is a predominately affluent, white community in Galveston County. The two

most important protective factors for U.S.-born individuals were *not identifying closely with the Hispanic community* and *having experienced upward social mobility*.

#### **4.3.2.1 Not Identifying Closely with the Hispanic Community**

All four respondents identified as Hispanic because they had a grandparent or parent who had been born in Mexico, however they did not identify closely to the Mexican community in Houston. Three reported understanding a little Spanish, but not speaking it, while one did not speak or understand Spanish at all. None of the respondents had relatives whom they knew in Mexico. This explains why the benefits of living in an ethnic enclave did not apply to this group of people. Their relatives no longer lived in ethnic communities, and there was no apparent reason why any would choose to live among other people of Mexican descent. The connection with Mexican people and identity was simply not there. In the case of these participants, it was not a matter of what they said, but what they did not say in the interview. For example, when asked if they relied on their neighbors for any type of support, they all responded no; with one adding that she was friendly with her neighbors and that they kept an eye on each other's homes when out on vacation. However, these relationships with neighbors were fundamentally different than the immigrants, who reported relying heavily on relatives and friends in the neighborhood. None of these relationships were born from dire circumstances and improved their life chances in any way. When asked if they had ever received assistance of any kind, such as borrowing a car or help finding employment, from people in the community, they all replied negatively.

Another contributing factor was the absence of a Hispanic spouse. Two of the four interviewees were married to people who were not of Hispanic descent, and the other two were unmarried. All four reported feeling very comfortable with diversity, and not caring if their neighborhood was majority white or Hispanic. The factors that were pivotal in these individuals'



residential decisions were for the most part based on amenities, such as being close to the water (for some respondents living in Galveston) and living far from chemical plants and refineries.

For the people in this group, living away from the Hispanic community was not seen as a tradeoff because it would not be beneficial from their perspective. Therefore, not identifying closely with the Hispanic community was protective for them, because they were open to – indeed, they preferred – living away from enclaves elsewhere in the city and had the economic resources to make this possible.

#### **4.3.2.2 Having Experienced Upward Social Mobility**

The most important protective factor for this group of people was having experienced upward social mobility, which U.S. born people at high risk had not been able to achieve. Three of the four respondents had professional jobs with relatively high incomes. Their professions included chemical engineer at a plastics plant, conductor at a refinery, and a computer programmer. The fourth respondent was marginally employed and had not really experienced upward mobility, but he had the advantage of having inherited his father's house, which was located in a relatively desirable Houston neighborhood.

While a few of these interviewees' workplaces may have been hazardous, they were able to buy homes in areas that were far from noxious chemical plants and refineries. They were well educated in the risks of exposure to pollution and even mentioned taking into consideration wind patterns when searching for the locations of their homes. Three respondents said they had to commute over 20 miles to their workplace, but still preferred living outside of the city because it was peaceful and there was more space with less pollution. They were able to afford the cost of commuting as well as more elevated house/property prices.

Consider the case of Luke, who was born and raised in Galveston, Texas. He left the city for a couple of years when he was in military service, but returned in 1979 and, at the time of his interview, had lived there ever since. He lived in Santa Fe, Texas, which is between Galveston and Houston. Luke had worked as a chemical engineer in a plastics plant until his retirement four years prior to his interview, and had since done consulting work. Before living in his current home, he had lived in a house that was a couple of blocks away; he still owns that other home and rents it out. When asked how he chose his house and the particular area as well as the benefits of living there, he responded:

We just bought some additional property, and we built the house. We were able to do exactly what we wanted with it since we built it ourselves- like putting in bigger bedrooms, the windows and fixtures that we wanted- the most important thing for us was having bigger bedrooms. About the area, the lots here are pretty big, open areas- we got 5 acres. We just got a big yard here, sometimes it can be a lot of work, but it's worth it. Compared to living in downtown Houston, there's less pollution, but we also like that it's convenient from Houston, so when we go out, we can go to Galveston to the Beach or go out to the theater or restaurants in Houston. It is conveniently located.

The excerpt above illustrates the benefits that have resulted from Luke's upward mobility. He is the grandson of a Mexican immigrant; Luke has been able to go to college, get a professional job, and thus be financially stable. He has choices when it comes to deciding where to live, and it is clear that he was very active in the process of choosing, or in his case building, a home. The power of social mobility as a protective factor cannot be underestimated.

In summary, there are significant differences based on nativity in terms of the factors that contribute to relative safety from air toxics for Hispanic residents. US-born individuals are

relatively safe from air toxics because they do not feel compelled to live in more heavily polluted Hispanic communities (since they do not identify strongly with them) and because they have experienced upward mobility. In contrast, immigrants achieve safety when they trade off aspects of their life situations in a manner that leads them to reside in less than ideal homes within environments at lower risk to air toxics. Thus, for immigrants safety results from tradeoffs, while for the US born Hispanics it results much more often from having increased access to resources.

## **Chapter 5: Discussion**

The findings of this study demonstrate that immigrant experiences should be analyzed more thoroughly within the field of environmental justice in a manner that recognizes immigrants as forming parts of heterogeneous racial/ethnic populations in the United States. As the Results chapter revealed, immigrant experiences of environmental injustice are distinct from those of non-immigrants in a variety of ways, even within the Hispanic community; thus, they should be examined more carefully using an environmental justice lens. This approach aids in avoiding the assumption of within-group homogeneity, which has led EJ analysts to not take into consideration how racial and ethnic status (as well as immigration status) intersect with other axes of social inequality in contributing to unequal risks (Collins et al., 2011). In general, barriers and constraints figure more prominently as factors influencing exposure to residential air toxics among U.S.-born Hispanics, as compared to Hispanic immigrants. Many Hispanic immigrants engage in chain migration, the process through which they typically settle in socio-environmentally marginalized racial/ethnic enclaves, which include high proportions of both U.S.- and foreign-born Hispanics. These receiving residential areas within metropolitan areas tend to be near industrial centers and major transportation corridors, which are relatively highly polluted spaces. Unlike their U.S.-born counterparts, the Hispanic immigrants (foreign born) examined here exhibited strong attraction to enclave living for reasons described in the Results chapter and reviewed here. In contrast, experiences of U.S.-born individuals of Hispanic descent were similar to other marginalized racial/ethnic minority groups in the U.S. in that the main factors shaping their risk exposures derived from structural barriers to upward and outward socio-spatial mobility, with financial constraint being perhaps most important.

This study also contributes to a heightened focus on immigrant and mobile populations in the field of EJ (along with Crowder and Downey, 2010; Ethan and Ma, 2012; Collins and Grineski, 2010; Raddatz and Mennis, 2013), and demonstrates the value of using qualitative methods (within this field) to examine an understudied population (Boone, 2008; Sze and London, 2008). An important contribution of this study is that it provides evidence of the value of qualitative research in revealing the workings of micro and macro processes in the production of unequal risks, as well as illuminating the mechanisms underlying the quantitative empirical findings that orient much of the literature on EJ. By comparatively examining the four groups created in the sample, this study reaffirms that environmental injustices are shaped by forces other than the race and class factors traditionally emphasized, but are also influenced by immigration (Hunter, 2000).

Hispanic immigrants described the locational benefits associated with living in residential environments at high risk to air toxics much more clearly than did U.S.-born Hispanics. Interviewees reported weighing the costs and benefits of living in particular locations that are heavily contaminated as a result of historical processes of environmental racism. With some degree of rationality, they ranked priorities based on what they viewed as more-or-less pressing issues in their lives. The uncertain harm being done to their families via exposure to air pollution, while alarming to most, was not considered by many to be a highly pressing concern when compared to the other issues in their lives (e.g., concerns about crime and/or making ends meet). In contrast to this study's reductionist focus on risk and safety in terms of exposure to air toxics, for interviewees 'risk' and 'safety' emerged as complex, multifaceted conceptions that referred to environmental and social aspects of their residential environments. Immigrants were typically aware of air pollution, but for most the desire to minimize their family's exposure to air

toxics was not as pressing as the need to keep them away from high-crime areas, to protect against the risk of being caught in situations in which they were unable to communicate due to a language barrier, or to find affordable housing with adequate space. Risk was also evaluated in reference to the fear of being unable to negotiate social life and cultural norms in the U.S. Some such apprehension was more ambiguous—like the fear of facing reprisal for not ‘doing things the right way’ (in terms of social interactions)—while some was more concrete, such as fear of standing out in a whiter community and having one’s own or a family members’ immigration status questioned.

On the other hand, the concept of safety was not only defined as being safe from air toxics, but also as feeling safe among relatives and friends who provided support in an unknown city. Immigrants articulated strong affinities for enclave living; for example, they described how their adjustment to the U.S. was facilitated by fellow residents and local business operators who spoke Spanish, by their kids fitting-in at school among other kids who looked like them, and by the comfort provided by living in a place where they “blended in” and did not call unwanted attention from immigration authorities.

Complex meanings of fear and safety held by immigrants, along with the relative social benefits of enclave living, outweighed the perceived costs of residing in these areas, including relatively acute air toxics exposures. While immigrants acknowledged the obstacles that would confront them if they attempted to live in other areas of Greater Houston (and air toxics exposures were not viewed as the most dangerous phenomena they potentially face in the city), they also conveyed a sense of empowerment experienced by living in Hispanic enclaves. Many felt that enclave living afforded them with the opportunity to reside in a social space that represented the closest approximation to ‘back home’ that they could get in the U.S.

While many immigrant interviewees acted with a large degree of rationality when choosing their residential locations, their marginality is underscored by the fact that their pursuit of desirable homes led them to sites at greatest risk to air toxics in Greater Houston. Thus, the macro-socioenvironmental marginality of Hispanic communities in the U.S. creates a pernicious micro-sociospatial context in which Hispanic immigrants seeking to empower themselves via residential decision-making tend to arrive and stay put in areas at disproportionately high risk to air toxics.

Thus, the environmental injustices experienced by Hispanic immigrants living in high risk air toxics zones can only be understood by examining processes at micro- and macro-levels. Examining this issue exclusively at a micro-level presents the danger of arriving at interpretations that cast doubt on whether this situation constitutes an environmental injustice at all. In practical terms, purely micro-social analysis could provide the empirical basis for the perverse argument that Hispanic immigrants ‘freely choose’ to reside in ethnic enclaves, which coincidentally happen to be high pollution areas, since they feel empowered and ‘safe’ in those locations. We should move beyond such simplistic arguments in order to reach a deeper understanding of the sociospatial processes that have relegated immigrants to toxic spaces. When viewing results of this micro-social analysis in macro-social context, the environmental injustices burdening Hispanic immigrants appear to be actively reproduced as part of a multiscalar process, with both constraining and enabling components, which takes place in a highly unequal sociospatial context. By taking these processes of marginality into consideration this study also contributes to the continuing of the discussion of themes of mobility and migration within EJ; the same themes which have not been adequately examined in EJ literature

since the “chicken-or-egg” debate in the 1990s (Been, 1994; Boerner and Lambert, 1994; Anderton et al., 1994; Rees, 1992).

Through processes of marginalization, Hispanic enclaves in Houston have been historically and geographically situated in more polluted environments, as they have elsewhere in the U.S. (Bolin et al. 2005; Pulido 1996, 2000). As mentioned above, micro-level residential decision-making regarding locational costs and benefits among Hispanic immigrants tends to lead them to dwell in more polluted ethnic enclaves, which actively reinforces patterns of environmental injustice at the macro-level. This highlights what is perhaps the most novel finding of this study: *While raced and classed patterns of environmental injustice have shown to be historically-geographically structured (i.e., they are a legacy of unjust city building processes in the U.S.), they are also actively reproduced through the everyday mobility decision-making of city residents, including groups of people whose decision-making is most constrained and who are most burdened by these arrangements (e.g. Hispanic immigrants).* This highlights the perniciousness of environmental injustice in this case. It also suggests that undoing the pattern of distributive injustice experienced by socially marginal groups will be quite difficult without curtailing levels of toxic exposures that impact the communities into which they are channeled. This findings supports Pulido’s (2000) argument that historical-geographical processes of suburbanization and decentralization in US cities have reflected the prevailing system of white privilege, and have contributed to the contemporary raced and classed patterning of environmental injustice (Pulido, 2000). Residents of these enclaves suffer the consequences of processes that have marginalized the social spaces in which they enjoy the highest levels of comfort and support. Not only are they pulled by the relative benefits of living in these environments, but they are also discouraged from moving to cleaner, predominantly white-Anglo



neighborhoods due to the possibility of facing discrimination and the more certain issue of unaffordability.

This is a situation of environmental justice since, for Hispanic immigrants arriving in Greater Houston and presumably elsewhere in urban America, having to choose between social and environmental safety is a devil's bargain. In order to feel socially safe and comfortable with little capital at their disposal, they must risk their health. The tradeoff confronted by interviewees involved choosing between (a) living in a cleaner environment albeit with less social support and in an undesirable dwelling, or (b) living in a more toxic environment where they enjoyed support from family/friends and where they could afford to rent or own a home as opposed to a much smaller apartment.

Homeownership added to the challenges faced by Hispanic immigrants in an unexpected way, making their experiences of environmental injustice even more pernicious. As was mentioned in the Results chapter, owning a home is an important part of the 'American Dream' that many immigrants internalize and work hard to achieve. However, many end up buying homes in areas where they initially arrive due to affordability and familiarity, among other factors. After saving up for a down payment and covering other homeownership expenses, immigrants find themselves living paycheck to paycheck. If they later develop a desire to move elsewhere, they are typically seriously constrained in doing so (due to indebtedness and the low relative exchange values of their homes); thus, homeownership appears to entrap many Hispanic immigrants in polluted spaces. It is more difficult for them to simply decide to move away from acute air toxics risks. On one hand this problematizes the use of homeowner occupancy in environmental justice research as a general proxy for social advantage, especially when applied to racial/ethnic minority and low socioeconomic status groups. On the other, it reveals how the

pattern of environmental injustice may be reinforced through marginal people's aspirations for social mobility and their pursuit of a higher quality of life. It must be recognized that the obstacles immigrants face every day are more formidable than those faced by individuals born in the U.S. who enjoy increased access to resources and knowledge of how to navigate the city (culturally and spatially). It might be argued that Hispanic immigrants are able to exert something that resembles the ideal of 'free choice', but do they really? Immigrants make decisions that they hope will improve their lot in life, yet constraints seriously restrict their 'range of choice' to the extent that 'choice' is an inappropriate word to associate with their decision-making.

The most significant limitation of this study was that interviews were not conducted in-person with residents in Greater Houston. While interviews at participants' homes would have been ideal, resource constraints made this impossible. The fact that I was unable to experience firsthand all of the sites mentioned in the interviews (e.g., chemical plants and refineries in close proximity to residential areas) is a related limitation. I was able to partially overcome this limitation by integrating secondary contextual data on social and environmental aspects of participants' residential environments, which augmented understanding of their residential circumstances. An important limitation of the study was also that I focused on residential exposure to air toxics only, when work, school and recreational exposures are also important. Another notable strength of the qualitative interview data collected for this project is that they were paired with the quantitative structured survey data, which provided exceptionally comprehensive information on respondents' sociodemographic characteristics.

Another limitation was that some populations may not have been captured in the sample because we only interviewed people who had landline telephone service. This was required

because cell phone lines are not tied to residential locations, and knowing where the person lived was imperative for the sampling strategy of this study. Highly marginalized and mobile populations, such as migrant agricultural workers, were not well represented in the sample due to their lack of long-term residential stability. It is likely that agricultural employment and residents near the fields would also contribute to low NATA air toxics risk for immigrants, but they are missing from this study. Outside of subpopulations with a high degree of residential instability, the systematic random sampling approach implemented here successfully yielded a broadly socially and spatially representative sample of the Greater Houston population. Thus, interviewees in this study are generally representative of the typical Hispanic immigrant or U.S. born person of Hispanic descent living in areas of Greater Houston at high and low risk to air toxics. Another limitation of the sample was the low numbers of interviewees in the low risk groups; having a few more in each group would have strengthened the analysis of factors contributing to environmental safety.

## **Chapter 6: Conclusion**

This study demonstrates that immigrants and U.S.-born individuals of Hispanic descent living at high risk of exposure to air toxics are generally aware of the risk they face, yet there are underlying forces that channel them to and keep them living in environmentally risky situations. It also clarifies factors that are protective for these groups of individuals. While factors shaping immigrants experiences of environmental injustice are similar to other marginalized minority groups, they are different in key ways.

This study sheds light on the heterogeneity of the Hispanic population in the United States by taking nativity into consideration; thus it helps to uncover the ways in which nativity affects people's experience and ability to protect themselves and their families from exposure to air toxics. As was previously noted, not all individuals who identify as Hispanic have the same levels of mobility. U.S.-born individuals of Hispanic descent are more likely (although not always) to have experienced upward social mobility and thus are in a better position to protect themselves and their families from exposure to air toxics. The other protective factor for U.S.-born individuals of Hispanic descent was not identifying closely with the Hispanic community and thus not seeing many of the social advantages that draw immigrants to ethnic enclaves, which are often located in polluted areas. On the other hand, protection for immigrants comes as a trade-off (although it may not be consciously recognized as such), where they must choose to live in less desirable homes (usually apartments as opposed to houses) and have less support from the community in order to access environments with greater safety from air toxics.

As was previously outlined in the results section, the five factors that were found to be the main factors shaping risk of air toxics exposure for Hispanic immigrants and people of Hispanic descent were financial constraints, chain migration, comfort, more pressing concerns,

and central location. These five factors were contributors to risk for both Hispanic immigrants and those U.S.-born individuals of Hispanic descent who lived at high risk of exposure to air toxics. Nativity was not the primary factor shaping high risk exposures; both U.S. and foreign born respondents were affected to some extent by those five factors. There were, however, subtle differences based on nativity. For U.S.-born individuals at high risk, not having experienced upward social mobility, which was associated with financial constraints, was the most relevant risk factor. For immigrants, attributes that made enclave living attractive, such as social support and familiarity, were more influential when compared to U.S.-born individuals.

Considering the complexity of the issue, it is possible that the disproportionate risks experienced by Hispanic immigrants will be dismissed by some as the work of market forces (among other equally erroneous explanations) and not as a social and environmental injustice, as has been done in the past. To fall into this trap once again would be a setback. The choice that many of these people face is a devil's bargain where they must choose between environmental safety and what they consider to be social well-being.

This study contributes to the discussion of the discrimination faced by immigrant communities and people of Hispanic descent in the United States. These findings directly relate to the Hispanic population in Houston, but it stands to reason that they are applicable to other places in the United States. Future qualitative research should be conducted in places where distributive injustices have been found through quantitative analysis in order to clarify explanations and possibly inform efforts to achieve greater justice. While regional differences exist, there are marginalized immigrant groups (not only Hispanic) throughout the United States who suffer from environmental burdens and deserve justice

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## Appendix

### Interview guide used for interviews, English and Spanish

Record:

Respondent Name:

#### Residential Decision Making Module

Residential history (Where have they lived and why?):

**When did you move to ...**

**...your current home/residence?**

**...the Houston Metro area? What brought you to this city?**

**...In what state were you born?** [Write the answer to this down for use later in interview] [Ask the following question if respondent is living in Houston/Miami, but was born in a state other than Texas/Florida] **What brought you to this state?**

[Foreign-born][“q721\_Usborn” = 5] **In what country were you born?** [Write the answer to this down for use later in interview] **What brought you to the US?**

[NOTE: The following questions should trace a residential history of where they lived and why over their life span: where, when, why (both pull and push factors) moves were made]

Where did you live before your current location?

Why did you move from there?

How does your current neighborhood compare to where you used to live in the city?

How does your current home compare to the last home you lived in?

Where did you live before your last move [fill in]? Why did you move from there? Where did you live before that?

#### **How did you identify your current home?**

PROBE: Did you identify it on your own, or did you use a real estate agent or property management company?

PROBE: If you used a real estate/property management agent, did they “sell” you on their current residential location and home? How so?

PROBE: Did they sell you on the home site amenities, on the idea that other residents were “like you”, good economic value or resale value, good schools, good neighborhood or part of town, etc.

PROBE: What did the real estate/property management agent describe as the benefits of the location and home?

Benefits of current location:

**What are the benefits of living...**

**...in your current home?**

**...in your neighborhood?**

**...in that part of the Houston metro area?**

PROBE: In other words, what do you like about living there? What are the attractions of that location?

Specific probes: environmental amenities (e.g., views, trees, parks, coastal access), social benefits (e.g., proximity to family, exclusivity, schools), convenience (e.g. proximity to freeways, shopping, bus routes), and home site characteristics (e.g., home size, number of bathrooms).

**Do you live in this neighborhood partly because of the availability of lower rent/more affordable housing?**

If YES: How did you learn that more affordable housing was available in this area?

**Do you live near where you work? How far is your home from your job?**

What type of work do you do? Can you describe what your position is, and what kinds of tasks you do as part of your job?

Would you say that your work life has influenced your choice to live where you do? If yes, in what ways?

[Racial/ethnic minorities] ["q71\_02\_black" = 1 OR "q71\_03\_nativeam" = 1 OR "q71\_04\_asian" = 1 OR "q71\_05\_pacisland" = 1 OR "q71\_06\_other" = 1] Would you say that you live in a neighborhood that includes mostly residents from minority racial or ethnic groups – in other words, residents who are \*not\* white-Anglos?

If YES: Do you feel more comfortable living in your neighborhood than you would living in a majority white-Anglo neighborhood? Why or why not?

Have you ever been discriminated against? [If Yes] Please describe those experiences to me.

[White-Anglos] ["White\_NotHispanic" = 1] Would you say that you live in a neighborhood that includes mostly residents who are white-Anglos – in other words, residents who are \*not\* from minority racial or ethnic groups?

If YES: Do you feel more comfortable living in your neighborhood than you would living in a neighborhood where residents are mostly from minority racial or ethnic groups? Why or why not?

[Foreign-born] ["q721\_Usborn" = 5] Are there things in your neighborhood that you cannot find in other places in the city, such as grocery stores that sell ethnic foods/products, church services, or people who speak your native language? Please describe.

If YES: Would you say that those things influence your decision to live there?

[Foreign-born] ["q721\_Usborn" = 5] Given what you know about people in your neighborhood who are immigrants, or who cannot speak English, or who lack legal US residency status – do you see reasons why they would prefer to stay there and not go elsewhere in the city? Please explain.

Do you have close ties to people living in your neighborhood?

If YES: Who with? Did you know them before you moved to the area? Did those ties influence why you moved there? Do those ties influence why you have continued to live there? Please explain.

PROBE: Do people provide employment opportunities for each other?

[Foreign-born] ["q721\_Usborn" = 5] [Born out-of-state] [*Ask this question if respondent is living in Houston/Miami, but was born in a state other than Texas/Florida*] Do you know people living in your neighborhood who are from the same home *country/state* [*foreign-born/born out-of-state*], or city-town as yourself?

If YES: are any of those people family members or friends from your home *country/state* or city-town who you knew before you moved to the area? Please explain.

[Foreign-born] ["q721\_Usborn" = 5] [Born out-of-state] [*Ask this question if respondent is living in Houston/Miami, but was born in a state other than Texas/Florida*] Are there other people from your home *country/state* or city-town who you met after you moved to the area? How did you meet them?

Would you say that people in the area where you live provide you with important information or social support, financial support, or any other type of support? Please explain.

*Drawbacks of current location (including hazards):*

**What are the drawbacks of living...**

**...in your current home?**

**...in your neighborhood?**

**...in that part of the Houston metro area?**

PROBE: In other words, what do you dislike about living there? What are the negative aspects of that location?

Specific probes: distance from coastal/river flood zones, factories, refineries, freeways, major roads, crime and blight, inconveniences (e.g., far from school), noise pollution.

**When you completed the original survey, you responded that you think air pollution in the Houston Metro Area is ...** [*READ PARTICIPANT'S SURVEY RESPONSE FOR AIR POLLUTION RISK PERCEPTION*] ["q10\_pollution\_problem": 1 = ... not a problem at all; 2 = ... a minor problem; 3 = ... a moderate problem; 4 = ... a somewhat serious problem; 5 = ... a very serious problem]

**Would you say that your concerns about air pollution influenced your decision to live where you do?**

**Specifically, did any concerns you had about air pollution impact your decision to move to your current home?**

If YES: Please explain how.

If NO: Please explain why your concerns about air pollution did \*\*\*not\*\*\* influence your decision to live where you do.

**When you completed the original survey, you responded that you think flooding in the Houston Metro Area is ...** [*READ PARTICIPANT'S SURVEY RESPONSE FOR AIR POLLUTION RISK PERCEPTION*] ["q12\_floodingproblem": 1 = ... not a problem at all; 2 = ... a minor problem; 3 = ... a moderate problem; 4 = ... a somewhat serious problem; 5 = ... a very serious problem]

**Would you say that your concerns about flooding influenced your decision to live where you do?**

**Specifically, did any concerns you had about flooding impact your decision to move to your current home?**

If YES: Please explain how.

If NO: Please explain why your concerns about flooding did \*\*\*not\*\*\* influence your decision to live where you do.

**Were other factors besides air pollution and flooding were more important influences in your decision to live where you do?**

If YES: Which factors were more important influences and why were they more influential in your decision to live where you do?

If NO: Given the fact that you have concerns about [air pollution and/or flooding] where you live – why did you decide to live in that location?

*Barriers to residential mobility*

**If you had your choice again today, would you choose to live in your current...**

**...Home? If so, why? If not, what has changed your mind?**

**...Neighborhood? If so, why? If not, what has changed your mind?**

**...Part of town? If so, why? If not, what has changed your mind?**

PROBE: [If the respondent wishes they lived in a different neighborhood or part of town]:

**What has stopped you from moving elsewhere? Please describe what you see as the barriers/challenges you would face in trying to move elsewhere.**

If you had your choice, regardless of the financial cost or other constraints that you have in your life, what part of town or neighborhood would you prefer to live in Houston? Why?

[Foreign-born] ["q721\_Usborn" = 5] How long have you been a resident of the United States?

**Do you think that your being an immigrant to the US has influenced your choice to live where you do?**

[Hispanic, US-born] ["US\_Hisp" = 1] Were your parents born in the US? What about your grandparents – were they born in the US? **Do you think that your being a US-born Hispanic American – as opposed to a foreign-born Hispanic immigrant to the US – influenced your choice to live where you do?**

**PROBE: How do you feel about living among foreign-born Hispanic immigrants? Are there specific Hispanic immigrant groups – for example, people from specific countries – which you would prefer to not live near?**

Overall, do you feel comfortable or uncomfortable where you live? In other words, do you feel like you are a member of the neighborhood you are currently living in, or do you feel like you are an outsider? Please explain.

**Do you view your current residential arrangement as being long-term or temporary?**

If TEMPORARY: For how long do you plan to live in your current place of residence? Does that affect the way in which you view air pollution OR flooding where you live? (*Maybe these are seen as less important, since they are temporary.*)

### **Risk Perceptions, Hazard Experiences, and Hazard Mitigation Module**

#### **Air Pollution**

**How would you describe the air quality (or level of air pollution) around your home and neighborhood?**

**What are the sources of air pollution in or near your neighborhood? Please describe them.**

PROBE: For example, a factory, oil refinery or another type of industrial site; a freeway; a truck-stop; a construction site; an airport or seaport; or anything else that you believe creates air pollution.

PROBE: Which source of air pollution do you feel is the most hazardous to your health? Why is it the most hazardous? What is hazardous about it?

In your opinion, what is the most hazardous source of air pollution in the Houston Metro area?

Why is it the most hazardous? What is hazardous about it?

**In general, do you think that air pollution in your neighborhood is more or less of a problem than it is for other neighborhoods in the Houston Metro area? Why?**

PROBE: Why do you think that is the case?

[Foreign-born] [“q721\_Usborn” = 5] Do you see a difference in the air pollution that you are exposed to now, as opposed to the level of air pollution which you were exposed to back home in [Fill in Country][*You should have written down the respondent’s country of birth in the Residential history module*]? Is the air pollution worse where you live now or is it not-as-bad?

**When you think about the concerns in your life, would you say that air pollution is a primary concern, or would you say that there are other issues that are of higher concern to you than air pollution?**

If other issues are of higher concern: Can you describe other things that you worry more about?

PROBES: Making ends meet, employment, providing for others, etc.

**In general, do you think outdoor air pollution plays a role in causing illnesses like cancer or asthma?**

**If YES: how important of a role does it play – for example, compared to family history or behaviors like smoking?**

**If NO: why not?**

**Do you think air pollution has ever impacted your health or the health of your family members?**

**Please explain.**

*[NOTE: We are particularly interested in cancer and respiratory illnesses such as asthma.]*

If YES: what are the sources of the air pollution that created the health problem?

PROBE: For example, traffic, factories, oil refineries, or anything else.

If YES: Where are the sources of this air pollution located in relation to your home?

If YES: Have the health problems occurred at the home where you currently live?

If YES: How were you or other members of your family affected?

If YES: Did you seek medical care? If so, how did they treat the problem? Do you take medications for the problem?

**If YES: Have you moved or thought about moving out of a home or neighborhood to address the problem? Why or why not?**

**Have you taken action in some way to protect yourself and other members of your household from air pollution?**

**If YES: What did you do? Why?**

PROBE: Ask if the person did/does any of these things: staying inside on “bad air” days; buying a HEPA filter; having new windows installed; getting medications or other treatments to treat the health effects of air pollution (inhalers or allergy medications); planting trees

**[If there is a health problem made worse by pollution]: Did these actions help with [specific health problem(s)]?**

**If NO: Please explain why your concerns about air pollution did \*\*\*not\*\*\* influence you to take measures to protect yourself and other members of your household.**

*[IF THE RESPONDENT HAS TAKEN ANY AIR POLLUTION MITIGATION MEASURES BASED ON THEIR RESPONSE TO THE QUESTION ABOVE]:* **Would you say that the measures that you have taken to protect yourself have made you feel better about air pollution where you live? Please explain.**

**What difficulties or barriers have you encountered in trying to take action?**

PROBE: too expensive, don’t know what to do, resistance from other family members, takes too much time or energy, can’t find the right person to do it, not your responsibility, don’t think it would help reduce risk, can’t do it legally because you do not own the property and/or the home or because of covenants, conditions and restrictions, or other rules that prohibit it (like local ordinances)

**Do you believe that there is little that you can do to protect yourself from air pollution? Please explain.**

### Flooding

**Are you concerned about the possibility of a flood, hurricane or windstorm impacting your home and family? (If respondent focuses on only one, such as there is no flooding in their area, ask specifically about hurricanes or windstorms)**

If YES: Is it coastal or inland flooding that you are concerned about?

If YES: What are you concerned about: Damage to your home? Bodily harm? Being prevented from working? Disruption to daily activities?

If NO: Why are you not concerned? Please explain.

**In general, do you think that flooding in your neighborhood is more or less of a risk than it is for other neighborhoods in the Houston Metro area?**

PROBE: Why do you think that is the case?

How much control do you feel that you have over whether or not you and your property are exposed to flooding or damage caused by hurricanes?

PROBE: Please explain why you feel that way?

**Have you or other members of your household ever been affected in any way by flooding?**

PROBE: For example...

...[HOUSTON] Since the year 2000, flood damage has occurred as a result of Tropical Storm Allison (2001), Tropical Storm Fay (2002), heavy rains in October and November 2002, Hurricane Rita (2005 [*largest evacuation in U.S. history*]), heavy rains in June 2006, Tropical Storm Erin (2007), and Hurricane Ike (2008).

If YES: Have you experienced flooding at the home where you currently live?

How many times has this happened? When?

Have you experienced flooding at homes where you used to live? How many times did it happen? When?

**Please describe the most serious storm or flood event you have ever experienced in Houston and what happened.**

HEALTH: Did anyone in your family suffer injuries or health problems? Please describe them.

If YES, injury: How did it happen?

If YES, illness: What do you think caused it?

If YES: How severe was it / were they?

If YES: How long did the problem(s) last?

If YES: What was done to address the injuries/illness(es)? Did they receive medical care? Why or why not?

HOME: Was the home damaged?

If YES: How much did it cost to repair?

If YES: Was the repair done right away and was the work of high quality?

If YES: Was it difficult for you to pay for the repair?

If YES: Who did the work?

WORK: Were you forced to miss any work at your place(s) of employment?

If YES: How severe were the impacts of missing work on your family?

**[Foreign-born, Hispanic, Houston] ["Hou\_FB\_Hisp" = 1] Where did you get information, if at all, about the status of the storm or about resources in the area to assist with evacuation, clean-up, and recovery?**

PROBE: News-media outlets (TV, newspaper, radio), internet, phone calls from family members

(Ask only if SPANISH is primary language) (LANGUAGE = 1) Was information always available in Spanish? What information was available to you in Spanish?



**[Foreign-born, Hispanic, Houston] ["Hou\_FB\_Hisp" = 1] During or after the storm, did you receive any type of assistance, compensation, or program aid?**

PROBE: Ask if they received FEMA aid, Small Business Administration (SBA) Disaster loans, or aid from the Red Cross, Salvation Army, State of Texas, church group and/or local government sources, or any other form of assistance

If YES: How did you learn about these resources? What did you receive?

If NO: Why not?

**[Foreign-born, Hispanic, Houston] ["Hou\_FB\_Hisp" = 1] Did you rely on family, friends, neighbors, church groups, or someone else for help during evacuation, clean-up and recovery after the storm? Please describe how.**

PROBE: reciprocal networks—familial, community, and church sharing? For example, did people share labor to help clean up after the storm, or did people share food or provide a place for others to stay?

If networks were used, ask if resources were shared along ethnic, mutual regional origins in a home country, or church community lines.

What kind of resources did you get from these networks?

PROBE: Food, water, labor, materials for reconstruction, transportation, shelter, clothing or other supplies, etc.

**Did you receive an order to evacuate before the storm hit, and did you evacuate?**

If YES, evacuate:

Why?

How?

Where did you go?

Did you encounter any obstacles in doing so?

How many days were you away from your home? If applicable, how many days were you away from work?

What was the hardest part about this experience? What else was challenging about this experience?

If NO, not evacuate: Why did you stay?

PROBE: Fear of encountering authorities [Foreign-Born, Hispanic]["FB\_Hisp" = 1];

Transportation issues; physical limitations or medical conditions; felt that evacuation was “optional,” not mandatory; did not have anywhere to go or stay; financial reasons; did not want to “make a big deal about it”

**[Foreign-born, Hispanic] ["FB\_Hisp" = 1] Could you tell me about your experiences as a Hispanic immigrant in the storm?**

[Foreign-born, Hispanic] ["FB\_Hisp" = 1] Were you or your family ever exposed to flooding back home in [FILL IN COUNTRY] [*You should have written down the respondent's country of birth in the Residential history module*]? If so, how does that compare to your experiences with the storm?

PROBE: perception that risk of death here is lower; heightened awareness of dangers; knowledge of possible mitigations measures

**[Foreign-born, Hispanic] [“FB\_Hisp” = 1] During or after the storm, do you feel like you had trouble accessing any resources available to impacted residents because of language issues, your status as an immigrant, or because of anything else?**

If YES—why do you think you were unable (or partially able) to access these resources?

PROBE: uninformed, not eligible, resources did not reach their community, fearful

FOLLOW-UP: How were you able to get your basic necessities met given that you had trouble accessing resources?

**[Foreign-born, Hispanic] [“FB\_Hisp” = 1] Looking back, as an immigrant, would you have done anything differently in preparing for, or dealing with the impact of the storm?**

Separate from that storm, have you ever received other orders to evacuate from your home by local officials due to concerns about flooding or a hurricane?

If YES: How many evacuation orders have you ever received?

If YES: Have you received an evacuation order while living at your current home?

If YES: Did you and all members of your household evacuate during those events? Why or why not?

If YES: When was the last time you evacuated?

**Have you taken action in some way to protect yourself and other members of your household from flooding and hurricanes?**

**If YES** [*Write “Yes to flood mitigation” down for use later in interview*]: **What actions have you taken? Why?**

PROBES: evacuation plan, modifications to home like raising it up; installing backflow valves to keep the sewer from backing up inside the home; raising the electrical box, using special flood-resistant materials – such as waterproof sheeting, compounds, and sealants to water proof the home; building a floodwall outside the home.

**If YES: Are there specific actions that you have taken for hurricanes? Describe them.**

**If NO: Please explain why your concerns about flooding did \*\*\*not\*\*\* influence you to take measures to protect yourself and other members of your household.**

**What difficulties or barriers have you encountered in trying to take action?**

**When you completed the survey, you mentioned that some mitigation measures had \*not\* been implemented to reduce the risks of flood damage where you live.**

**For example, you said ...**

[*Ask “q401”, “q402” and “q408” if they have \*not\* implemented those. If they have implemented those [responses = 1], then pick other ones in the following order: “q403”, “q404”, “q405”, “q406”, “q407”, “q409”; the idea is to ask about 3 mitigation measures that respondents have not implemented*]

**[“q401” = 5] – ... that the home structure originally was \*\*\*not\*\*\* elevated or raised to protect against flooding...**

**[“q402” = 5] – ...that the electric components of the home – such as the main electric panel board and outlets – as well as the home’s water heater, furnace, and washer and dryer were \*\*\*not\*\*\* raised to protect against flooding...**

["q403" = 5] – ...that the home indoor heating, ventilation, and air conditioning system components – such as vents and indoor ductwork – were \*\*\*not\*\*\* raised to protect against flooding...

["q404" = 5] – ...that outdoor service equipment – such as air conditioning and heat pump compressors, electric and gas meters, and fuel tanks – were not raised and anchored to protect against flooding...

["q405" = 5] – ...that floodwalls, berms or levees had \*\*\*not\*\*\* been built on site to protect the home from flooding...

["q406" = 5] – ...that back flow valves or check valves had \*\*\*not\*\*\* been installed to prevent flood waters from backing up into the drains, toilets, and other sewer connections of the home...

["q407" = 5] – ...that an interior drainage system – including a sump pump with back-up power – had \*\*\*not\*\*\* been installed to remove any flood water from the home...

["q408" = 5] – ...that hurricane shutters had \*\*\*not\*\*\* been installed...

["q409" = 5] – ...that the roof had \*\*\*not\*\*\* been reinforced to protect against strong winds...

**Please explain why you did \*not\* take those protection actions.**

PROBES: too expensive, don't know what to do, resistance from other family members, takes too much time or energy, would take away from the property's appearance, can't find the right person to do it, not your responsibility, don't think it would help reduce risk, can't do it legally because you do not own the property and/or the home or because of covenants, conditions and restrictions, or other rules that prohibit it (like local ordinances)

**Do you believe that there is little you can do to protect yourself from flooding or hurricanes?**

***[HOMEOWNER AND HAS NFIP COVERAGE FOR HOME AND CONTENTS]  
[RENTER AND HAS NFIP COVERAGE FOR CONTENTS]***

**When you responded to the survey, you mentioned that you had purchased flood insurance from the National Flood Insurance Program to cover damage to the ...**

[HOMEOWNER / HOME COVERAGE / CONTENTS COVERAGE][“HH\_Renter” = 5 / “q41\_NFIPhome” = 1 / “q43\_NFIPcontents” = 1] ... **home AND the home's contents.**

[RENTER / CONTENTS COVERAGE][“HH\_Renter” = 1 / “q43\_NFIPcontents” = 1] ... **home's contents.**

**Is that the case?**

**Why did you purchase flood insurance from the National Flood Insurance Program?**

PROBE: Did your real estate agent or mortgage company tell you that you are required to purchase flood insurance (from NFIP)?

**[In 100-year flood zone] How did you become aware of the fact that you were required to purchase flood insurance? (DO NOT USE UNTIL WE GET INFORMATION FROM MARILYN)**

**Were you required to purchase flood insurance? [If “Yes”]: How did you become aware of the fact that you were required to purchase flood insurance?**

**Would you choose to live where you do without flood insurance – that is, if flood insurance was not available?**

**Would you choose to live where you do if you had to pay 2 times as much for flood insurance? What if you had to pay 3 times as much for flood insurance – would you still choose to live where you do?**

***[HOMEOWNER AND \*NO\* NFIP COVERAGE FOR HOME OR CONTENTS]***

***[RENTER AND \*NO\* NFIP COVERAGE FOR CONTENTS]***

**When you responded to the survey, you mentioned that you had \*\*\*not\*\*\* purchased flood insurance from the National Flood Insurance Program to cover damage to the**

**[HOMEOWNER / NO HOME COVERAGE OR NO CONTENTS**

**COVERAGE][“HH\_Renter” = 5 / “q41\_NFIPhome” = 5 OR “q43\_NFIPcontents” = 5] ...**

**home AND/OR the home’s contents.**

**[RENTER / NO CONTENTS COVERAGE][“HH\_Renter” = 1 / “q43\_NFIPcontents” = 5]**

**... home’s contents.**

**Is that the case?**

**Why have you not purchase flood insurance?**

**Are you aware that your place of residence/home is within a 100-year flood zone, which means it is at very high risk to flooding?**

PROBES: Does it have to do with the cost? Is it because you are not required to where you live? Is it because you don’t want to deal with the government? Are there any other things you do, or have done, to protect yourself or your home that you feel are adequate substitutions for flood insurance? Have you thought about purchasing it in the past? Are you aware that--even as a renter--flood insurance for your property is available to you at a relatively low cost - lower than the market rate? Has the landlord ever mentioned that the housing unit you live in is covered by flood insurance? Would you like to know where you can find more information about how to obtain flood insurance?

***[ASK THIS QUESTION IF THE RESPONDENT ANSWERED “YES TO FLOOD MITIGATION” ABOVE]:*** **Would you say that the measures that you have taken to protect yourself from flooding have made you feel better about flooding where you live? Please explain.**

**In 1968, the U.S. Congress created the National Flood Insurance Program to provide a means for property owners to financially protect themselves, since standard insurance policies do not cover flooding due to hurricanes, tropical storms, heavy rains and other conditions that impact the U.S. As of August 2010, the National Flood Insurance Program was \$18.8 billion in debt. This is because household payments for flood insurance policies do not cover what the U.S. government pays-out to cover the costs of damages due to flooding. Basically, the U.S. taxpayers end up picking up some of the costs of flood damage to properties covered under the Program. Do you see any problem with that? If so, what do you think should be done to address this issue, that is, if you think anything should be done?**

PROBE: Do you think that the federal government should completely do away with the NFIP and put flood insurance completely in the hands of private insurers? Or do you think that the government should raise rates so that they are sufficient to cover costs?

### **Wrap-up Module**

**Would you be willing to send us any materials that could give us a better sense of where you live? We are especially interested in receiving photos of your home, photos of your neighborhood, or photos of your area that relate to air pollution or flooding. Would you be willing to send it to us by e-mail or through regular mail?**

If YES, e-mail: Please send any materials in digital format – like photos – to [twcollins@utep.edu](mailto:twcollins@utep.edu)

Alternatively, if you provide me with your e-mail address, I can contact you and then you can reply by sending your materials to me in digital format.

If YES, regular mail: Please send any materials via regular mail to:

Timothy W. Collins  
Department of Sociology & Anthropology  
University of Texas at El Paso  
500 West University Avenue  
El Paso, TX 79968

**Also, we need to confirm your mailing address in order to immediately send you the \$20 we promised. *[READ THE ADDRESS INFORMATION THAT WE HAVE; ASK IF IT IS CORRECT; MAKE CORRECTIONS IF IT IS NOT CORRECT; IMMEDIATELY SEND THE INCENTIVE AT THE CLOSE OF THE INTERVIEW]*[ADDR; CITY; STATE; ZIP] [IMPORTANT NOTE: THE NAME COLUMNS IN THE EXCEL STRATA FILE (“SURN”; “GIVEN”; “MIDDI”) DO NOT CORRESPOND WITH MOST RESPONDENT NAMES. SEE THE EXCEL “RESPONDENTNAME” FILE FOR RESPONDENT NAMES (CROSS-REFERENCE RESPONDENT NAMES THEM BASED ON “RECORD” FIELD > RESPONSE “QC 80” IN “LABEL” FIELD)].**

**Finally, can we have your permission to contact you again in the coming months to clarify anything that we have discussed today?**

Record:

Respondent Name:

Modulo Sobre Decisiones Residenciales

Historial Residencial (¿Donde han vivido y porque?):

¿Cuando se cambio a vivir a...

...el hogar/residencia donde vive?

...el area metropolitana de Houston? ¿Que lo trajo a esta ciudad?

¿En que estado nacio? *[Write the answer to this for use later in the interview] [Ask the following question if respondent is living in Houston/Miami, but was born in a state other than Texas/Florida]*

¿Que lo trajo a este estado?

[Nacido en el extranjero] ][“q721\_Usborn” = 5] ¿En qué país nació? *[Write the answer to this down for use later in interview]* ¿Que lo trajo a los Estados Unidos?

*[NOTA: las siguientes preguntas trazaran el historial residencial de donde han vivido y porque: donde, cuando, y porque (incluyendo ambos factores de salida como de entrada) se han mudado]*

¿En donde vivió antes de mudarse a su hogar actual?

¿Porque se mudo de ahí?

¿Como se compara el vecindario donde vive ahora con el vecindario en el que vivía en aquella ciudad?

¿Como se compara el hogar donde vive ahora con la zona/hogar donde vivía antes?

¿Donde vivía antes de su ultima mudanza a [fill in]? ¿Porque se mudo de ahí? ¿Donde vivía antes de eso?

¿Como encontró su Hogar/Casa en donde vive ahora?

AGREGAR: ¿Lo identifico usted solo, o utilizo los servicios de algún agente o compañía de bienes raíces?

AGREGAR: ¿Si utilizo a algún agente o compañía de bienes raíces, fueron ellos (agente o compañía) quienes lo convencieron de tomar la decisión de mudarse a su hogar actual?

¿Como hicieron eso?

AGREGAR: Lo convencieron por medio de las comodidades que ofrece la casa/el hogar, por medio de la idea de que los vecinos son “como usted,” buen valor económico en el punto de reventa, buenas escuelas, buen vecindario o zona de la ciudad, etc.

AGREGAR: ¿Cuales fueron las ventajas/comodidades que el agente de bienes raíces expreso sobre la zona y la casa/hogar?

Beneficios de la zona actual:

¿Cuales son los beneficios de vivir...

...en su residencia actual?

...en su vecindario?

...en esa parte del área metropolitana de Houston?

AGREGAR: En otras palabras, ¿que le gusta de vivir ahí? ¿Cuáles son las atracciones de esa zona?

AGREGAR: Beneficios del medio ambiente (árboles, parques, o acceso a la costa), beneficios sociales (cerca de familia, exclusividad, escuelas), conveniencia (cerca de 'freeways' o carreteras grandes, centros comerciales, o rutas de autobús), o características del hogar (tamaño de la casa/hogar, número de baños).

**¿Vive en este vecindario en parte porque las rentas son más bajas o el costo de vida es mas económico?**

SI ES AFIRMATIVO: ¿Cómo supo que era mas económico vivir en esta área?

¿Vive cerca de su trabajo? ¿Qué tan lejos esta su casa de su trabajo?

¿Qué tipo de trabajo hace? Puede describir su posición, y con qué tipo de responsabilidades cuenta.

¿Diría usted que su trabajo influyo sobre su decisión de vivir en donde vive? Si este es el caso, ¿de que forma?

[Minorías Étnicas] ["q71\_02\_black" = 1 OR "q71\_03\_nativeam" = 1 OR "q71\_04\_asian" = 1 OR "q71\_05\_pacisland" = 1 OR "q71\_06\_other" = 1] ¿Se puede decir que usted vive en un vecindario en donde la mayoría de los residentes forman parte de algún grupo o minoría étnica- por ejemplo, personas que no son Anglo- blancos?

SI ES AFIRMATIVO: ¿Se siente usted mas cómodo en su vecindario de lo que se sentiría en un vecindario donde la mayoría de los residentes son Anglo/blancos? ¿Por qué si, o porque no?

¿Alguna vez se ha sentido discriminado/a? [SI ES AFIRMATIVO] me podría describir sus experiencias.

[Blanco-Anglo] [DO I NEED TO TRANSLATE THIS PART?]

[Nacidos en el Extranjero] ["q721\_Usborn" = 5] ¿Hay cosas en su vecindario que no puede encontrar en otras partes de la ciudad, como por decir supermercados que venden productos/comida de su país natal, servicios religiosos, o personas que hablen su lenguaje natal? Por favor explique.

SI ES AFIRMATIVO: ¿Diría usted que esas cosas influyen sobre su decisión de vivir ahí?

[Nacidos en el Extranjero] ["q721\_Usborn" = 5] Considerando lo que usted sabe sobre personas inmigrantes que residen en su vecindario, o personas que no hablan ingles, o que no tienen residencia legal en los Estados Unidos- ¿puede usted identificar razones por las cuales ellos prefieren vivir ahí, en vez de vivir en otras áreas de la ciudad? Por favor explique.

¿Mantiene usted relaciones/amistades cercanas con personas que viven en su vecindario?

SI ES AFIRMATIVO: ¿Con quien? ¿Ya los conocia antes de mudarse a el area?  
¿Influyeron esas amistades en su decisión de mudarse a el area, o de continuar viviendo en esta area? Por favor explique.

AGREGAR: ¿Hay personas en esta area que proveen oportunidades de empleo para residentes de la misma area?

[Nacidos en el Extranjero][“q721\_Usborn” = 5] [Fuera del Estado] [*Ask this question if respondent is living in Houston/Miami, but was born in a state other than Texas/Florida*]  
¿Conoce usted a personas que viven en su vecindario que son originarios del mismo pais/estado, o ciudad que usted?

SI ES AFIRMATIVO: ¿Son algunas de esas personas amigos o familia de su pais/estado o ciudad de origen, a los cuales usted ya conocia antes de mudarse a esta area? Por favor explique.

[Nacidos en el Extranjero][“q721\_Usborn” = 5] [Fuera del Estado] [*Ask this question if respondent is living in Houston/Miami, but was born in a state other than Texas/Florida*]  
¿Hay otras personas que son del mismo pais/estado o ciudad de origen que usted, a los cuales usted conocio despues de llegar a vivir a esta area? ¿Cómo los conocio?

¿Se podria decir que personas que viven en la misma area que usted le proveen informacion importante, o apoyo social, financiero, o de cualquier tipo? Por favor explique.

Inconvenientes de Zona Actual (Incluyendo peligros/riesgos):

**¿Cuáles son los inconvenientes de vivir...**

**...en su casa/hogar actual?**

**...en su vecindario?**

**...en esa parte del área metropolitana de Houston?**

AGREGAR: En otras palabras, ¿qué es lo que no le gusta de vivir ahí? ¿cuáles son los aspectos negativos de vivir en esa zona?

AGREGAR: distancia de la costa o areas propensas a inundaciones, fabricas, refinarias, ‘freeways’ o carreteras grandes, crimen, otros inconvenientes (por ejemplo, muy lejos de la escuela) ruido contaminante.

**Cuando usted respondio a la encuesta original, dijo que usted piensa que la contaminación aérea en el área metropolitana de Houston es...** [*READ PARTICIPANT’S SURVEY RESPONSE FOR AIR POLLUTION RISK PERCEPTION*] [“q10\_pollution\_problem”: 1 = ... not a problem at all; 2 = ... a minor problem; 3 = ... a moderate problem; 4 = ... a somewhat serious problem; 5 = ... a very serious problem]

**¿Diría usted que su preocupacion sobre la contaminacion del aire influyo sobre su decision de vivir en donde vive? Especificamente, ¿tuvieron algo que ver sus preocupaciones sobre la contaminacion del aire en su decision de mudarse a su casa/hogar actual?**

SI ES AFIRMATIVO: Por favor explique.

SI NO: Por favor explique porque preocupaciones sobre la contaminacion del aire

**\*\*no\*\*** influyeron sobre su decision de vivir en donde vive.



**Cuando usted respondió a la encuesta original, dijo que usted piensa que las inundaciones en el área metropolitana de Houston es...***[READ PARTICIPANT'S SURVEY RESPONSE FOR FLOOD RISK PERCEPTION]* ["q12\_floodingproblem": 1 = ... not a problem at all; 2 = ... a minor problem; 3 = ... a moderate problem; 4 = ... a somewhat serious problem; 5 = ... a very serious problem]

**¿Diría usted que su preocupación sobre el peligro de inundaciones influyó sobre su decisión de vivir en donde vive? Específicamente, ¿tuvieron algo que ver sus preocupaciones sobre el peligro de inundaciones en su decisión de mudarse a su casa/hogar actual?**

SI ES AFIRMATIVO: Por favor explique.

SI NO: Por favor explique porque preocupaciones sobre el peligro de inundaciones

**\*\*no\*\*** influyeron sobre su decisión de vivir en donde vive.

**¿Aparte de la contaminación del aire y el peligro de inundaciones, hubo otros factores más importantes que influyeron sobre su decisión de vivir en donde vive?**

SI ES AFIRMATIVO: ¿Qué factores fueron mas importantes en su decisión de vivir en donde vive, y porque fueron mas importantes estos factores?

SI NO: Si usted tiene preocupaciones sobre la contaminación del aire o el peligro de inundaciones en donde vive, ¿Por qué decidió vivir ahí?

#### *Obstáculos que Afectan la Movilidad Residencial*

**Si tuviera que volver a escoger, ¿volvería a escoger vivir en su actual...**

**...Casa/Hogar? Si es afirmativo, ¿Por qué? Si no, ¿Qué le ha hecho cambiar de parecer?**

**...Vecindario? Si es afirmativo, ¿Por qué? Si no, ¿Qué le ha hecho cambiar de parecer?**

**...Área de la ciudad? Si es afirmativo, ¿Por qué? Si no, ¿Qué le ha hecho cambiar de parecer?**

AGREGAR: [Si a la persona le gustaría vivir en otra parte de la ciudad, o en otro vecindario]: **¿Por qué no se ha mudado? Por favor describa los obstáculos o dificultades que usted cree que tendría que enfrentar si decide mudarse a otro lugar.**

Si usted pudiera escoger, sin tomar en cuenta el costo u otros obstáculos, ¿en cual parte de la ciudad o vecindario en Houston le gustaría vivir? ¿Por qué?

[Nacidos en el Extranjero] ["q721\_Usborn" = 5] ¿Cuánto tiempo ha vivido en los Estados Unidos? **¿Cree usted que el ser un inmigrante en los Estados Unidos influye sobre su decisión de vivir en donde vive?**

[Hispano, Nacidos en E.U.] ["US\_Hisp" = 1] ¿Son sus padres nacidos en los Estados Unidos? ¿Son sus abuelos nacidos en los Estados Unidos? **¿Cree usted que el haber nacido en los Estados Unidos y ser de descendencia Hispana, en vez de haber nacido en el extranjero y ser inmigrante a los Estados Unidos, influyó sobre su decisión de vivir en donde vive?**

AGREGAR: **¿Cómo se siente usted viviendo en una comunidad de inmigrantes Hispanos que son nacidos en el extranjero? ¿Hay algunos grupos de inmigrantes, por decir que sean originarios de algún país en específico, de los cuales a usted no le gustaría vivir cerca?**

En general, ¿se siente usted cómodo o incomodo en donde vive? En otras palabras, ¿siente usted que es un miembro de la comunidad en donde vive, o se siente como un extraño? Por favor explique.

**¿Piensa usted que su residencia actual es permanente o temporal?**

SI ES TEMPORAL: ¿Por cuánto tiempo cree usted que va a vivir en su residencia actual?  
¿Cree que eso afecta la forma en que usted ve la contaminación del aire o el peligro de inundaciones en donde vive? (*Puede ser que sean menos importante porque la estancia es temporal*).

### **Percepción de Riesgos, Experiencias con Peligros/Desastres, Atenuación de Peligros/Riesgos**

#### **Contaminación del Aire**

**¿Cómo describiría la calidad del aire (o el nivel de contaminación aérea) en su casa y vecindario?**

**¿Cuáles son las fuentes de contaminación aérea en, o a los alrededores de su vecindario?  
Por favor descríbalos.**

AGREGAR: Por ejemplo, fabricas, refinería de petróleo, otros tipos de sitios industriales; una carretera grande (*freeway*), una parada de camiones; algún sitio de construcción, un aeropuerto o un puerto marítimo; o cualquiera otra cosa que usted crea que causa contaminación.

AGREGAR: ¿Cual fuente de contaminación cree usted que es más peligrosa para su salud? ¿Por qué es la fuente más peligrosa?

En su opinión, ¿cual es la fuente contaminante (del aire) más peligrosa en el área metropolitana de Houston? ¿Por qué?

AGREGAR: ¿Y porque cree que esto sea así?

**En general, ¿cree usted que la contaminación del aire en su vecindario es mas problemática, o menos problemática que en otros vecindarios del área metropolitana de Houston/Miami? ¿Por qué?**

[Nacidos en el Extranjero] [“q721\_Usborn” = 5] ¿Ve usted alguna diferencia en el nivel de contaminación aérea a la cual esta expuesta/o ahora en comparación con la contaminación aérea a la cual estaba expuesto/a en in [Fill in Country][*You should have written down the respondent’s country of birth in the Residential history module*]? ¿Es peor la contaminación ahora, o no esta tan mal como antes (en su país de origen)?

**Cuando piensa en las preocupaciones de su vida, ¿se podría decir que la preocupación sobre la contaminación aérea es bastante importante, o hay otras preocupaciones que toman prioridad por encima de la contaminación aérea?**

[Si hay otras cosas que son más importantes]: Podría describir las otras preocupaciones que son mas importantes para usted?

AGREGAR: preocupaciones económicas, empleo, mantener a otros (familia).

**En general, ¿cree usted que la contaminación del medio ambiente causa enfermedades como cáncer o asma?**

**SI ES AFIRMATIVO:** ¿Qué tan importante cree que es el medio ambiente en cuanto a estas enfermedades? Por ejemplo, en comparación con el historial familiar, o fumar.

**SI NO:** ¿Por qué no?

**¿Cree usted que la contaminación aérea haya impactado de alguna forma su salud, o la salud de algún miembro de su familia? Por favor explique.**

**[NOTA: LO MÁS IMPORTANTE ES SABER SOBRE CANCER O ENFERMEDADES RESPIRATORIAS COMO ASMA]**

**SI ES AFIRMATIVO:** ¿Cuáles son las fuentes de contaminación aérea que causaron este problema?

**AGREGAR:** Por ejemplo el tráfico, fábricas, refinerías de petróleo, o cualquier otra cosa.

**SI ES AFIRMATIVO:** ¿Están las fuentes de contaminación localizadas cerca de su casa?

**SI ES AFIRMATIVO:** ¿Se presentaron estos problemas de salud en la casa/hogar en donde reside actualmente?

**SI ES AFIRMATIVO:** ¿Cómo se vieron afectados usted y su familia?

**SI ES AFIRMATIVO:** ¿Busco ayuda medica? ¿SI, si como es que le dieron tratamiento al problema? ¿Tomo usted medicamento para aliviar el problema?

**SI ES AFIRMATIVO:** ¿Se ha mudado, o ha considerado mudarse a otra casa o vecindario para aliviar el problema? ¿Por qué, o por qué no?

**¿Ha tomado medidas de alguna forma para protegerse a si mismo, o a miembros de su familia de la contaminación del aire?**

**SI ES AFIRMATIVO:** ¿Qué hizo? ¿Por qué?

**AGREGAR:** Preguntar si la persona practica (o practico) lo siguiente: no salir afuera en días de “aire malo”, comprar un filtro de aire (HEPA); instalar ventanas nuevas; tomar medicamento y tratamientos para aliviar los efectos de la contaminación aérea (inhaladores, o medicamento para la alergia); plantar arboles.

**[Si existe alguna complicación medica que se empeora con la contaminación]:**

**¿Ayudaron las medidas que tomo para mejorar su enfermedad?**

**SI NO:** ¿Por favor explique porque sus preocupaciones sobre la contaminación aérea no fueron suficientes para que tomara medidas protectoras?

**[IF THE RESPONDENT HAS TAKEN ANY AIR POLLUTION MITIGATION MEASURES BASED ON THEIR RESPONSE TO THE QUESTION ABOVE]:** ¿Se podría decir que las medidas que ha tomado para protegerse la han hecho sentir mejor sobre la contaminación aérea en la zona en donde vive? Por favor Explique.

**¿A qué dificultades u obstáculos se ha usted enfrentado al tratar de tomar acción?**

**AGREGAR:** es muy caro, no sabe que hacer, se oponen otros miembros de la familia, toma mucho tiempo o energía, no ha encontrado a la persona correcta para hacerlo, no es

su responsabilidad, no cree que reduciría el riesgo, no puede hacerlo legalmente porque usted no es dueño de la propiedad o casa, o por acuerdos, condiciones o restricciones, u otras reglas que se lo prohíben (leyes locales).

**¿Cree usted que hay muy poco que pueda hacer para protegerse de la contaminación del aire? Por favor explique.**

### Inundaciones

**¿Le preocupa la posibilidad de una inundación, huracán o tormenta de viento que le perjudique a usted o a su familia?**

SI ES AFIRMATIVO: ¿Esta usted mas preocupado por inundaciones en la costa o tierra adentro?

SI ES AFIRMATIVO: ¿Qué es lo que a usted le preocupa: daño a su hogar/casa? ¿Daño a su persona? ¿No poder trabajar? ¿o interrupción a sus actividades diarias?

SI NO: ¿Por qué no le preocupa esto? Por favor explique.

**En general, ¿cree usted que las inundaciones en su vecindario son mas problemáticas, o menos problemáticas que en otros vecindarios del área metropolitana de Houston? ¿Por qué?**

AGREGAR: ¿Por qué cree usted que esto sea así?

¿Qué tanto control cree usted tener sobre el estar (o no estar) usted y su propiedad expuestos a danos causados por inundaciones, huracanes o tormentas de viento?

AGREGAR: Porque explique por que piensa así.

**¿Alguna vez han sido usted o su familia afectados por inundaciones?**

AGREGAR: Por ejemplo...

...[Houston] Desde el año 2000 danos por inundaciones ocurrieron como resultado de la tormenta tropical Allison (2001), la Tormenta Tropical Fey (2002), lluvias severas en Octubre y Noviembre 2002, el Huracan Rita (2005 [la evacuación mas grande en la historia de los Estados Unidos]), lluvias severas en Junio del 2006, la Tormenta Tropical Erin (2007), y el Huracan Ike (2008).

AGREGAR: ¿Ha tenido usted alguna experiencia con inundaciones en la casa/hogar donde actualmente vive?

¿Cuántas veces ha ocurrido esto? ¿Cuándo?

¿Tuvo usted experiencias con inundaciones en la casa/hogar donde solía vivir? ¿Cuántas veces sucedió? ¿Cuándo?

**¿Por favor describa la tormenta o inundación mas seria que haya vivido en Houston, y que fue lo que paso?**

SALUD: ¿Sufrió algún miembro de su familia daños o problemas de salud? Por favor descríbalos.

SI ES AFIRMATIVO                      lesión: ¿Cómo sucedió?

Enfermad: ¿Qué piensa usted que lo causo?

¿Qué tan severo fue, o fueron?

¿Cuánto duraron los problemas, o el problema?

¿Qué se hizo para aliviar las lesiones/enfermedades? ¿Recibieron atención médica? ¿Por qué, o por que no?

HOGAR: ¿Sufrió daños su hogar/casa?

SI ES AFIRMATIVO: ¿Cuánto costo reparar los daños?

¿Fueron hechas las reparaciones inmediatamente, y fue el trabajo de buena calidad?

¿Fue difícil para usted pagar las reparaciones?

¿Quién hizo el trabajo?

TRABAJO: ¿Tuvo usted que faltar a su trabajo?

SI ES AFIRMATIVO: ¿Qué tan difícil fue para su familia que usted tuviera que faltar al trabajo?

**[Nacido en el extranjero, Hispano, Houston] ["Hou\_FB\_Hisp" = 1] ¿Tuvo usted acceso a los reportes informativos sobre la tormenta, o acceso a información acerca de servicios que proveen ayuda con evacuación, limpieza, y recuperación?**

AGREGAR: Fuentes de Información (televisión, periódicos, radio) internet, llamadas telefónicas con miembros de la familia (Ask only if SPANISH is primary language) (LANGUAGE = 1) ¿Tuvo usted acceso a información en Español? ¿A que información tuvo usted acceso en Español?

**[Nacido en el extranjero, Hispano, Houston] ["Hou\_FB\_Hisp" = 1] ¿Recibió usted algún tipo de asistencia, compensación o programa de ayuda durante, o después de la tormenta?**

AGREGAR: ¿Recibió usted ayuda de "FEMA," de la administración de ayuda a pequeños negocios (SBA), Prestamos por desastres, o ayuda de la Cruz Roja, el Ejercito de Salvación, del estado de Texas, algún grupo religioso, o recursos gubernamentales, o cualquier otro tipo de asistencia?

SI ES AFIRMATIVO: ¿Cómo se entero usted de esos recursos? ¿Qué fue lo que usted recibió?

SI NO: ¿Por qué no?

**[Nacido en el extranjero, Hispano, Houston] ["Hou\_FB\_Hisp" = 1] ¿Recibió usted apoyo de familiares, amigos, vecinos, grupos religiosos, o cualquier otra persona durante la evacuación, la limpieza o la recuperación después de la tormenta? Por favor describa.**

AGREGAR: redes de apoyo reciprocas- dentro de la familia, la comunidad, o su comunidad religiosa? Por ejemplo, ¿cooperaron miembros de la comunidad para ayudar a limpiar después de la tormenta, o compartieron comida y estancia?

Es posible decir que las redes de apoyo fueron formadas de acuerdo a el grupo étnico, lugar (país) de origen, o comunidad religiosa.

¿Qué tipo de recursos recibió usted de estas redes de apoyo?

AGREGAR: Comida, agua, mano de obra, materiales para reconstruir, transportación, albergue, ropa, o cualquier otra cosa.

**¿Recibió usted una orden de evacuación antes de que llegara la tormenta, y abandono usted su hogar?**

SI ES AFIRMATIVO, evacuación:

¿Por qué?

¿Cómo?

¿A dónde se fue?

¿Se enfrentó usted a algún obstáculo al evacuar?

¿Cuántos días estuvo usted fuera de su hogar? Si aplica, ¿Cuántos días estuvo usted fuera de su trabajo?

¿Cuál fue la parte más difícil de esta experiencia? ¿A que otro reto se enfrentó usted durante esta experiencia?

SI NO, no evacuó: ¿Por qué se quedó usted?

AGREGAR: Por miedo de enfrentarse a las autoridades [Nacido en el Extranjero, Hispano] ["FB\_Hisp" = 1]; problemas de transporte; limitaciones físicas, o condiciones médicas; sintió usted que abandonar su hogar era "opcional," no obligatorio; no tenía usted a donde ir, o donde quedarse; razones financieras; o simplemente no quiso darle mucha importancia.

**[Nacido en el extranjero, Hispano] ["FB\_Hisp" = 1] ¿Podría usted relatar sus experiencias como inmigrante Hispano durante la tormenta?**

**[Nacido en el extranjero, Hispano] ["FB\_Hisp" = 1] ¿Alguna vez estuvieron usted o su familia expuestos a inundaciones en su país de origen [FILL IN COUNTRY] [You should have written down the respondent's country of birth in the Residential history module]? Y si, si ¿Cómo puedo eso compararse a sus experiencias con la tormenta?**

AGREGAR: [¿????????????????]

**[Nacido en el extranjero, Hispano] ["FB\_Hisp" = 1] ¿Tuvo problemas con el acceso a cualquier recurso disponible para residentes perjudicados durante o después de la tormenta, a causa de no hablar inglés, de su estatus migratorio, o por cualquier otra razón?**

SI ES AFIRMATIVO: ¿Por qué cree usted que no haya tenido acceso, o haya tenido poco acceso, a estos recursos?

AGREGAR: falta de información, que no califica, los recursos no fueron disponibles en su comunidad, o por miedo.

AGREGAR: ¿Cómo es que usted pudo satisfacer sus necesidades básicas, ya que no tuvo acceso a esos recursos?

**[Nacido en el extranjero, Hispano] ["FB\_Hisp" = 1] En retrospecto, como inmigrante, ¿Qué hubiera hecho usted diferente para prepararse, o para enfrentar la tormenta?**

Aparte de su experiencia en esa tormenta, ha usted alguna vez recibido ordenes para evacuar su hogar de parte de oficiales locales por peligros de inundaciones o huracanes?

SI ES AFIRMATIVO: ¿Cuántas ordenes de evacuación ha usted recibido?

SI ES AFIRMATIVO: ¿Ha recibido alguna orden de evacuación en su residencia actual?

SI ES AFIRMATIVO: ¿Evacuaron usted y toda su familia cuando le llegó esta orden?

¿Por qué, o por que no?

SI ES AFIRMATIVO: ¿Cundo fue la ultima vez que usted tuvo que abandonar su hogar?

**¿Ha usted tomado alguna medida de protección para usted y los miembros de su familia en contra de inundaciones y huracanes?**

**SI ES AFIRMATIVO** [*Write “Yes to flood mitigation” down for use later in interview*]:: **¿Cuáles medidas ha usted tomado? ¿Por qué?**

AGREGAR: ¿tiene un plan de evacuación? ¿ha hecho modificaciones a su hogar, como elevaciones, instalar válvulas que vacían el drenaje; elevar la caja eléctrica; usar materiales resistentes contra inundaciones- por ejemplo componentes y selladores a prueba de agua; construir una pared de retención afuera del hogar.

**SI ES AFIRMATIVO: ¿Ha usted tomado alguna medida específica para protegerse de huracanes? Describalos.**

**SI NO: Por favor explique por que a usted no le preocupa protegerse, y proteger a su familia en contra de las consecuencias de inundaciones.**

**¿A qué dificultades, u obstáculos se ha usted enfrentado cuando ha intentado hacer algo al respecto?**

**Cuando usted respondió a la encuesta original, usted menciona que algunos métodos de atenuación \*no\* han sido implementados para reducir los riesgos de daños por inundaciones donde usted vive.**

**Por ejemplo, usted dijo...**

[*Ask “q401”, “q402” and “q408” if they have \*not\* implemented those. If they have implemented those [responses = 1], then pick other ones in the following order: “q403”, “q404”, “q405”, “q406”, “q407”, “q409”; the idea is to ask about 3 mitigation measures that respondents have not implemented*]

**["q401" = 5] –...La estructura de la casa \*\*\*no\*\*\* fue originalmente construida o fue elevada o alzada después para proteger de inundaciones...**

**["q402" = 5] –...que los componentes eléctricos de la casa- tales como el tablero de mando eléctrico principal, y las tomas de corriente como el calentón de agua en casa, horno, lavadora y secadora \*\*\*no\*\*\* fueron elevados para proteger de inundaciones...**

**["q403" = 5] – ...que todos los componentes de sistema del interior de la casa del calentón, ventilación, y aire acondicionado- tal como las rejillas de ventilación y los conductos interiores \*\*\*no\*\*\* no fueron elevados para proteger de inundaciones.**

**["q404" = 5] –...que todo el equipo de servicio de fuera, tales como los compresores de aire acondicionado, de la bomba de calor, los medidores de electricidad y gas, y los tanque de gasolina \*\*\*no\*\*\* fueron elevados para proteger de inundaciones.**

**["q405" = 5] –...que muros de contención, veredas, o represas para proteger la casa de inundaciones \*\*\*no\*\*\* fueron construidos...**

**["q406" = 5] –...que válvulas de retención para prevenir que el agua de una inundación se regresara al drenaje, baños, y a otras conexiones del drenaje del hogar \*\*\*no\*\*\* fueron instaladas.**

**["q407" = 5] –...que un sistema de drenaje interior, incluyendo una bomba de sumidero con energía de respaldo, \*\*\*no\*\*\* fue instalada.**

**["q408" = 5] – ...que persianas para huracan \*\*\*no\*\*\* fueron instaladas...**

**["q409" = 5] – ...que el techo \*\*\*no\*\*\* fue reforzado para proteger en contra de vientos fuertes...**

**Por favor explique porque usted \*no\* tomo estas precauciones.**

AGREGAR: sale muy caro, no sabe que hacer, se opusieron otros miembros de la familia, toma mucho tiempo y energía, le cambiaria negativamente la apariencia a la propiedad, no puede encontrar a la persona correcta para hacerlo, no es su responsabilidad, no piensa que reduciría el riesgo, no lo puede hacer legalmente porque usted no es el dueño de la propiedad/casa, o por acuerdos, condiciones, o restricciones, o cualquier otra regla que lo prohíbe, por decir leyes locales.

**¿Cree usted que hay muy poco que usted pueda hacer para protegerse de las inundaciones o huracanes?**

***[HOMEOWNER AND HAS NFIP COVERAGE FOR HOME AND CONTENTS]***

***[RENTER AND HAS NFIP COVERAGE FOR CONTENTS]***

**Cuando usted respondió a la encuesta, usted menciona que había asegurado su casa/hogar y sus pertenencias con el Programa Nacional de Seguros en Contra de las Inundaciones para cubrir daños a...**

**[HOMEOWNER / HOME COVERAGE / CONTENTS COVERAGE][“HH\_Renter” = 5 / “q41\_NFIPhome” = 1 / “q43\_NFIPcontents” = 1] ... la casa y los contenidos de la casa.**

**[RENTER / CONTENTS COVERAGE][“HH\_Renter” = 1 / “q43\_NFIPcontents” = 1] ... los contenidos de la casa.**

**¿Cierto?**

**¿Por qué obtuvo usted su seguro con el Programa Nacional de Seguros en Contra de las Inundaciones?**

AGREGAR: ¿Le dijo su agente de bienes raíces que es un requisito comprar seguro en contra de inundaciones (NFIP)?

**[In 100-year flood zone] ¿Cómo se entero usted de que es un requisito comprar seguro en contra de inundaciones? (DO NOT USE UNTIL WE GET INFORMATION FROM MARILYN)**

**¿Era un requisito que usted comprara un seguro en contra de inundaciones? [Si Afirmativo]: ¿Cómo es que usted se dio cuenta que tenía comprar seguro en contra de inundaciones?**

**¿Tomaría usted la decisión de vivir en donde vive sin seguro contra inundaciones- si es que el seguro de inundaciones no fuera disponible?**

**¿Tomaría usted la decisión de vivir en donde vive si tuviera que pagar el doble por seguro contra inundaciones?**

**¿Qué tal si usted tuviera que pagar 3 veces mas por seguro contra inundaciones- [tomaría usted la decisión de vivir en donde vive?**

***[HOMEOWNER AND \*NO\* NFIP COVERAGE FOR HOME OR CONTENTS]***

***[RENTER AND \*NO\* NFIP COVERAGE FOR CONTENTS]***



**Cuando usted respondió a la encuesta, usted menciono que no había asegurado su casa/hogar ni sus pertenencias con el Programa Nacional de Seguros en Contra de las Inundaciones**

[HOMEOWNER / NO HOME COVERAGE OR NO CONTENTS

COVERAGE][“HH\_Renter” = 5 / “q41\_NFIPhome” = 5 OR “q43\_NFIPcontents” = 5] ] ...

**la casa y los contenidos de la casa.**

[RENTER / NO CONTENTS COVERAGE][“HH\_Renter” = 1 / “q43\_NFIPcontents” = 5] ... **los contenidos de la casa.**

**¿Cierto?**

**¿Por qué no compro usted seguro contra inundaciones?**

**¿Sabe usted que su hogar está dentro de una llanura sujeta a inundaciones, lo cual significa que tiene un alto riesgo de inundarse?**

AGREGAR: ¿Tuvo algo que ver el costo con su decisión? ¿Es porque no es un requisito en donde usted vive? ¿o es porque usted no quiere nada que ver con el gobierno? ¿Siente usted que haya alguna medida que ha tomado para protegerse y a su hogar que puedan substituir al seguro de protección contra inundaciones? ¿Ha considerado comprar este seguro? ¿Sabe usted que—aunque rente su casa—hay un seguro en contra de inundaciones que es relativamente barato, en comparación a seguros privados? ¿Alguna vez le ha mencionado su casero/a que la unidad en la que usted vive está protegida por algún seguro en contra de inundaciones? ¿Le gustaría saber en dónde puede encontrar más información sobre cómo obtener seguro en contra de inundaciones?

*[ASK THIS QUESTION IF THE RESPONDENT ANSWERED “YES TO FLOOD MITIGATION” ABOVE]*

**¿Podría usted decir que las medidas que ha tomado para protegerse de las inundaciones le han hecho sentir mas protegido contra las inundaciones donde usted vive? Por favor explique.**

**En 1968 el Congreso de los Estados Unidos creo el Programa Nacional de Seguros Contra Inundaciones para poder ayudar a los propietarios a protegerse, porque los seguros regulares no cubren inundaciones a causa de huracanes, tormentas tropicales, y otras condiciones que impactan a los Estados Unidos. Desde Agosto del 2010 la deuda del Programa Nacional de Seguros Contra Inundaciones en la tesorería de los Estados Unidos es de 18.8 billones de dólares. La razón es que los pagos de cada residencia por seguro en contra de inundaciones no cubren las cantidades que el gobierno paga para cubrir el costo de daños causados por inundaciones. Básicamente, los impuestos de ciudadanos terminan pagando parte de los costos para reparar danos a propiedades que están aseguradas bajo el programa. ¿Ve usted algún problema con eso? Y si si, ¿Qué piensa usted que se debería hacer para arreglar este problema? Si es que usted piensa que algo se debe hacer...**

AGREGAR: ¿Piensa usted que el gobierno debería de cancelar el programa y darles a los seguros privados la responsabilidad de asegurar inundaciones? ¿O piensa usted que el gobierno debería de subir los pagos del seguro para cubra los costos?

**¿Cuál piensa usted que es la mejor manera de resolver este problema?**

AGREGAR: ¿Piensa usted que el gobierno federal debería de cancelar este programa (NFIP) y hacer a las compañías de seguros privados responsables de cubrir esa área? ¿o piensa usted que el gobierno debería de subir los precios para poder cubrir sus costos?

### **Wrap-Up**

**¿Aceptaría mandarnos cualquier material que nos ayude a entender mejor el área donde usted vive? Nos interesa recibir fotografías de su hogar, de su vecindario, de cualquier área que relacione la contaminación ambiental, o las inundaciones. Aceptaría usted mandarnos estos materiales por correo electrónico, o correo regular?**

SI ES AFIRMATIVO, email: por favor mande los materiales en formato digital, como fotografías, a [twcollins@utep.edu](mailto:twcollins@utep.edu).

Alternativamente, si usted me da su dirección de correo electrónico, yo puedo contactarlo, y de esa forma usted puede mandarme sus materiales en formato digital.

SI ES AFIRMATIVO, correo regular: Por favor mande cualquier material por medio de correo regular a:

Timothy W. Collins  
Department of Sociology and Anthropology  
University of Texas at El Paso  
500 West University Avenue  
El Paso, TX 79968

**Y también, necesitamos confirmar su dirección física para poderle mandar inmediatamente los \$20 que le prometimos. [READ THE ADDRESS INFORMATION THAT WE HAVE; ASK IF IT IS CORRECT; MAKE CORRECTIONS IF IT IS NOT CORRECT; IMMEDIATELY SEND THE INCENTIVE AT THE CLOSE OF THE INTERVIEW] [ADDR; CITY; STATE; ZIP] [IMPORTANT NOTE: THE NAME COLUMNS IN THE EXCEL STRATA FILE (“SURN”; “GIVEN”; “MIDDI”) DO NOT CORRESPOND WITH MOST RESPONDENT NAMES. SEE THE EXCEL “RESPONDENTNAME” FILE FOR RESPONDENT NAMES (CROSS-REFERENCE RESPONDENT NAMES THEM BASED ON “RECORD” FIELD > RESPONSE “QC 80” IN “LABEL” FIELD)].**

**Por último, ¿nos permite contactarlo de nuevo en los próximos meses para aclarar cualquier cosa que hemos previamente discutido?**

## **Vita**

Maricarmen Hernandez was born in El Paso, Texas but grew up in Ciudad Juarez, Chihuahua as well as different cities in Northern Sonora and Southern Arizona. She returned to El Paso, Texas to finish high school and start college at the University of Texas at El Paso. She graduated with a BA in Anthropology in 2009, earning an Outstanding Academic Achievement Award for Anthropology, and entered UTEP's Sociology Master's program in 2012.

Her areas of research include environmental justice, immigrant communities, Latin American sociology, border studies, and transnationalism. For the most part she has conducted qualitative, ethnographic work. She has conducted ethnographic fieldwork on both sides of the U.S.-Mexico border on topics including immigration, Mexican journalists seeking asylum in the U.S, female maquiladora workers and their children, and issues of environmental justice.

Maricarmen worked as a graduate research assistant for a National Science Foundation-funded project from 2012-2014. She earned an Outstanding Academic Achievement Award for graduate work in Sociology in spring of 2014. She presented work related to her thesis at the 2013 and 2014 Association of American Geographers annual conferences, and received the J.X. Kasperson student paper award from the AAG Hazards, Risks and Disasters specialty group in 2014.

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This thesis/dissertation was typed by Maricarmen Hernandez.