Differences in Neighborhood Characteristics and Capabilities to Move among Families with and without Health Challenges: A Case of Monterrey

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ABSTRACT

This study positions health as a risk factor for neighborhood selection into poor neighborhoods, and overviews the possible mechanisms that constrain sick people from living in low poverty neighborhoods. Most of the literature on health and place focuses on the unidirectional relationship from place to health, supporting the argument that one’s environment affects one’s health. However, there is limited research on the causal direction of this association. I compare a group of households with a child with Cerebral Palsy to a group of households that do not have children with special health care needs. I developed a cross sectional analysis, using survey data, geospatial analyses, and a series of statistical tests to compare differences between the two groups. I complemented this research with 16 in-person interviews to get additional information about their environment and daily routine experiences. I find that families with a sick child live in poorer neighborhoods overall. Possible pathways that explain the reason why sick households might live in relatively poorer neighborhoods in comparison to the non-sick households are lower economic productivity, relatively worse mental health, and lack of time due to special caregiving needs and distant living locations. All pathways might potentially operate in conjunction to negatively impact the material, social, psychological, and time resources needed in order to improve neighborhood choice. The results suggest that health places families at peril by decreasing their ability to live in better neighborhoods and increasing their exposure to stressors that could potentially reinforce their poor health.

Thesis Committee: Mariana C. Arcaya and P. Cristopher Zegras
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INTRODUCTION

Previous research has shown that poor health impacts a household’s material and psychological resources due to the uneven distribution of time, money, and psychological resources needed to effectively manage the illness of the sick person’s condition while completing the activities of everyday living (Kuhlthau et al., 2005) (Raina et al., 2005). This positions health as a risk factor for residential selection into poor areas by limiting the resources that families have to either leave or avoid being forced into them. Studies have supported this argument by identifying poor baseline health status as a predictor of poor residential outcomes, where people receiving financial aid to move into better neighborhoods have been less likely to do so because they are taking care of a sick child (Arcaya et al., 2014) (Pashup et al., 2005).

Previous literature reviews links between poverty and health (Glymour, Avendano, & Kawachi, 2000) (Link & Phelan, 1995); health and economic productivity (Kuhlthau et al., 2005) (Merlis, 2002) (Kim, Nam-Hyeon, Sohn, Dong-Won, Wall, 1999); the reproduction of health (Raina et al., 2004) (Parminder Raina; Maureen O’Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005); social and built environment and health (Painter & Waters, 2013) (Ellen, Mijanovich, & Dillman, 2001) (Frank et al., 2006) (Pope et al., 2009) (Cubbin, LeClere, & Smith, 2000) (Sallis, Floyd, Rodriguez, & Saelens, 2012); and health and neighborhood selection (Arcaya et al., 2014) (Sampson & Sharkey, 2008) (Pashup et al., 2005). The range of interactions between health, place, and wealth that these studies review illustrates the complexity of determining the causal direction of the relationship between health and the resources people have available. This problem reinforces the need to understand the role that health plays in limiting a sick household’s ability to improve its residential location as a step to better life conditions.

A major implication for this study is the potential re-production of health, whereby baseline health problems could reinforce poverty and residential selection into poor environments that in turn would potentially increase household’s exposure to health risks found in the social and built environment.
FOCUS OF THIS STUDY

This study investigates a population based in Monterrey, Mexico that has a child with Cerebral Palsy in their household. Cerebral Palsy (CP) is a health condition that, in most cases, inhibits patients from controlling voluntary bodily movements, which in turn make them dependent on a caregiver to do basic daily activities such as eating, walking, or bathing. As I have noted, this caregiving process is normally associated with negative impacts on parental employment and increased financial costs (Kuhlthau et al., 2005) which could limit household's ability to improve their living conditions.

I collaborated with Instituto Nuevo Amanecer (INA), a local non-profit organization that provides health and education services to children and youngsters with CP in conjunction with their families. This collaboration provided me with access to speak with the members of this specific population and to and survey the specific individual and household characteristics that could potentially limit living in particular places throughout the city.

The setting for this thesis is Monterrey, the third largest city in Mexico, located in the northeastern part of Mexico. The importance of developing this type of study in Monterrey is grounded in three main aspects: first, there is limited research on public health outside of Mexico City, the capital of the country; second, research on neighborhood environment in Monterrey has been mostly focused on residential segregation as a product of urban expansion and market forces (Fitch Osuna & Soto Canales, 2005; González & Villeneuve, 2007; Sousa, 2010). While others that have looked at residential selection have only focused on basic preferences such as municipality, architectural style, house dimensions, amenities, building density, and price, without assessing specific health or wealth selection into neighborhoods (Fitch Osuna & Soto Canales, 2012). Third, the relatively poorer health of the population in Monterrey, compared to national averages, might be a manifestation of the city’s urbanization over the past decade. Monterrey has recently received attention as the city with most days with poor air quality in Latin America (Green & Sánchez, 2012), and is above the national average in diabetes and arterial hypertension detection for adults over 20 years old (ENSANUT, 2012).

Although this thesis will not address these specific health and urban topics, it is important to acknowledge the consequences of poor health on families, and how poor health reproduces poverty.

---

1 I would like to caution that even though CP is not considered a sickness, but a health condition, I use the term sick households when referring to families that have a child with CP, because the interest of this study is to assess households that have a child with special health care needs, and the name is used for practical reasons.
and illness due to the places where sick people are limited to live. This study identifies health as a risk factor of neighborhood selection into poor areas and overviews at the possible mechanisms that hinder people from living in high poverty neighborhoods. I define poor neighborhoods as places where people reside and perform their basic activities and have a relatively low neighborhood socioeconomic status.

In order to make sense of this relationship, my thesis will answer the following questions:

1. Are sick households living in poor neighborhoods?
2. What limitations prevent sick households from improving residential selection?

To answer these questions, this thesis takes on the following structure:

Chapter 1 introduces the background of this research. It contextualizes the problem in the city of Monterrey and illustrates the need for this research.

Chapter 2 reviews relevant literature from two viewpoints: The first is how health is a risk factor for residential selection into poor areas, while the second reviews how health difficulties impact a household’s wealth.

Chapter 3 presents the methods used to answer the questions. It describes the theoretical reasons why each methodology was applied along with the selected variables and the analytical strategy to prove the hypothesis.

Chapter 4 illustrates and discusses the results in three categories: first, the neighborhood characteristics, followed by the household characteristics and ending with an assessment of the potential mechanisms by which poor health might lead to poor residential environments.

Chapter 5 presents a final discussion of the results based on theoretical expectations.

Chapter 6 reviews the results in relation to the research questions, as well as a brief description of study limitations, and recommendations for future work.
1 CONTEXT

The key problem that this thesis addresses is the impact of health on a household’s capabilities to improve its neighborhood choices. Specifically, I evaluate the resources that could potentially limit household’s upward residential mobility. I focus on a population of families who have a child or youngster with Cerebral Palsy, who largely depend on a caregiver to complete basic tasks such as eating, walking and bathing, which could turn into a full time dependence. The foregone income, in addition to limited productivity of the caregiver, could increase the long-term impact that poor health has on families and could potentially reduce said family’s resources to find better places to live. The following pages describe the overall context where the study is based and the key characteristics that make it an important study to pursue.

Cerebral Palsy

Theories have developed the relationship between poverty and poor health, showing that no matter where in the world, poor populations are exposed to higher health risks than more affluent ones (Glymour et al., 2000). Cerebral palsy is no exception. Research indicates that low socioeconomic status is a primary indicator of developing CP. This is explained by the relationship between low birth weight and prematurity, which are both correlated with low socioeconomic status (Sundrum, Logan, Wallace, & Spencer, 2005).

One of the main clinical features of Cerebral Palsy is the impairment of voluntary movements, which depending on the severity of the condition, inhibits patients from walking, holding objects, and sitting straight (Krigger, 2006). This represents a major challenge for parents because it makes the patient almost 100% dependent on them to function. Moreover, there is no cure for CP, but patients can improve their physical conditions through physical therapy (Rosenbaum et al., 2007). This turns into a main challenge for parents because they must balance their daily activities with the need to supervise their child’s health difficulties in the best way possible (Parminder Raina; Maureen O’Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005). In addition to a negative impact on parental employment, parents also face the risk of suffering higher rates of stress and poor mental health (Kuhlthau et al., 2005) which can in turn reduce their capabilities to access more resources or give proper attention to their child with special health care needs, not to mention the rest of the family.
The population sample being studied attends INA on a regular basis. It comprises both INA's clients and employees. Clients can be both parents who receive special training and psychological support, as well as children who attend INA to receive special education and therapy. All employees work at INA on a daily basis, and half of the clients receive treatment nearly every day, though a few attend only once every two weeks or up to once a month.

Monterrey

All of the selected participants reside in the twelve municipalities that constitute the metropolitan area of Monterrey (MAM, Figure 1). As I will describe later, there is no pattern of where both clients and employees of INA live, although there is a significant difference in the distance between the city center and their residential locations, with the clients group living farther out.

An important aspect about setting this study in the city of Monterrey is that in spite of its relatively high average income and education levels compared to national averages (Imco, 2012), there is little to no interest in addressing the preventive factors that could reduce the health risks that a large share of its population are currently exposed to (ENSANUT, 2012). Studies have looked extensively at the relationship between the built and social environment and health, where the land use and street patterns tend to influence physical activity through travel behavior. Poor areas tend to have higher rates of exposure to violence and pollution, or lower access to green areas and walkable environments which in turn may have worse mental and cardiovascular disease outcomes (Cerin, Saelens, Sallis, & Frank, 2006; Ellen et al., 2001; Handy, Boarnet, Ewing, & Killingsworth, 2002).

These risk factors are not extraneous to the places where the population being studied lives. If we follow the urban development patterns that the city has experienced, together with the high rates of crime in the previous years, we can assume that a large portion of the population is being exposed to such health risk factors. Mexican cities have gone through a particular process of suburbanization over the past 10 years due to massive development of affordable housing in the peripheries of the cities, and Monterrey has not been an exemption (González & Villeneuve, 2007). An important concern, is that many of these relatively new housing developments, which initially helped reduce the critical housing shortage, are now being abandoned due to the distance from the city center and jobs, as well as overall poor infrastructure and construction quality (OCDE, 2015). Another health risk that inundated the city over the last decade was the wave of violence. Near the end of the last decade, and up to 2014, the AMM, together with many other places in Mexico, experienced extremely high rates of violence and criminal activity partly due to the confrontations with the drug

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2 MAM is the third largest city in Mexico with a total population of 4,106,054 persons, after Guadalajara (4M) and Mexico City (20M) (INEGI, 2005).
cartels in the country. By 2010, the city had one of the highest insecurity perception rates in the country: 60% of the population perceived the city to be unsafe, while the national average was 49% (Imco, 2012). Based on my experience living in the city while this was happening, different populations experienced crime, insecurity, and urban violence differently, and most of it depended on the places where they lived.

While the city has been facing such pressing challenges, there has been little to no research on how this is affecting the population, and how people are being forced to live in such risky places. Urban studies in the city have been mostly focused on higher level studies on residential segregation as a product of urban expansion and market forces (Fitch Osuna & Soto Canales, 2005) (Sousa, 2010) (González & Villeneuve, 2007). While others that have looked at residential selection have only focused on basic preferences, such as municipality, architectonic style, house dimensions, amenities, building density, and price, without assessing specific health or wealth considerations as part of selection into neighborhoods (Fitch Osuna & Soto Canales, 2012).

Figure 1 Metropolitan area of Monterrey (image taken from Google Earth, 2016)
How did they end up living there?

Living in poor places can have severe health outcomes. For poor and sick families, this can be catastrophic due to the latent risk of having to manage the emotional, physical and financial burden of dealing with two persons in the family with ill health. Literature reviews that this possibility is latent (Arcaya et al., 2014) (Pashup et al., 2005), because poor and sick households might have relatively lower capabilities to acquire wealth (Kuhlthau et al., 2005; Parminder Raina; Maureen O’Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005), which can in turn restrict them to live in poor neighborhoods, or are sorted into them longitudinally, and in times in a “multigenerational” manner (Sharkey, 2013).

The research presented at the beginning of this chapter regarding the unidirectional relationship between place and health represents the status quo of the studies on the relationship between the built and social environment and health. It essentially positions the environment as the risk factor to poor health, but it avoids addressing the problem of causality, which means that perhaps these poor places show poor health because it is unhealthy people that end up living there, and not vice versa (Arcaya et al., 2014). There are other researchers who have looked at health as a risk factor to poor neighborhood outcomes, and have found that, in fact, unhealthy people tend to live in poor places, however, the mechanisms by which this occurs are as of yet unknown (Arcaya et al., 2014). Explanations on why this might occur will be further discussed in the literature review.

My motivation

Four years ago, I co-founded an organization, Mas Libertad Menos Barreras (MLMB), which works with these same families to transform their houses into places by making them handicap accessible, where both the child with CP and the caregiver can be as independent as possible and free from any health risks. My intention with this thesis is to understand the levels of accessibility that go beyond the physical barriers and understand how poor health is in itself a risk to accessibility.

In addition, I think that inequities in health should not be an overlooked topic. It is unfair that the population that faces more challenges to become economically stable, to access education, to live in safe places, are the same one that is at higher risk of having poor health outcomes. Cities are going to keep growing, population will migrate, inequalities might turn into despair, violent conflicts continuously arise, and, in the meantime, our planet is overheating. The future health challenges are beyond our imagination, and understanding how health itself is a risk factor to other exposures is key in creating urban policies with the potential to generate health equity.
2 LITERATURE REVIEW

I hypothesize that poor health acts as a risk factor that limits households from living in more affluent neighborhoods, which literature defines as health selection into neighborhoods. I review literature on health selection into neighborhoods, together with the impact of health on household's resources.

2.1 HEALTH SELECTION INTO NEIGHBORHOODS

"People may be sorted into neighborhoods according to individual characteristics, and these individual characteristics may be related to outcomes" (Diez Roux, 2001)

Studies on the relationship between health and place have focused mainly on the unidirectional impact of poor places on health, where places with limited resources, or high exposure to risks disproportionally impact a population's health. For example, studies have focused on the association between access to parks and physical activity, which could potentially impact cardiovascular diseases (Brownson, Hoehner, Day, Forsyth, & Sallis, 2009) and mitigate stress through social support (Painter & Waters, 2013). In other cases, studies of the relationship between the social dynamics of places and health, such as exposure to violence, have identified an impact on smoking prevalence and poor birth outcomes (Ellen et al., 2001), however, there is limited research on the reverse causation of this phenomenon, where unhealthy people might be living in economically deprived areas due a complex set of characteristics (Arcaya et al., 2014).

There have been two major public programs that intend to help families move from high to low poverty neighborhoods: Moving to Opportunity (MTO) and Gautreaux Two. Many researchers have been interested in looking at the changes in health outcomes of families that relocated successfully. However, some studies have focused on the reasons why some failed to move, or relocated to higher poverty areas. Studies based out of the MTO experiment, discovered that households with baseline health problems were less able to move and predicted moves to a higher neighborhood poverty rate (38% compared to 50%). Whereas no relationship was found between neighborhood poverty and health status (Arcaya et al., 2014) (Arcaya, Waters, & Subramanian, 2015). Another study found an association between child health problems and relocations to lower income neighborhoods (Dunn,
Winning, Zaika, & Subramanian, 2014), even when all families had equal financial support to relocate to more affluent neighborhoods.

Pashup et al. assessed the Gautreaux Two housing mobility program, and found that of the enrolled families, only about one-third relocated successfully to lower poverty neighborhoods. They found that there were two main barriers to moving, and defined them as external (rental market, discrimination and bureaucratic delays), and internal (health problems, a large household size, and limited experience in managing the program requirements). In addition, they found that “non-movers” had little time to deal with the complicated process to find a new place because they were too busy with work or school (Pashup et al., 2005).

These studies support the evidence that health is a risk factor for poor neighborhood attainment, not just by limiting people to choose lower income neighborhoods, but by limiting their capabilities to move.

The empirical evidence showing that health plays a role in neighborhood selection confirms that the pure desire to move or live in particular places is not enough to let people relocate. Decisions that people make are influenced by a complex set of factors operating at the same time, such as resources, preferences, and changing life circumstances (Sampson & Sharkey, 2008). These factors might limit people to stay in the places they live, or sort them into particular neighborhoods.

Other studies based in Chicago identified a set of variables that influence neighborhood selection. They found an association between such variables and the relative advancement or regression in neighborhood outcomes. Sampson and Sharkey found that characteristics that predicted mobility to higher income neighborhoods were household income and education, together with higher education of caregivers. Other characteristics that also influenced a positive move were buying a home and getting married. Social support from friends and family to caregivers was another characteristic related to higher income neighborhoods (Sampson & Sharkey, 2008).

Moreover, the study identified household characteristics that were associated with lower mobility and higher poverty outcomes. First, even though homeownership was associated with higher neighborhood incomes, baseline homeowners had lower rates of mobility out of Chicago. Similarly, compared to marriage as a factor that predicts positive neighborhood attainment, cohabiting was associated with an inverse outcome.
Such findings are backed up by two other studies, where they identify that higher education and getting married increased the probability of moving out of low income neighborhoods, while older age, and homeownership reduced it (South & Crowder, 1997). Van Lenthe et al identifies that women's education level increased the probability of upward mobility, while lower education showed an increased probability in moving downwards (van Lenthe, Martikainen, & Mackenbach, 2007).

Arcaya et al propose a set of material, social and psychological pathways by which poor health might influence residential selection into poor neighborhoods. Material pathways are produced by the disproportionate distribution of health related expenses that lead to poverty and least expensive neighborhoods; social pathways develop through dependence on social support for caretaking, which motivates moves closer to family or relatives; and psychological pathways are a product of the impact that health has on parents' well-being due to stress and unexpected expenses, which might "reduce mental energy to seek, move to, and stay in new neighborhoods". (Arcaya et al., 2014)
2.2 HEALTH IMPACT ON HOUSEHOLD'S CAPABILITIES

Possible causes for the incidence of health on poor neighborhood selection are related to the impact that a sick child has on parents by limiting their capabilities to access key resources. Access to opportunities is essential for well-being and human development, especially in countries in a developing phase (Zegras, 2011). In my reviewing of the literature on mobility and accessibility, authors have defined three components by which we can measure and understand the distribution of resources available for people to benefit from and achieve well-being: the land-use component (amount and distribution of resources spatially); transportation component (time, cost, and effort of using the transportation system, together with its location and characteristics); temporal component (availability of resources at specific times, and time available for individuals to access them); and individual component (needs, abilities, and opportunities of persons) (Geurs & van Wee, 2004).

Capabilities are conceptualized by Amartya Sen as the “freedom to achieve the ‘functionings’ that individuals have reason to choose (Zegras, 2011). One could suggest that there is a reciprocal relationship between each accessibility component in impacting such capabilities that could contribute to residential selection into poor neighborhoods.

Two of the capabilities at the household level that could potentially provide access to resources, are good mental health and economic productivity. Studies show that caregiving not only plays a role in producing poor mental health for parents, but also in limiting economic productivity due to reduced employment and higher costs both “out of pocket” and special care needs. (Kuhlthau et al., 2005). This implies that parents with sick children have to make trade-offs that reduce their opportunities to access income, employment or the financial security to make future plans or investments.

Previous studies have found that 40% of families with a special care needs child experienced financial burden (Kuhlthau et al., 2005), which could be explained by the higher out-of-pocket spending by sick households on average (Hwang, Weller, Ireys, & Anderson, 2001). It has been found that some families with sick children have up to 20 times higher uncompensated health care costs than families without sick children (Kim, Nam-Hyeon, Sohn, Dong-Won, Wall, 1999).

An important implication that could balance this financial situation is that mothers who usually are the primary caregivers have high rates of unemployment or unpaid employment. Studies have found that close to 75% of mothers who have a sick child are enrolled in unpaid work activities (Curran, Sharples, White, & Knapp, 2001) or have to quit employment to take care of a child at home (Kim, Nam-Hyeon, Sohn, Dong-Won, Wall, 1999). Some are experiencing an even more challenging
situation because of their marital status. Comparing single caretakers with mothers in two-parent families, single caretakers are 15 times more likely to quit their jobs (Kim, Nam-Hyeon, Sohn, Dong-Won, Wall, 1999). In addition, many family-related problems are related to financial issues (Kuhlthau et al., 2005), and many caregivers have little to no extended family support (Curran et al., 2001).

As I mentioned before, there is a risk of producing poor mental health outcomes due to the complications of having to manage the illness of a sick child, while simultaneously having to complete daily activities. Studies find that stress is more prevalent in parents of children with special care needs relative to parents whose children do not need special care attention (Dyson, 1996; Parminder Raina; Maureen O'Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005).

A last important thing to consider, is that the opportunity cost for a family that has to distribute important significant resources into attending to special care needs of a sick member can have lagged effects on the household across generations. Research has looked at the persistence of poor neighborhood attainment as a “multigenerational nature”, which parallels persistent income and education inequality across multiple generations (Sharkey, 2013). Persistent health inequality is a potential risk of developing a poor-residential environment trap due to the impact between the reinforcing mechanisms of health, income, and poor residential environments.
3 METHODS

In this section, I describe the methods used to answer the thesis questions:

1. Are sick households living in poor neighborhoods?
2. What limitations prevent sick households from improving residential selection?

In order to respond these questions, I developed a cross sectional analysis, using survey data, geospatial analyses, and a series of statistical tests to compare differences between the two groups. I complemented this research with 16 in-person interviews to get additional information about their environment and daily routine experience.

In summary, the analytical strategy was the following:

a. I first compared the neighborhood characteristics between sick and non-sick households. I estimated the quality of the neighborhood based on risk factors to health that previous research has identified at the neighborhood level. These risk factors are led by neighborhood socioeconomic status along with distance to the Central Business District (CBD) and INA, access to green spaces, and the perception of safety and air quality.

b. Second, I compared the socio-demographic profile of both groups. I acknowledge that the sample is not random, but this process aims at understanding the main socio-demographic differences between sick and non-sick households that, according to the literature, have a relationship with living in poor neighborhoods.

c. I then assess the potential mechanisms by which poor health leads to poor residential environments. I do so by comparing the availability of four resources between sick and non-sick households.
3.1 DATA COLLECTION

3.1.1 Qualitative Interviews

I conducted 16 semi-structured interviews with INA clients this January in Monterrey. The purpose of carrying out the interviews was to have a sense of the experience these families have navigating the city, how living in different places has helped or affected them in accessing the resources they need, and what are their limitations or desires to find a better place to live.

Qualitative research enables the study to capture the perspectives of the participants, understand the meaning of real-life events, and more importantly, discover the contextual conditions – the social, institutional, and environmental conditions that define people’s lives (Yin, 2011). Conducting the interviews helped me identify multiple circumstances related to how the places where people live have an impact on their lives (i.e. discrimination, house quality, marital status, residential ownership) and the complications of navigating the city, both on a daily basis and on residential re-location.

Interviews lasted approximately 40 minutes on average, and they took place at INA’s center. The criteria for selection was random. INA has a client dataset organized by each child’s last name. The first twenty numbers were invited to participate. Eighteen of them were available and willing to participate, however, due to time constraints only 16 families were interviewed. There was no type of compensation for the participants.

The interview questions were addressed to understand three main things:

1. The places they’ve lived. One question this thesis aims to answer is how sick households are limited to live in relatively lower poverty neighborhoods. As discussed earlier, having a sick child within the families puts an extra burden on them, and some might have to adapt their living styles in order to cope with the change (Parminder Raina; Maureen O’Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005).

2. How they access their resources. Every person’s journey to work, run errands, buy food, and get to the health center is unique and presents costs that have a quantitative and qualitative significance (Curran, Sharples, White, & Knapp, 2001).

3. Desire to move. The final part of the interview questions was focused on understanding future residential expectations. Hypothetically or not, understanding people’s willingness to achieve their intentions, desires and limitations, is a key question that could help assess a potential “self-selection” conflict in the data (Sampson & Sharkey, 2008).
3.1.2 Survey

After conducting the interviews, I realized there was the need and research potential to distribute a survey with an aim to descriptively collect the population's characteristics. But rather than focusing on the population that has a child with CP, the survey aimed at collecting sufficient data and create two sub-groups: households that have a sick child and households that don't, which for the purpose of this study I call sick households (for households who stated living with a child or youngster with CP) and non-sick households (for the remaining part of the sample who stated not living with a child or youngster with CP). The intention in doing so is to be able to compare their differences and assess whether health impacts the possibilities for families to live in lower poverty neighborhoods.

Sample

The intended sample size was 200 persons to ensure a response variety, with an intention to keep a balanced ratio of the two household sub-groups mentioned earlier. The inclusion criterion is every person that has a relationship with INA, meaning that attends daily or at least once a month. The survey was designed and distributed using the online survey software provided by MIT: Qualtrics. INA personnel were in charge of distributing the survey and granted me access to the results.

There are three main groups of people that attend INA on a daily basis: employees, clients, and volunteers. Figure 2 describes the distribution of the sample according to their relationship with INA.

Employees: Due to the variety of services that INA provides, the demographics of its population are varied. Teachers, doctors, occupational therapists, social workers, administrative personnel, gardeners, and bus drivers are some job types. According to my conversations with INA's director, the population's gender share is close to half and half.

Clients: The population that attend INA to receive some type of service is mostly comprised of low income parents who bring their child with CP to receive any of the services described before.

Volunteers: There are three main types of volunteers that attend INA: medical students (i.e. dental, physical therapy, nutrition, etc), high school and undergrad students doing hours of service, and volunteers from the community at large.

Not all of the responses were used for this study. The total bulk of responses by April 6 of 2016 was 210, however, the database had to be cleaned to end with a total number of 185 due to various reasons:

- Some addresses could not be located in the metro area, or belonged to another city.
- Not all sections of the survey were answered, or the survey was left incomplete.
- Responses were difficult to analyze (i.e. respondents misunderstood open questions and the answer could not be interpreted).

Figure 2 Sample's relationship with INA

Description of the Survey
The survey included 74 questions that looked at the categories presented below. It is important to note that the extension and coverage of the survey was decided in order to be able to develop further studies. The full survey can be found in the appendix. These are the categories and examples of questions that the full survey addressed:

- Respondent’s individual characteristics (e.g. age, sex, marital status)
- Household level characteristics (e.g. child with CP in the household, average monthly income, average weekly expenses, education level of both parents, employment status of both parents, household size, homeownership, access to vehicle)
- Quality of the housing (e.g. house type, construction materials, quality satisfaction, overcrowding)
- Neighborhood quality (using the NEWS instrument which looks at land use diversity, land use accessibility, street configuration, walking quality, neighborhood aesthetics, traffic safety, and crime safety)
- Travel experience (e.g. travel mode, travel times, transportation quality)
- Time allocation (i.e. time spent on different activities such as sleeping, taking care of kids, physical activity, work, etc)
- Neighborhood Social Capital (using 10 questions that ask about interactions between neighbors)
- Neighborhood Selection (e.g. previous residential location, residential preference)
- Individual trade-offs that the respondent has had to make in order to take care of child’s health needs (e.g. relationships with family and friends, a good job, school, etc)
- Physical and Mental Health (self-assessment of health status)
- Financial Security (security of future income, and security of future expenses)

3.1.3 GIS based measures
In order to measure the neighborhood level characteristics that the survey could not address, I used the residential location obtained from the neighborhood name, postal code, and municipality, to geolocate every response. The variables calculated are neighborhood socioeconomic status, number of jobs in the neighborhood, distance to INA, and the Central Business District (CBD) of the MAM. The calculation of such variables was developed following the process I detail below.

**Geocoding locations**
Survey data provided the neighborhood names, postal code, and municipality from each response. I used INEGI’s neighborhood and postal code georeferenced database to match responses.

Not all respondents’ “neighborhood name” matched perfectly. I had to manually confirm the accuracy by matching their input name to the database’s neighborhood’s name, using the municipality and postal code as a guide in case there was more than one neighborhood with the same name. This process was the main criterion to clean and discard respondents. An iterative process of joining the respondent’s addresses with INEGI’s database was done to be able to localize them spatially. Those whose addresses were not identified were removed from the sample.

The final step was to calculate the centroid of each neighborhood’s polygon, and use that as the point of reference for each response. The outcome of this process is seen in detail in Figure 3, while Figure 4 shows all the respondents distributed across the city divided by the sick households and non-sick households groups.
Figure 3 Neighborhood polygons and centroids example

Figure 4 Residential locations colored by group.
Neighborhood Socioeconomic Status

Matching the neighborhood socioeconomic status (SES) with each respondent is the first step to answer question 1: Are sick households living in poor neighborhoods? And as I reviewed earlier, there are many negative social and health implications in living in a low socioeconomic status or poor neighborhood. Studies find a strong relationship between low SES and risk of homicide or crime (Cubbin et al., 2000), and residents might be exposed to higher levels of pollution and relatively lower places to be physically active (Arcaya et al., 2014).

In order to calculate the socioeconomic status (SES), I developed a proxy measure using the total number of occupied houses with a computer in the AGEB³ over the total number of occupied houses in the AGEB (see formula below). This creates a ratio of houses with a computer which previous measurements (ITDP, 2014) confirm is a reliable measure considering its strong and positive correlation with education and income level. Following this, I matched the obtained AGEB value to each residential location to assign an SES value per household. Figure 5 illustrates the process.

\[
\text{Computer proportion} = \frac{\text{Number of inhabited houses at the AGEB with a computer}}{\text{Total number of inhabited houses at the AGEB}}
\]

Figure 5 Socioeconomic status proxy measured at the AGEB level

³ AGEB is the “Area Geoestadistica Basica”; the spatial unit of measure that INEGI uses by grouping census blocks. This unit is comparable to the “census tract” from the US census.
Access to total green area

The first step to measure the total green area accessible by each residential location, an 800m (0.5 mile) street network buffer zone using the street network⁴ was calculated using GIS on every respondent’s neighborhood centroid. These calculations were done using ESRI ArcGIS software. The 800m distance is used as the standard for the planning of U.S. transit oriented developments, which is calculated as the distance that people are willing to walk to transit. I used this measure to maintain consistency with other data and to be able to compare for future studies (Guerra, Cervero, & Tischler, 2012).

Green space was characterized as total public green area⁵ with an area larger than 25 square meters. GIS techniques were used to calculate the total green area available at 800m Euclidian distance buffer from each neighborhood centroid. Previous research has measured green space access by similar modes; total green space vs. usable green space in a 300m and 3km Euclidian distance buffer. Measures include distance to usable green space, distance to total green space, proportion of usable green space over total green space, and proportion of total green space (both proportions calculated for 300m and km) (Nutsford, Pearson, & Kingham, 2013). Figure 6 illustrates the procedure taken.

Figure 6 Access to total green area in an 800 meter walkshed

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⁴ The vector street network for Monterrey was provided by INEGI’s website.
⁵ Green area shapefiles per city are available at INEGI’s webpage: http://www.inegi.org.mx/geo/contenidos/urbana/default.aspx
Distance to CBD and INA

The Central Business District (CBD) in the AMM plays a key role in the daily functioning of the city. Besides hosting commercial and office activity, it informally operates as the transportation transfer zone. Most of the bus routes have the CBD as either the origin or the destination of a trip, so getting easy access to this area is key to improving accessibility to the wider metropolitan area. I chose the center of the main plaza – “La Alameda” as the location of the CBD geo-located point. This was not arbitrary. Based on the interviews, this is the point where most of the people transfer bus routes. A job density map was developed to confirm that this was the right location using block data from INEGI and a deconstructed measure of number of jobs from DENUE, calculating the number of jobs over hectares (see Figure 7). I used the Origin Destination Matrix tool from ESRI ArcGIS to calculate the distance in meters from every residential location (origins) to the CBD point (destination) using the street network.

In a similar matter and of equal importance, the relation between the location where these families live and INA is essential because it is the the primary daily destination of the majority of the sample. According to my conversations with the department of social work at INA, not every member of INA’s community attends daily, specifically INA clients. Nearly half of INA’s clients visit the institution on a daily basis either for therapy, special education or medical attention. The other half varies. Some visit INA on a weekly basis, others just once every two months for regular medical check-up. But even though not every person has INA as their daily commute, based on my interviews, commuting here was one of the heaviest burdens for mothers, both because of the cost in time and money, and because of the difficulties to carry their son or daughter when they use public transportation. The distance between INA and the residential locations was calculated using the same technique I used with the distance to CBD calculation.
Figure 7 CBD - number of jobs over hectares
3.2 ANALYTIC STRATEGY

As I described before, the purpose of this study is to first determine whether sick families are living in relatively poorer neighborhoods, and then assess the capabilities they have to leave or avoid living in such poor places. Studies widely identify the impact that low SES neighborhoods have on their residents: relatively higher exposure to air pollution (Harlan & Ruddell, 2011; Kan, Huang, Chen, & Zhao, 2009; Pope et al., 2009); fewer places to be physically active (Frank et al., 2006; Painter & Waters, 2013; Sallis et al., 2012); and higher exposure to crime (Ellen et al., 2001; Hammal et al., 2005). Whereas other studies address the possibility that poor areas host sick populations because they are systemically sorted into living in them (Arcaya et al., 2014; Sampson & Sharkey, 2008) (Arcaya et al., 2014) (Arcaya, Waters, & Subramanian, 2015). The importance in understanding this relationship is that poor and sick households might be vulnerable to reproducing their illness and poverty status due to their limitations to avoid health exposures or access to resources in the city.

In order to assess the possibility that this is happening among the sick population in Monterrey, I divided the analysis in three parts:

a. I first compared the neighborhood characteristics between sick and non-sick households to assess whether sick households live in relatively poorer neighborhoods. I estimated the quality of the neighborhood based on risk factors to health that previous research has identified at the neighborhood level. These factors are led by an estimation of neighborhood socio-economic status, followed by access to green spaces, distance from the Central Business District (CBD) and INA, and the perception of safety and air quality. Table 1 illustrates the relevance of each exposure according to previous literature together with the selected variables to assess the quality of the environments the studied population lives.

b. Second, I compared the household characteristics of both groups. I acknowledge that the sample is not random, but this process attempts to understand the main socio-demographic differences between sick and non-sick households to identify potential limitations for neighborhood selection improvement.

c. I then assess the potential mechanisms by which poor health leads to poor residential environments. I do so by building from potential mechanisms identified by previous literature (Arcaya et al., 2014) compared among sick and non-sick households. Table 2 illustrates the theoretical framework and variables chosen to assess the hypothesis being tested.
Table 1 Analytic framework to assess neighborhood quality based on reviewed neighborhood impacts on health

<table>
<thead>
<tr>
<th>Theory</th>
<th>Neighborhood quality</th>
<th>SES</th>
<th>Distance from city center</th>
<th>Green spaces</th>
<th>Crime</th>
<th>Air pollution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES places have relatively higher exposures to poor health through many pathways (Ellen et al., 2001)</td>
<td>Low SES</td>
<td>Living far implies long commutes which have negative impacts on health (Lyons &amp; Chatterjee, 2008)</td>
<td>Green spaces impact health through pathways related to air quality, behavior and social capital (Painter &amp; Waters, 2013) (Frank et al., 2006)</td>
<td>Exposure to crime has predominantly mental health implications (Ellen et al., 2001) (Hammal et al., 2005)</td>
<td>Air pollution has impacts on respiratory and cardiovascular diseases (Kan et al., 2009) (Pope et al., 2009)</td>
<td></td>
</tr>
</tbody>
</table>

Analysis Variables

| SES proxy | Distance to CBD | Access to total green area | Safety perception | Air quality perception |

Table 2 Analytic framework to identify potential mechanisms from poor health to poor neighborhoods

<table>
<thead>
<tr>
<th>Resident Selection</th>
<th>Material</th>
<th>Social</th>
<th>Psychological</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large households predict lower mobility (Pashup et al., 2005)</td>
<td>Moves to places closer to family or friends (Sampson &amp; Sharkey, 2008)</td>
<td>Mental health impacts selection (Sampson &amp; Sharkey, 2008)</td>
<td>Time to deal with moving processes (Pashup et al., 2005)</td>
<td></td>
</tr>
<tr>
<td>Low parental employment (Kim, Nam-Hyeon, Sohn, Dong-Won, Wall, 1999) (Curran et al., 2001) (Parminder Raina; Maureen O'Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005) (Raina et al., 2004) (Kuhlthau et al., 2005)</td>
<td>Caretaking impacts on mental health and productivity (Raina et al., 2004).</td>
<td>Risks of poor mental health (Parminder Raina; Maureen O'Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005)</td>
<td>Caregiving has high time costs (Raina et al., 2004) (Kuhlthau et al., 2005) (Curran et al., 2001)</td>
<td></td>
</tr>
<tr>
<td>Sick households have larger out of pocket expenses (Kuhlthau et al., 2005) (Merlis, 2002) (Hwang, Weller, Irey, &amp; Anderson, 2001)</td>
<td></td>
<td>Poor mental health and poor work performance (Blank, Peters, Pickvance, Wilford, &amp; MacDonald, 2008)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis Variables

| Trade-off a job (self-reported) | Trade-off relationships with friends and/or family (self-reported) | Mental Health (K-10 self-assessed survey) | Time to INA (estimation by survey respondent) |

| Health expenses ratio (percentage of total expenses) | | | |

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3.2.1 Neighborhood Characteristics

I estimated the quality of the neighborhood based on risk factors to health that previous research has identified at the neighborhood level. These factors are led by an estimation of neighborhood socio-economic status, followed by access to green spaces, distance from the Central Business District (CBD) and INA, and the perception of safety and air quality. The following pages describe the theoretical relevance of each measure along with an explanation of how each variable was constructed.

*Neighborhood socio-economic status*

The leading question to answer is whether families that have a sick member live in relatively poorer neighborhoods. Studies widely identify the impact that low SES neighborhoods have on its residents due to several factors such as relatively higher exposure to air pollution (Kan et al., 2009) (Pope et al., 2009) (Harlan & Ruddell, 2011); lower places to be physically active (Sallis et al., 2012) (Painter & Waters, 2013) (Frank et al., 2006); and higher exposure to crime (Ellen et al., 2001) (Hammal et al., 2005). As I described earlier in this chapter, I calculated the neighborhood SES using a proxy of computer access in the house relative to access to a computer of the rest of the population at the same AGEB.

*Distance to CBD and INA*

Living far from the city center or primary destination might imply longer commutes. Studies identify that long commutes might impact health by creating stress, but also by increasing the exposure to accidents or air pollution (Lyons & Chatterjee, 2008). In addition, commute time might further constrain the scarce time resources available to parents with sick children (Curran et al., 2001). The distance to both locations was a GIS calculation using the street network of Monterrey.

*Access to green area*

As discussed in previous chapters, there are two major links between access to green areas and health. First, urban green spaces provide a place for both social and recreational opportunities, which encourages physical activity, and also enhances social ties serving as a place of encounter. Research also suggests that there is a positive relationship between mental health and observable green space at the neighborhood environment (Nutsford et al., 2013). The second is by mitigating air pollution, noise, and heat exposure (Painter & Waters, 2013). This variable was calculated via the GIS analysis described before, where a total area in the 800 meters walkshed is used to estimate the accessibility to total green area for each household.
Safety perception
Living in places with high crime rates can have negative consequences on health. Beyond the probability of being physically affected by violence, there are repercussions on mental and cardiovascular health. Exposure to violence can increase stress which may impact hypertension and influence negative behaviors in order to cope, such as smoking (Ellen et al., 2001). To develop this variable, I look at the only measure from the NEWS section of the survey that I’m using for the study, which is the “exposure to violence” category. This question includes of five Likert type questions that assess the perception of safety that people have in their neighborhood. The questions asked are:

- “The streets in my neighborhood are well lit”
- “It is easy to see pedestrians and cyclists from the inside of homes”
- “I usually talk with other people when I’m walking in my neighborhood”
- “There is a high crime rate in my neighborhood”
- “The crime rate in my neighborhood makes it unsafe to go on walks during the day”
- “The crime rate in my neighborhood makes it unsafe to go out on walks at night”

Air quality perception
This final neighborhood characteristic variable is also extracted from the NEWS section, though it is the Likert score of only one question which asking about the “pollution while walking due to car exhaust”. Even though this might not represent the overall air quality of the local environment, it helps to make an assessment of the perception of what each respondent is breathing in his or her neighborhood streets. In addition, previous research has identified a relationship between traffic-related air pollution and illness (Ponce, Hoggatt, Wilhelm, & Ritz, 2005). Also, studies review how reductions in air pollution are related with an increase in overall life expectancy (Pope et al., 2009).
3.2.2 Household characteristics

To identify the individual characteristics of the respondents, I begin with basic information such as the respondent’s age and sex. The household level characteristics are reviewed by coding the respondent’s household average income by asking respondents to select between having an average monthly income of 7,879 and lower; 7,880 – 13,499; 13,500 – 40,599; and 40,600 or higher. These categories and breaks were developed through INEGI’s methodology6. Educational level is calculated by number of years (the survey initially asked for education attainment, which I converted into estimated number of years based on the Ministry of Education standards). Another important factor in neighborhood selection is marital status (single, married, cohabiting, and separated/divorced), studies have shown that there is a residential advancement when people get married (Sampson & Sharkey, 2008). We can logically assume that employment status is positively correlated with relatively higher income, and maternal employment in particular, could be an important factor that increases household’s income level. I code employment status using a binary variable indicating whether the respondent and the respondent’s partner works or not. Sampson and Sharkey identify homeownership (also coded using a binary variable) as an important variable that can be associated with a higher neighborhood income level. However, other studies show that homeownership is also associated with lower mobility (South & Crowder, 1997). This does not mean that low mobility is associated with higher neighborhood poverty, although it does limit people from moving to a different place considering that they would have to deal with the process of selling or renting their current property. Next, a large household size (discrete variable) could potentially limit families to move considering the complexity of negotiating processes to move out and to find a place to live (Pashup et al., 2005).

Literature also suggests that sick households tend to have a higher share of their expenses allocated to health and out of pocket expenses (Kuhlthau et al., 2005), which plays as an opportunity cost to cover other benefits. I estimate the share of costs that households distribute to health and transportation, by extracting from the survey the total weekly health and transportation expenses, and divide that over total household expenses.

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6 INEGI uses the Mexican Association of Market and Opinion Intelligence (AMAI) index of income based on socioeconomic status. http://www.inegi.org.mx/rme/docs/Pdfs/Mesa4/20/HeribertoLopez.pdf
3.2.3 Mechanisms linking sick households to poor neighborhoods

Material

Trade-off a job: Using survey data, I measured the share of respondents who selected this option as one of the things in life that they’ve had to select in order to take care of their child. As the literature suggests, there is a higher probability for mothers of sick children to quit their jobs or limit their employment possibilities due to the extra time that the special care requires (Kim, Nam-Hyeon, Sohn, Dong-Won, Wall, 1999). This might impact the household productivity in two ways: first by eliminating the potential income that maternal employment could produce (foregone cost), and second by increasing the rate of non-economically active persons in the house which another person has to cover.

Health expenses ratio: Households that have a sick child tend to spend higher shares of their income on health related expenses (Kuhlthau et al., 2005) (Hwang et al., 2001) (Merlis, 2002). This depletes resources that could be allocated for other purposes such as changing residential location. This variable is also extracted from the survey data by calculating the share of health related expenses of the total expenditure reported in the survey.

Social

Trade-off friends and family relationships: This variable measures the share of respondents who selected this option as one of the things in life that they’ve had to balance in order to take care of their child. Recognizing that some families are trading key resources for social support adds another layer to consider in evaluating possibilities of families to move. Social support is a key resource that could help sick households to complete daily activities and access resources needed such as a job (Raina et al., 2004). This could potentially influence moves to places closer to family and friends (Arcaya et al., 2014).

Psychological

Mental Health: Parents are exposed to negative mental health outcomes like stress and anxiety when they have to deal with the burden of completing daily activities while handling the special health care and basic needs of a sick child. (Parminder Raina; Maureen O’Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005). In addition, poor mental health is associated with lower working performance (Blank et al., 2008). Although Cerebral Palsy is treated as the health risk variable that might draw people to poor neighborhoods, I introduce mental health as second health variable in the tests. I aim to see whether those families that are currently dealing with another health issue are potentially limiting their capabilities to access key resources to improve their residential condition. To measure mental health, I used the Kessler Psychological Distress Scale (K10) which includes 10 questions
asking about different feelings people have had during the past 30 days (Andrews, 2001). The score ranges from 10 to 50, where a score under 20 indicates that the respondent is likely to be well, scores between 20 and 24 means that there’s a likelihood that the respondent has a mild mental disorder, 25 – 29 are likely to have a moderate mental disorder, and scores 30 and over indicate that the respondent is likely to have a severe mental disorder.

**Time**

Average travel time to INA: The household’s residential location relative to INA also plays an important role due to the impact on time spent traveling. As discussed before, caregiving for a child with special care needs is time demanding (Parminder Raina; Maureen O’Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005; Kuhlthau et al., 2005), and time is a valuable resource that could be spent getting potential benefits that could ultimately lead into improved residential selection (Pashup et al., 2005). In addition, it is relevant because the further the distance, or, in this case time, there is a higher probability of missing a visit to the health center (Feikin et al., 2009), which could reproduce negative health outcomes for both the child and caregiver.
4 FINDINGS

This chapter reviews the findings from the survey, GIS and interview data. It begins by providing a summary of findings, and continues by providing a detailed narrative starting with demographic results, followed by neighborhood characteristics, household characteristics, and the potential mechanisms by which poor health leads to poor residential environments.

4.1 SUMMARY OF FINDINGS

The tables below provide a summary of the results. Table 3 reviews the findings on the neighborhood characteristics compared between sick and non-sick households. Based on the variables identified previously to measure the quality of the residential environment, the results prove the hypothesis that sick households are living in lower quality neighborhoods, where all measures show a negative difference.

Table 4 provides the results of the potential mechanisms that could lead poor health households into poor neighborhood environments. The table shows that sick households have lower capabilities to access resources needed to improve neighborhood choice, which confirms the hypothesis tested.

<table>
<thead>
<tr>
<th>Findings</th>
<th>SES proxy</th>
<th>Distance to CBD</th>
<th>Distance to INA</th>
<th>Access to total green area</th>
<th>Safety perception</th>
<th>Air quality perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sick households live in neighborhoods with 16 SES percentage points lower than non-sick households</td>
<td>Sick households live further away from the CBD and INA (3.5 and 5.3 km on average)</td>
<td>Sick household neighborhoods have relatively less green areas (8,500m²; not significant)</td>
<td>Sick household perceive their neighborhoods to be more insecure than non-sick households</td>
<td>Sick households perceive relatively poorer air quality (not significant)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4 Potential mechanisms to poor residential environments findings

<table>
<thead>
<tr>
<th>Findings</th>
<th>Material</th>
<th>Social</th>
<th>Psychological</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50% of sick households have traded off a job.</td>
<td>40% trade-off relationships with family or friends</td>
<td>40% of sick households are likely to have a mild or severe mental disorder</td>
<td>20% of sick households spend at least 3 hours commuting to and from INA</td>
</tr>
<tr>
<td></td>
<td>Only 26% of sick household's mothers work.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12% of expenses are distributed to health care</td>
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<td></td>
</tr>
</tbody>
</table>

4.2 DEMOGRAPHICS

Sick households represent 40% of the sample (n=185). These are households that reported to have a kid or youngster with a chronic condition or Cerebral Palsy living in the house. The average age of the respondents is 34.2 years old (35.4 for CP households, and 33.3 for NCP households), with a large majority of them being women (mean = 77%; CP = 89%; NCP = 68%). However, the largest share of the sample population age is between 21 and 30 years old which accounts for 39% of total respondents.
4.3 NEIGHBORHOOD CHARACTERISTICS

4.3.1 Neighborhood socio-economic status

In order to assess the difference in the neighborhood's poverty level between the two subgroups, Table 6 provides the neighborhood characteristics of the sample, together with the mean values for the demographic and socioeconomic profile of the whole sample, as well for each subgroup individually. As mentioned in the methods chapter, neighborhood poverty is measured using a proxy for socioeconomic status, by calculating the percentage of households with a personal computer in the AGEB. Sick households are living in SES neighborhoods with an average score of 46%, while non-sick households live in places with an average score of 56%. This means that the sick population is living in neighborhoods with a 16% difference in SES. Figure 8 displays a map with the residential location and SES divided by sub-groups.

4.3.2 Distance to CBD and INA

Households from both groups live across the twelve municipalities that comprise the MAM, with the municipality of Monterrey claiming the largest share lives at (30%), followed by Santa Catarina (16%), and San Pedro Garza Garcia (10%). The average distance to the CBD for the sample is 13.3 kilometers. There is an average difference of 3.5 km between both subgroups, with those households with a sick child living farther away from the CBD (15.4km for sick households and 11.87 for non-sick households; p=0.002). The shortest distance was 1.1km while the longest was 41.8km. As I have noted, INA is the main daily destination for all of the sample. The experience of getting there is different for each group, especially due to the mode each uses and distance each has to travel. We can see that families with a sick member have a longer commute to INA than the other group by 5.37km (p<0.03) while the average distance to INA is 15.46km. And even though 64% of the total sample owns a vehicle, only 42% of the households with a sick child owns one, and have a 36% difference with the other group (p<0.001).

<table>
<thead>
<tr>
<th>municipality</th>
<th>count</th>
<th>municipality</th>
<th>count</th>
<th>municipality</th>
<th>count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monterrey</td>
<td>56</td>
<td>Gral. Escobedo</td>
<td>15</td>
<td>Juárez</td>
<td>5</td>
</tr>
<tr>
<td>Santa Catarina</td>
<td>30</td>
<td>Guadalupe</td>
<td>13</td>
<td>Gral. Zuazua</td>
<td>3</td>
</tr>
<tr>
<td>San Pedro Garza Garcia</td>
<td>29</td>
<td>San Nicolás de los Garza</td>
<td>7</td>
<td>Salinas Victoria</td>
<td>2</td>
</tr>
<tr>
<td>Apodaca</td>
<td>17</td>
<td>García</td>
<td>6</td>
<td>Cadereyta Jimenez</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5 Residential location: Municipalities

42
Figure 8: Residential location by sub-group and SES at the AGEB level.
Table 6 Contingency table between subgroups

<table>
<thead>
<tr>
<th>Variable</th>
<th>mean</th>
<th>SD</th>
<th>CP</th>
<th>SD</th>
<th>NCP</th>
<th>SD</th>
<th>Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=185</td>
<td>n=75</td>
<td>n=110</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents age</td>
<td>34.25</td>
<td>11.3</td>
<td>35.43</td>
<td>10.64</td>
<td>33.46</td>
<td>11.7</td>
<td>-</td>
</tr>
<tr>
<td>Respondents gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>female (proportion)</td>
<td>0.77</td>
<td>0.89</td>
<td>0.68</td>
<td>0.23</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>0.23</td>
<td>0.11</td>
<td>0.32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Neighborhood</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood SES</td>
<td>0.5</td>
<td>0.22</td>
<td>0.4</td>
<td>0.19</td>
<td>0.56</td>
<td>0.22</td>
<td>-0.16 ***</td>
</tr>
<tr>
<td>Distance to CBD (km)</td>
<td>13.32</td>
<td>7.61</td>
<td>15.42</td>
<td>8.98</td>
<td>11.87</td>
<td>6.14</td>
<td>-3.555 **</td>
</tr>
<tr>
<td>Distance to INA (km)</td>
<td>15.46</td>
<td>10.82</td>
<td>18.64</td>
<td>12.09</td>
<td>13.26</td>
<td>9.29</td>
<td>-5.379 ***</td>
</tr>
<tr>
<td>Access to green area (m2)</td>
<td>37,740</td>
<td>3,094</td>
<td>32,716</td>
<td>4,832</td>
<td>41,166</td>
<td>4,014</td>
<td>-8,450</td>
</tr>
<tr>
<td>Safe neighborhood, 1 = disagree 5 = agree</td>
<td>3.36</td>
<td>0.74</td>
<td>3.19</td>
<td>0.77</td>
<td>3.47</td>
<td>0.7</td>
<td>-0.27 **</td>
</tr>
<tr>
<td>Good air quality, 1 = disagree 5 = agree</td>
<td>3.34</td>
<td>0.083</td>
<td>3.22</td>
<td>0.13</td>
<td>3.42</td>
<td>0.11</td>
<td>-0.20</td>
</tr>
<tr>
<td><strong>Household</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household Monthly Income (mxn; thousands)</td>
<td>15.33</td>
<td>12.09</td>
<td>8.09</td>
<td>6.58</td>
<td>20.20</td>
<td>12.54</td>
<td>-12.11 ***</td>
</tr>
<tr>
<td>7,879 or lower (proportion)</td>
<td>0.37</td>
<td>0.69</td>
<td>0.15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>7,880 - 13,499</td>
<td>0.31</td>
<td>0.24</td>
<td>0.36</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13,500 - 40,599</td>
<td>0.21</td>
<td>0.06</td>
<td>0.31</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>40,600 or higher</td>
<td>0.11</td>
<td>0.01</td>
<td>0.18</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Employment, 1 = employed full time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother (proportion)</td>
<td>0.45</td>
<td>0.26</td>
<td>0.58</td>
<td>-0.32***</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>0.64</td>
<td>0.73</td>
<td>0.59</td>
<td>0.14 *</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Both parents working</td>
<td>0.30</td>
<td>0.17</td>
<td>0.43</td>
<td>-0.48 ***</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Education Level (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother (proportion)</td>
<td>12.35</td>
<td>4.1</td>
<td>10.94</td>
<td>3.25</td>
<td>13.31</td>
<td>4.36</td>
<td>-2.37 ***</td>
</tr>
<tr>
<td>Father</td>
<td>12.28</td>
<td>5.02</td>
<td>10.46</td>
<td>4.65</td>
<td>13.51</td>
<td>4.9</td>
<td>-3.05 ***</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single (proportion)</td>
<td>0.35</td>
<td>0.09</td>
<td>0.53</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>0.47</td>
<td>0.63</td>
<td>0.36</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cohabiting</td>
<td>0.09</td>
<td>0.16</td>
<td>0.04</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Separated / divorced</td>
<td>0.09</td>
<td>0.12</td>
<td>0.07</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Homeownership, 1 = homeowner</td>
<td>0.69</td>
<td>0.50</td>
<td>0.82</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Household Size</td>
<td>4.2</td>
<td>1.8</td>
<td>4.7</td>
<td>1.86</td>
<td>3.85</td>
<td>1.68</td>
<td>-0.85 **</td>
</tr>
</tbody>
</table>

*p<0.05. **p<0.03. ***p<0.001
4.3.3 Access to green area

Based on geo-spatial data, we can see that there is a difference of 8,450 square meters of accessible green space between sick households and non-sick households. Sick households have access to 32,716 square meters at walking distance (800 meters), while non-sick households have an average of 41,166 square meters of green area in their neighborhood. However, this difference is not statistically significant.

4.3.4 Safety perception

As I described earlier, exposure to violence at the neighborhood level was calculated using a set of Likert questions and the score represents the mean value of all responses ranging from 1 to 5. Even though there is not a strong difference between the two groups, there is a significant difference between both neighborhoods, where sick households have lower safety perception (3.19) than non-sick households (3.47). Reviewing the interview data, some families expressed their concern about the limitations they have to access resources in their environment due to the presence of crime:

"We have to go early to the supermarket, because later at night it gets very insecure. If it's not by youth gangs, it's the police that extort you because they see you walking by yourself" [4]

4.3.5 Air quality perception

One of the risks of living in poor neighborhood environments in relation to poor air quality is not only the relative exposure to contaminants of nearby industries, but of the behavior of local residents, and the interviews demonstrated that:

"Neighbors, predominantly poor, usually run out of gas so they cook by burning wood – all of the houses get infested with smoke and this happens several times a month" [5]

I used the survey data as an instrument to compare air pollution in the neighborhood. Air quality was measured using a Likert question, asking respondents to indicate their perception of air pollution, where higher scores indicated better air quality. Sick households perceive their neighborhoods to have poorer air quality than non-sick households, scoring 3.22 compared to 3.42 respectively. However, the difference is not statistically significant.
4.4 HOUSEHOLD CHARACTERISTICS

4.4.1 Household Income
As Table 6 shows, the average monthly income of the total sample is $15,330.34 MXN (858 USD). There is a statistically significant difference of $12,111.17 MXN at the 99% confidence level. The average income of sick households is $8,090.69 MXN, while the group without a sick member has an average monthly income of $20,201.87 MXN. We can see that almost 70% of the CP group belongs to the lower income break, earning a monthly average income of 7,879 MXN or lower, while only 15% of the other group is earning this amount.

4.4.2 Employment and Education
Even though there was no question in the survey that specifically asked whether the respondent was the main caregiver, based on the interviews, we can conclude that mothers are in almost all of the cases the caregivers of their son or daughter. And as the results show, sick households allocate twice the amount of financial resources to health expenses, and in addition to that there’s an extra cost to the household when the caregiver has limited capacities to work. That said, maternal employment is a key factor in potentially improving the household’s income, and increase their chances to live in a lower poverty neighborhood. We can see that only 26% of the mothers who have a sick child work, while 58% of mothers in non-sick households are employed. We can confirm that this difference is statistically significant at the 99% confidence level. The father’s employment level also varies among the groups, however, this difference is inverted and has a smaller difference with a lower significance level (p<0.05). A key finding of this difference is that fathers in sick households are working more than fathers in non-sick households. This could be a commonality among all low income populations, where the implication is that fathers are out of home at a higher rate, meaning that the burden of caregiving relies solely on the mother. Another possibility is that in sick households the father continues to work past typical retirement age due to the extra expenses that having a sick child generate.

In a similar manner and as I reviewed earlier, previous studies show that a person’s education level is an important predictor for employment, and we can see that both mothers and fathers in sick

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7 1 USD = 18 MXN approximately to today’s date.
8 This income break represents the second to last SES break by income estimated by AMAI (Mexican Association of Market and Opinion Intelligence)
households have fewer years of education. The average years of education for mothers of all the sample is 12.35 years, while fathers is 12.28. However, comparing the subgroups, there is a significant difference of 2.3 years of education between mothers (p<0.00), and 3 years for fathers (p<0.00) in sick households with a sick child.

4.4.3 Homeownership and household size

Homeownership is another important factor that could potentially limit families to move to new locations. Sixty nine percent of the total sample owns a house. Half of the families with a sick child (50%) own one, and 82% of the other group owns the place where they live at (p<0.001).

Also, sick households are larger by almost one person than the other group. Even though the literature on health selection and residential mobility coincide that large households limit residential mobility, interview data might contradict this condition because families voiced extensively that younger members provide income to the household, and also help as caregivers to the person with CP.
4.5 MECHANISMS LINKING SICK HOUSEHOLDS TO POOR NEIGHBORHOODS

In summary, the calculations show that sick households have relatively lower capabilities to access goods when compared to non-sick households. Table 7 provides us with the statistics, showing that households that have a sick child are significantly more likely to have a mental disorder, trade off job opportunities and relationships with friends or family in order to take care of their child at a higher proportion than the other group, allocate twice as much expenses to healthcare, and spend at least 30 minutes more commuting to INA than the non-sick households.

Table 7 Capabilities contingency table

<table>
<thead>
<tr>
<th>Variable</th>
<th>mean</th>
<th>SD</th>
<th>CP</th>
<th>SD</th>
<th>NCP</th>
<th>SD</th>
<th>Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n=185$</td>
<td>$n=75$</td>
<td>$n=110$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Capabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents mental health</td>
<td>20.18</td>
<td>7.52</td>
<td>22.55</td>
<td>8.05</td>
<td>18.52</td>
<td>6.69</td>
<td>4.03 ***</td>
</tr>
<tr>
<td>under 20 (well)</td>
<td>0.50</td>
<td>0.39</td>
<td>0.57</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-24 (mild mental disorder)</td>
<td>0.23</td>
<td>0.23</td>
<td>0.24</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-29 (moderate mental disorder)</td>
<td>0.12</td>
<td>0.19</td>
<td>0.08</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 and over (severe mental disorder)</td>
<td>0.15</td>
<td>0.20</td>
<td>0.11</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tradeoffs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good Job (proportion)</td>
<td>0.38</td>
<td>0.48</td>
<td>0.56</td>
<td>0.26</td>
<td>0.30</td>
<td>0.30 ***</td>
<td></td>
</tr>
<tr>
<td>School</td>
<td>0.27</td>
<td>0.44</td>
<td>0.32</td>
<td>0.24</td>
<td>0.08</td>
<td>0.08 ***</td>
<td></td>
</tr>
<tr>
<td>Family relationships</td>
<td>0.25</td>
<td>0.43</td>
<td>0.40</td>
<td>0.15</td>
<td>0.25 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends relationships</td>
<td>0.29</td>
<td>0.45</td>
<td>0.40</td>
<td>0.23</td>
<td>0.17 **</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health expenses share</td>
<td>0.08</td>
<td>0.12</td>
<td>0.06</td>
<td>0.06 ***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation expenses share</td>
<td>0.22</td>
<td>0.19</td>
<td>0.24</td>
<td>-0.05 **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Av. time to INA (min)</td>
<td>54.41</td>
<td>41.66</td>
<td>72.26</td>
<td>47.01</td>
<td>41.53</td>
<td>31.8</td>
<td>30.72 ***</td>
</tr>
</tbody>
</table>

*p<0.05. **p<0.03. ***p<=0.001
4.5.1 Material

We can see that respondents that have a sick child have had to trade-off, at a significant level, potential resources that according to the literature, could limit them from relatively higher income neighborhoods.

"I would like to get a job, but having to bring my kid to INA takes too much time and effort. I've thought of not bringing her anymore but I'm afraid that she would fall behind so I prefer to sacrifice having a job" [8]

This was a common thing to hear, especially because most mother's that attend INA on a daily basis don't work. Ten out of 16 were not working when interviewed, and most mentioned they stopped working after they had their child with CP. They spend most mornings in the center because it's too expensive to move throughout the city to work and then come back to the center to pick up their child. However, 3 had a part-time job and the other 3 a full time job. It was interesting to see that those that worked did so close to their residential location, and others were able to bring their child to their job.

According to the survey, more than 56% of the sick household’s respondents have had to trade off a job in order to take care of their child, compared to 26% of the other group (p<0.001). Thirty two percent of the sick household respondents stated that they have had to trade off school or studies compared to 24% of the non-sick households, however, there is no significance in this difference.

As discussed in the previous chapter, sick households have higher costs than average due to the extra expenses needed for the special care needs of their child (Merlis, 2002). In order to have a sense of the whether this coincided with the studied population, I estimated the share of travel and health expenses relative to total household expenses. The results show that, as expected, sick households spend a larger share of their expenses in health costs compared to the non-sick population at a 99% confidence level. They allocate an average of 12% of their total expenses on health, compared to only 6% in the other group. Comparing these results with the national average (3.1% on average across the years 2006 and 2012) (INEGI, 2013) sick household allocate four times more, while non-sick households allocate twice as much resources to health expenses.

Many of the parents frequently expressed the support they have had to cover extra health expenses. Some mentioned support from family members, INA personnel and volunteers, and even from strangers:
"We met a person in the health clinic that paid for my grandson's eyeglasses" [11]  

Something that was consistent between the conversations was the need to sacrifice other expenses in order to cover needs related to their child's overall development but not directly linked to health expenses:  

"We had to use my husband's first pension payment to buy a car to be able to bring my daughter to INA" [10]  

"A woman gave us 700 pesos for Christmas - we collected 50 more to buy a microwave to be able to reheat my daughter's special meals" [13]  

However, the results on transportation expenditure does not display what I expected. Sick households spend an average of 19% of their total expenses on transportation, while the non-sick households allocate an average 24% of resources for transportation. Sick households are allocating the same share of expenses to transportation as the national average (18.5) (INEGI, 2013), while non-sick households are spending approximately 6% more. I expected that sick households were going to have a larger share of transportation expenses than the other group, because they would have to take a taxi to commute due to the inaccessibility of public transportation. I learned from the interviews that one of the possible explanations for this difference is that many INA clients use the transportation provided by INA to get there.  

4.5.2 Social  

Having to trade-off relationships with families and friends is another key risk that, according to the literature could impact both the desire and needs to move to a new residential location (Sampson & Sharkey, 2008), Family and friend relationships are key because they can take care of children while parents complete other activities. That said, 40% of respondents that have a sick child stated that they have had to trade-off relationships with friends or family in order to take care of their child, while only 23% (p<0.03) and 15% (p<0.001) of the compared group stated they had done so.  

Talking to parents about their relationships with friends, neighbors, and family provided mixed findings. There were some families that stated they had very good relationship with other relatives, to the point that the child's special condition has made the family closer and share responsibilities:
"My sister helps me take care of my son, she goes to the bus stop when I'm carrying his special milk, so that she can help me get down the bus and carry everything" [7]

"My dad helps me financially if I need it and if he can; it has to be high season in Cancun for him to be able to support us" [14]

Twelve of the parents I interviewed stated they have a good relationship with their family. Stories like the ones above were common to hear, where there was a willingness to help form family members. This shows that the impact of poor health stretches to the extended family, who might also need to sacrifice personal activities in order to help their relatives.

However, not all of families enjoy the same social support. Some parents expressed the problems they have had with other relatives to the point that there is poor communication and added stress:

"Had to sue the girl's parents to respond. The only thing we need is to help us bring her to INA. I don't want to stress out whether I'm going to bring her the next day or not" [12]

In addition to poor relationships with other family members, parents also acknowledged negative effects on their relationships with neighbors. Many of their responses coincided that they lacked time to meet with neighbors because of the limited time they spend in the neighborhood due to the long journeys from INA:

"It's very hard that I get to speak to a neighbor, and it's not that I don't want to it's that I don't have the time... we basically get home directly to have dinner and sleep" [5]

4.5.3 Psychological

Literature identifies a relationship between caregiving for a child with special care needs and risks of poor mental health (Parminder Raina; Maureen O'Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005), and also a link between poor mental health and poor work performance (Blank et al., 2008). This suggests that families that have a sick child are at higher risk of lower employment performance and limit them to achieve better neighborhood outcomes.

The “stress” topic kept coming up during my conversations with the mothers. One mentioned:

"I feel a lot of stress that my husband is the only one that provides income to the house, and there's a lot of things to buy for my son"[4]
This comment is specifically relevant because it implies the relationship between income and her husband. Literature says that finance-related family problems are more persistent within families with a sick child, and is negatively associated with poor maternal and child health (Kuhlthau et al., 2005).

Again, we can also see a negative health impact on more distant members of the family. One parent told me the story of how her child’s sickness had affected the child’s grandmother:

"My mother in law has nerve crisis, and after my daughter was born, her condition got worse. She's always very stressed and worried that something could go wrong" [3]

Based on the K10 scale, the mental health status of respondents who have a sick child score relatively higher than the other group, with an average score of 18.5 compared to 22.5. Scores under 20 suggest the likelihood of having good mental health, while scores between 20 and 24 are likely to have a mild mental disorder. In addition, we can see that there is a higher variance within the group of respondents that have a sick child. Twenty percent of the sick households scored above 30. This score suggests the likelihood of having a severe mental disorder. The difference between groups is statistically significant with a confidence level at a 99% confidence level.

4.5.4 Time

The household’s residential location relative to INA also plays an important role due to the impact on time spent traveling. As discussed before, caregiving for a child with special care needs is time consuming (Parminder Raina; Maureen O’Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005; Kuhlthau et al., 2005), and time is a valuable resource that could be spent getting potential benefits that could ultimately lead to improved residential selection (Pashup et al., 2005). The experience of getting to INA is different for each group, especially considering the mode each use and distance each has to travel. We can see that sick households have a longer commute to INA. They spend close to 2.5 hours a day on average commuting to INA, while non-sick households spend an average of 1.5 hours a day. However, close to 20% of the sick households spend at least 5 hours a day commuting to INA, compared to only 3% of the non-sick households. This difference is statistically significant at the 99% confidence level.
A particular quote narrates this situation:

“I need to take 3 buses in order to get to INA. It takes about two hours and a half and around 40 pesos (2.25 USD) per trip. It takes too much time and it’s too expensive, so I need to ask INA for help because I don’t want my daughter do fall back with her treatment”
5 DISCUSSION

The first question this thesis aims to answer is whether sick households live in poorer neighborhoods relatively to non-sick households. Using a proxy for neighborhood socio-economic status, the study finds that sick households are living in places with 16 SES percentage points lower than non-sick households. I also estimated neighborhood poverty by measuring the difference in the distribution of risk factors to health that previous research has identified at the neighborhood level between both groups. I found that as part of living in lower SES neighborhoods, households with poor health baseline are also living farther away from the city center and INA. In terms of the environment they reside in, sick households also live in places with relatively less access to green areas, poorer air quality and safety perception in their neighborhoods (safety perception is the only difference that is statistically significant). These estimations confirm the first hypothesis that sick households are living in poorer residential locations.

An important thing to note is that there was no distinct pattern identified between the quality of neighborhoods, according to the resources identified, and their geographic location through the metropolitan area. The poor and sick populations are not spatially concentrated in specific sectors of the city. This indicates that there is a possibility that resources at the metropolitan area are not spatially segregated at a higher level, but the unequal distribution of said resources is represented across the city at the neighborhood level.

Being able to avoid stressors, either by moving to a new residential location or living in places where the benefits can be maximized, is an important concern that this thesis addresses. I acknowledge that a large share of the studied population owns a house, which could present a series of independent or dependent limitations to move due to financial, emotional, and social motivations, but this thesis studies the possibility that health is a risk factor for poor residential mobility and selection.

The second hypothesis tested is how poor exacerbates the limitations that families might already have to improve their residential selection. It presents health as a risk factor for poor neighborhood choice due to the potential impact that having a sick child has on the household's capabilities to access valuable resources. Extending on mechanisms from poor health to poor neighborhoods that previous literature has identified (Arcaya et al., 2014) together with one other hypothesis based on interview data and literature on caregiving burden, the study presents four potential pathways that lead sick households to live in poor residential environments.
Material
The first potential pathway that might link poor health to poor residential environment is the scarce material resources that these families have limits their ability to be economically productive. Beyond the poor financial resources of the sick population studied, maternal employment within this group is significantly lower, and close to 50% of the respondents stated to have had to trade-off a job in exchange of the need to take care of their sick child. This finding supports previous studies that indicate the same impact that poor health has on households (Kuhlthau et al., 2005; Parminder Raina; Maureen O’Donnell; Peter Rosenbaum; Jamie Brehaut et al., 2005; Raina et al., 2004). Another important consideration, is that sick households are almost one person larger. These two findings, taken in conjunction, mean that the ratio of productive persons in the households is lower than average, which impacts in the household’s productivity and limits its ability to afford living in more affluent neighborhoods. In addition, sick households allocate twice as much of their expenses on health compared non-sick households. The interview data suggest that beyond spending more on health related goods, sick households are also bound to invest in other resources to alleviate the caregiving burden and to prevent injuries such as buying a vehicle or making their home handicap accessible. These type of expenses add a level of understanding to the financial burden of sick households, where it is not only the higher health costs (Kuhlthau et al., 2005), but families also suffer the opportunity cost of being forced to acquire goods that would normally not be needed.

Social
Both the literature and interviews support the possibility that social support influences residential choice by encouraging relocations closer to family (Arcaya et al., 2014; Sampson & Sharkey, 2008). We can see that sick households have a higher rate of trading off relationships with both friends and family in order to be able to handle their child’s special care needs. Forty percent of sick households stated to have had to trade-off family and friends relationships in order to take care of child, whereas only 15% and 23% of non-sick households stated they had done so. This could be partially explained by the travel burdens families face due to poor transportation infrastructure and long commutes.

The implication of this finding is that sick households trade-off relationships that could potentially provide them with the social support to live in better places or increase their access to resources needed to improve residential selection. Families provided support for this notion by explaining that they benefit from good social support, either living with a relative, or in a relative’s property. The directionality of this mechanism is complicated to define due to the mixed results that the two data sources provide. However, survey data identifies the possibility that good relationships with family
and/or friends might limit people into living in particular places because it is a benefit they are receiving at potentially lower costs than that of living in a poor residential location.

*Psychological*

Another potential variable that limits sick households’ ability to live in lower poverty neighborhoods is mental health. Literature shows that low mental capacity limits people from proceeding with needed steps to benefit from opportunities to move (Sampson & Sharkey, 2008). This study finds that sick households are more likely to have moderate to severe mental disorders. Interview data suggests that the exhaustive attention that caregivers provide their children could be responsible. We can assume that caregiving is a process that takes mental energy away from other activities, like looking for a new place or accessing other resources, such as income, needed to live in lower poverty neighborhoods.

*Time*

Finally, limited time due to the long and complicated commutes that sick households do during the day might add to the existing burden of caregiving. Long commutes could potentially leave households with little to no time during the day to spend looking for other places to live or finding a job to increase the household income. The time that households spend commuting can be influenced by a set of factors: the residential location in relation with INA; the mode(s) of transport used; and the quality of the infrastructure. Sick households spend close to 2.5 hours a day on average commuting to INA, while non-sick households spend an average of 1.5 hours a day. However, close to 20% of the sick households spend at least 5 hours a day commuting to INA, compared to only 3% of the non-sick households. The survey data illustrates that it is more than distance between destinations that affect travel time and experience. A common thing to hear was that buses do not stop when they see mothers carrying a child and extra bags because they are at full capacity. Other comments pointed at the physical and social discrimination towards disability, both by transit infrastructure and by bus drivers and passengers.
6 CONCLUSION

This study supports the hypothesis that health is a risk factor for residential selection into poor areas by impacting a household's available resources and limiting its neighborhood choice, based on previous theoretical assessments (Arcaya et al., 2014) (Pashup et al., 2005). The hypothesis was tested by comparing a group of sick households to a group of non-sick households to assess the potential mechanisms by which poor health limits residential choices.

Results suggest, support for the claim that sick households live in relatively poorer neighborhoods and are “trapped” in such environments. This study suggests four possible mechanisms that reciprocally limit sick households to live in poor residential environments:

- First, sick households have fewer material resources, lower means to produce, and fewer financial saving options.
- Second, although the study suggests that sick households tend to trade-off relationships with friends or family in order to take care of their sick child, they might still be taking advantage of opportunities offered by friends or family to live in places near to them, or in places that they help to finance.
- Third, in sick households, parents tend to have lower mental capacity to adequately balance activities other than taking care of their child, which suggests low mental bandwidth to deal with relocation processes.
- Fourth, sick households live farther out from the city center and INA, forcing them to spend significantly more time commuting to INA. Beyond the extra time needed to take care of the special care needs of their child, this further limits parents’ time to invest in the production of more financial resources or to go through the process of finding the ideal place to live.

The implications for these suggestive findings are that sick households might be limited to stay or be sorted into relatively poor neighborhoods due to the scarce quantity of resources available to them. A significant thing to note is that these mechanisms do not operate independently from each other, but instead, they might create a positive feedback loop which can reinforce poor health, poverty, and poor residential location.
There are three main contributions that this study adds to previous research. An initial finding supports the possibility that sick people live in poor places. A second contribution is identifying the mechanisms by which sick people might be sorted into poor. And finally, this study shows how the interrelationship between health and place might support previous theoretical explanations of health justice on why the poor suffer from disproportionally worse health conditions than the rest of the population.

RECOMMENDATIONS

This study supports the theoretical foundation that health is a risk factor for residential selection into poor areas due to its impact on a household’s resources. I propose a set of recommendations to be considered by stakeholders that attempt to break the cycle of poor health, poverty, and residential location. I categorize them in short-term and long-term actions to address the identified mechanisms both individually and collectively.

Short-term:

Start a mobility assistance program to help parents identify ideal locations to live.

As the results suggest, two of the possible limitations parents with sick children have are time and bandwidth to invest in finding ideal places to live. By providing support and technical assistance to families, the probability of them improving their residential location could be higher, if the only remaining task is deciding among a set of pre-sorted options.

Actors: INA.

Partner with a clinic nearer the CBD to provide weekly or monthly medical appointments.

I acknowledge how challenging it would be for INA to relocate or open a new branch in a central part of the city, but I would suggest considering some alternative solutions, such as partnering with other health clinics, to bring certain services closer to families. The costs for parents to bring their children go beyond financial, and they also represent a significant allocation of daily time and energy. Partnerships with other health centers in the city could help INA deliver some of their services to support families without having to consume so much of their valuable time and resources.

Actors: INA, health partners.
Generate working opportunities for parents at/near INA and at homes

There is a large maternal unemployment rate within sick households of this population. And based on the interviews, bringing their child to INA on a daily to weekly basis, and intensive caregiving at home prevent them from working. This opens up the opportunity to provide an income generation platform at or nearby INA, if not in parents’ homes. This could happen in conjunction with public microcredit institutions and employment centers near INA.

Actors: INA, City, MLMB.

*Long-term. Recommendations for the government:*

**Affordable housing and health centers**

As the study shows, there is a correlation between the location where sick households live and the relatively higher costs of accessing the benefits distributed across the city. Sick and poor households often live in the outer parts of the metropolitan area, and their mobility costs end up being unsustainable for the household. Cities should pay particular attention at the population that is poor and sick, considering, as this thesis suggests, that they are vulnerable to reproducing their poor health and poverty status due to the poor locations they live in. This opens up an opportunity for developing a policy where the synced development of affordable housing, transportation, and health care facilities could serve as a potential mechanism to improve access for poor and sick households to promote their health and socioeconomic status.

Actors: City, INFONAVIT, and Ministry of Health

**Increase health data accuracy and availability**

The current census lacks data that could help make further social epidemiology research in Mexican cities. There are limited variables that inform the health status of residents, and the census only focuses on a small set of physical and cognitive disabilities, without specifying types of disabilities such as Cerebral Palsy. In addition, public health survey data is mainly available at city-level unit of analysis. It is especially relevant to generate detailed data on public health in Monterrey in order to understand and tackle the causes of disease which in many cases are preventable, and should be properly understood through a social epidemiology framework.

Actors: INEGI
### Table 8: Potential mechanisms to poor residential environments

<table>
<thead>
<tr>
<th>Theory</th>
<th>Material</th>
<th>Social</th>
<th>Psychological</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Residual Selection</td>
<td>Large households predict lower mobility (Pashup et al., 2005)</td>
<td>Moves to places closer to family and friends (Sampson &amp; Sharkey, 2008)</td>
<td>Mental health impacts selection (Sampson &amp; Sharkey, 2008)</td>
<td>Time to deal with moving processes (Pashup et al., 2005)</td>
</tr>
<tr>
<td>Health impact on households</td>
<td>Low parental employment (Kim et al., 1999) (Curran et al., 2001) (Raina et al., 2005) (Raina et al., 2004) (Kuhlthau et al., 2005)</td>
<td>Caretaking impacts on mental health and productivity (Raina et al., 2004).</td>
<td>Risks of poor mental health (Raina et al., 2005) Poor mental health and poor work performance (Blan et al., 2008).</td>
<td>Caregiving is time demanding (Raina et al., 2004) (Kuhlthau et al., 2005) (Curran et al., 2001)</td>
</tr>
<tr>
<td>Variables</td>
<td>Trade off a job (self-reported) Health expenses ratio (percentage of total expenses)</td>
<td>Trade-off relationships with friends and/or family (self-reported)</td>
<td>Mental Health (K-10 self-assessed survey)</td>
<td>Time to INA (estimation by survey respondent)</td>
</tr>
<tr>
<td>Analysis</td>
<td>50% of sick households have traded off a job Only 26% of sick household’s mothers work. 12% of expenses are distributed to health care</td>
<td>40% trade-off relationships with family or friends</td>
<td>40% of sick households are likely to have a mild or severe mental disorder</td>
<td>20% of sick households spend at least 5 hours commuting to and from INA</td>
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<tr>
<td>Discussion</td>
<td>Sick households have less resources, lower means to produce, and limited possibilities to save which impacts on disposable income to live in more affluent neighborhoods. Sick households trade-off relationships that potentially impacts on social support to live in better places, or increase their access to resources needed to improve residential selection. Caregivers tend to focus most mental capacity to the needs of their child which could limit them from bandwidth to find resources or other places to live.</td>
<td>Large distribution of time and energy commuting might limit families from productive activities like work or dealing with residential mobility processes.</td>
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<tr>
<td>Recommendations</td>
<td>INA: Generate working opportunities for parents at/near INA and homes Start a mobility assistance program to help parents identify ideal locations to live Partner with a clinic nearer the CBD to provide weekly or monthly medical appointments</td>
<td>City Wide: Affordable housing and health centers Increase health data accuracy and availability</td>
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<tr>
<td>Sampson &amp; Sharkey</td>
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<td>Pashup</td>
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<td>Merlis</td>
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<td>Hwang</td>
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<td>Blan et al.</td>
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FURTHER RESEARCH

What factors predicts caregiver’s paid employment?
This thesis finds that, based on the population studied, only 26% of mothers in sick households’ work, compared to 58% in non-sick households. And based on interviews, mothers who work do so in places that are close to their homes or in places where they are allowed to bring their child. There could be a potential relationship between land use and maternal employment that, if confirmed, could set recommendations for improving the opportunities to raise the income of sick households.

Have sick households moved to poorer environments over time?
The survey employed a set of questions that looked at the differences in neighborhood quality for those respondents that reported household relocation. This could potentially inform future studies that seek to address an overall question of move quality. For example, they could assess whether sick households move to poorer places over time and what are the mediating factors that explain this relationship.

What built environment factors predict a decrease in capabilities?
As this study suggests, sick households might be limited in their ability to improve their residential choices due to poor health. Future studies could attempt to create assessments that go beyond health, asking what the characteristics are that predict significant differences in capabilities within the sick group.
LIMITATIONS

The limitations of this study mainly fall into the results obtained from the survey.

First, the survey was not initially intended to be part of the study. It was incorporated after analyzing the interview results. Because of time constraints, the survey was designed in a short period of time, which limited the depth of analysis for questions to include and for instruments to use. This produced a long online-based survey, which limited my ability to control the consistency of the respondents: due to the length and accessibility of the survey, more than one person could have intervened in filling the survey, and affected its results.

Second, the inclusion criterion, which was every person that is associated with INA, including employers, clients, and volunteers, did not control for the fact that some respondents might not have children. This implies that the individual responses might not be compared with full significance. These variables are “mental health”, and “trade-offs”.

Third, as I mentioned before, the sample is not random. Most of the sick households are also relatively poor, which could affect the causal and mediating factors of the results. However, this still allowed for a t-Test analysis to measure the differences between sick and non-sick households, leaving income as an extra variable to compare.
REFERENCES


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APPENDIX

INTERVIEW QUESTIONS

Appendix B - Semi - structured Interview Question Guide.

Interviewee: Caregiver.

The purpose of this interview is to further understand the challenges but also opportunities that families with a member with Cerebral Palsy have on a day to day basis. The questions are oriented to identify qualitative aspects of the daily life. I will provide a consent to participate form to review and sign prior to we start the interview.

I would like to know a little about your home.
How did you come to be living here?
What do you like about living here?
Can you tell me a little about you and your family?
How close are you to your extended family? Where does everyone work?
If you were having a good day, what would it be like?
Now, I would like to know a little about other places you’ve lived.
Have you as a family, lived in other places?
Why have you moved? What is different now?
Tell me a little about your family back then, was [child with CP] already born?
Did you get any help caregiving back then?
What about now? What are the main challenges?
Can you tell me the differences between the neighborhood you lived before and the one you live in now?

Ask about neighbors, public spaces, transportation, access to food and jobs, safety perception, air quality, noise, etc.

Now, I would like to know your expectations of your future home in case you feel the need to move.

How do you visualize it?

Why do you think that is best for you and your family?

How do you visualize that happening?

What has to change in order for that to happen?

Thank you very much for your time, if you would like to add anything, please feel free to let me know.
SURVEY

The following pages contain the full survey applied, however, not every question or instrument was used for this study.

Salud y Ciudad

P1.1 CONSENTIMIENTO DE PARTICIPAR EN ENCUESTA  Agradecemos tu tiempo y voluntad de participar en el estudio desarrollado en conjunto entre el Instituto Nuevo Amanecer A.B.P. y Más Libertad Menos Barreras. El propósito de la investigación es entender la relación entre la salud en las personas y el entorno en donde vivimos. El objetivo es identificar los mecanismos por los cuales familias con un integrante con una condición de salud crónica puedan exponer a la familia a mayores riesgos en la salud. Esta encuesta es voluntaria y tiene una duración de aproximadamente 35 minutos. Usted tiene el derecho de no contestar ninguna pregunta, y/o dejar de contestar en cualquier momento por la razón que sea. No habrá remuneración económica. La encuesta es anónima, no requerimos ni su nombre ni la dirección completa de su casa. (Solamente le pediremos el código postal, colonia y municipio donde vive para tener oportunidad de hacer comparaciones georreferenciadas con el resto de la población de Monterrey).

P1.2 Estoy de acuerdo y deseo participar en la encuesta.

☐ Sí (1)
☐ No (2)

P2.1.2 Datos Personales Estas preguntas son relacionadas a tus condiciones personales. Te recordamos que no te pedimos tu nombre, ni datos personales detallados para poder conservar la privacidad de esta encuesta.

P2.2 Año de nacimiento

P2.3 Sexo

☐ Masculino (1)
☐ Femenino (2)

P2.4 ¿Cuál es tu ciudad de origen?

☐ Monterrey (1)
☐ Otra (2)

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P2.5 ¿Cuál es su estado civil?
- Soltera/o (1)
- Casada/o (2)
- Vivo con mi pareja (3)
- Divorciada/o o Separada/o (4)
- Viuda/o (5)

P2.6 ¿Tiene un hijo o hija con parálisis cerebral u otro tipo de discapacidad o enfermedad crónica?
- Sí (1)
- No (2)

P2.7 ¿Quién es la persona responsable de tomar decisiones relacionadas al hogar?
- Yo soy la persona responsable de tomar decisiones relacionadas al hogar (1)
- Yo comparto las responsabilidades de toma de decisiones con otra persona (2)
- Alguien más tiene la responsabilidad de la toma de decisiones en el hogar (3)

P2.8 ¿Cuál es el nivel de educación del padre de la familia?
- Primaria (1)
- Secundaria (2)
- Preparatoria (3)
- Carrera técnica (4)
- Profesional (5)
- Posgrado (6)
- Otro (7)
- Ninguno / No sabe (8)

P2.9 ¿Cuál es el nivel de educación de la madre de la familia?
- Primaria (1)
- Secundaria (2)
- Preparatoria (3)
- Carrera técnica (4)
- Profesional (5)
- Posgrado (6)
- Otro (7)
- Ninguno / No sabe (8)
P2.10 ¿Cuál es tu estado laboral actual? seleccionar todas las que apliquen.

- Un trabajo, tiempo completo (1)
- Múltiples trabajos (2)
- Un trabajo, medio tiempo (3)
- Trabajo del hogar (4)
- Desempleada/o (5)
- Retirada/o (6)
- Estudiante (7)
- Voluntaria/o de tiempo completo (8)
- No se (9)
- No aplica (10)

P2.11 ¿Cuál es el estado laboral actual de su pareja? seleccionar todas las que apliquen.

- Un trabajo, tiempo completo (1)
- Múltiples trabajos (2)
- Un trabajo, medio tiempo (3)
- Trabajo del hogar (4)
- Desempleada/o (5)
- Retirada/o (6)
- Estudiante (7)
- Voluntaria/o de tiempo completo (8)
- No se (9)
- No Aplica (10)

P2.12 ¿Con quién vives ahorita? seleccionar todas las que apliquen

- Vivo sola/o (1)
- Con una persona que no tiene relación conmigo (2)
- Con parientes (3)
- Con mi pareja (4)
- Con mis hijos (5)
- Con mis papás (6)
- Otro (7)

P3.1 3. Hogar

P3.2 En tu casa, ¿tienes perros o gatos? selecciona todas las que apliquen

- Perro (1)
- Gato (2)
- Ninguno (3)

P3.3 En tu casa, ¿cuántas personas fuman?
P3.4 En tu casa, ¿cuántas personas habitan de los siguientes grupos de edad? por favor incluyase a usted y excluya a visitas temporales.

- 0-2 años (1)
- 3-5 años (2)
- 6-10 años (3)
- 11-13 años (4)
- 14-18 años (5)
- 18-30 años (6)
- 31-50 años (7)
- 51-65 años (8)
- 66-80 años (9)
- 81 + años (10)

P4.1 4. Detalles del Hogar

P4.2 Ubicación de residencia actual: Por favor sólo indicar el nombre de la Colonia y el Código Postal como se indica abajo. Favor de no poner nombre de calle y número.

- Colonia (1)
- Código Postal (2)
- Municipio (3)

P4.3 ¿Vive en casa propia, rentada o prestada?

- Propia (1)
- Rentada (2)
- Prestada (3)
- Otro (4) ________________

P4.4 ¿En qué año se mudó a su casa donde vive ahora?

P4.5 ¿Cuántas habitaciones tiene su casa?

P4.6 ¿Cuántos baños tiene su casa?
P4.7 ¿Tiene acceso a un carro en su casa?
- Si, tengo carro propio en mi casa (1)
- Si, me prestan uno o me dan ride (2)
- No tengo carro o acceso a uno (3)

P4.8 ¿Ha tenido problemas para pagar los servicios? (renta, agua, luz, etc?)
- Si (1)
- No (2)

P4.9 ¿Cuál es el ingreso promedio mensual en su hogar?
- $7,879 o menos (1)
- $7,880 - $13,499 (2)
- $13,500 - $40,599 (3)
- $40,600 o más (4)

P4.10 ¿Cuál es el costo mensual que paga de renta o crédito para su casa? si ya terminó de pagar su casa, escriba "0".

P4.11 Aproximadamente, ¿Cuánto paga mensualmente en los siguientes servicios?
- Luz (1)
- Gas (2)
- Agua (3)

P4.12 Aproximadamente en su casa, ¿Cuánto gastan semanalmente en los siguientes conceptos?
- Alimentos y bebidas para la casa (1)
- Medicamentos y cuidados de la salud (2)
- Transporte y/o gasolina (3)
- Artículos para la escuela (4)
- Artículos de limpieza y cuidados de la casa (5)

P5.1 5. Calidad de la Casa
P5.2 ¿En qué tipo de vivienda vive?
- Casa uni-familiar con patio (1)
- Casa uni-familiar sin patio (2)
- Departamento (3)
- Cuarto (baño y cocina compartida) (4)
- Otro (5)

P5.3 ¿Los muros de su casa son de material firme? (block, concreto, ladrillo, etc)
- Sí (1)
- No (2)

P5.4 ¿El techo de su casa es de material firme? (vigüeta, bovedilla, concreto, ladrillo, etc)
- Sí (1)
- No (2)

P5.5 ¿El piso de su casa es piso firme? (concreto, madera, azulejo, etc)
- Sí (1)
- No (2)

P5.6 Por favor conteste dependiendo del grado de satisfacción considerando los siguientes datos.

<table>
<thead>
<tr>
<th></th>
<th>Muy en desacuerdo (1)</th>
<th>En desacuerdo (2)</th>
<th>Más o menos (3)</th>
<th>De acuerdo (4)</th>
<th>Muy de acuerdo (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mi casa tiene buena ventilación (1)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Mi casa tiene problemas de humedad (2)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>En mi casa me siento seguro/a (3)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Mi casa se mantiene fresca en verano (4)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Mi casa se mantiene cálida en invierno (5)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Mi casa tiene problemas de goteras (6)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>En mi casa hay agua a la temperatura que necesito (7)</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>
P5.7 ¿Hay más de 2 personas viviendo en un cuarto? (ej. 3, 4 o más personas durmiendo en la misma habitación)
- Sí, en todos los cuartos (1)
- Sí, en un cuarto (2)
- No (3)

P5.8 ¿Tu casa es accesible desde la calle?
- Sí, tenemos una rampa (1)
- Sí, el acceso es directo, sin escalones (2)
- No (3)

P5.9 ¿De cuántos niveles es tu casa?
- 1 (1)
- 2 (2)
- 3 o más (3)

Answer If ¿De cuántos niveles es tu casa? 1 Is Not Selected

P5.10 Si tu casa es de 2 pisos o más, ¿tienes baño en los dos pisos?
- Sí, los dos con regadera y baño (1)
- Sí, pero sólo uno tiene regadera (2)
- No, sólo tengo baño arriba (3)
- No, sólo tengo baño abajo (4)

P6.1 6. Calidad de la Colonia

P6.2 Alrededor de tu casa, ¿Qué tipo de casas o edificios hay?
- Puras casas de 1 piso (1)
- Puras casas de 2 pisos (2)
- Casas de 1 y 2 pisos (3)
- Casas (1 y 2 pisos) y Edificios de departamentos (3 pisos o más) (4)
- Puros edificios de departamentos (3 pisos o más) (5)
P6.3 Tiendas, locales y otras cosas en tu colonia. Como cuánto tiempo te toma o tomaría llegar al lugar más cercano de los que aparecen abajo si te vas caminando?

<table>
<thead>
<tr>
<th>Local</th>
<th>1-5 min (1)</th>
<th>6-10 min (2)</th>
<th>11-20 min (3)</th>
<th>21-30 min (4)</th>
<th>31+ min (5)</th>
<th>no se / no hay (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>tienda de abarrotes (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>supermercado (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>ferretería (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>mercado de frutas y verduras (4)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>lavandería (5)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>librería (6)</td>
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<td>☐</td>
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<tr>
<td>escuela primaria (7)</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>otras escuelas (8)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>restaurante (9)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>banco (10)</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>café o panadería (11)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>farmacia (12)</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>tu trabajo (13)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>parada de autobús o metro (14)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>parque (15)</td>
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<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<tr>
<td>centro recreativo / deportivo (16)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tbody>
</table>
### P6.4 Acceso a servicios
Selecciona la respuesta que mejor aplique a ti y a tu colonia.

<table>
<thead>
<tr>
<th>Opción</th>
<th>Muy en desacuerdo (1)</th>
<th>En desacuerdo (2)</th>
<th>Más o menos (3)</th>
<th>De acuerdo (4)</th>
<th>Muy de acuerdo (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hago todas mis compras en tiendas locales (1)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Es fácil llegar caminando a las tiendas desde mi casa (2)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Es difícil encontrar estacionamiento en las tiendas locales (3)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Hay muchos lugares para ir caminando desde mi casa (4)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Es fácil ir caminando a una parada de transporte desde mi casa (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Las calles de mi colonia están empinadas y hace que sea difícil caminar (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tengo que salir de mi colonia para encontrar lo que necesito (7)</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### P6.5 Calles en mi colonia
Selecciona la respuesta que mejor aplique a ti y a tu colonia.

<table>
<thead>
<tr>
<th>Opción</th>
<th>Muy en desacuerdo (1)</th>
<th>En desacuerdo (2)</th>
<th>Más o menos (3)</th>
<th>De acuerdo (4)</th>
<th>Muy de acuerdo (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Las calles de mi colonia son &quot;calles sin salida&quot; (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hay caminos peatonales que conectan las &quot;calles sin salida&quot; (2)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Las cuadras de mi colonia son cortitas (menos de 100 metros) (3)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Hay muchas maneras de llegar de lugar a lugar en mi colonia. (No siempre me tengo que ir por el mismo camino.) (4)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
P6.6 Banquetas en mi colonia
Selecciona la respuesta que mejor aplique a ti y a tu colonia.

<table>
<thead>
<tr>
<th>Opción</th>
<th>Muy en desacuerdo (1)</th>
<th>En desacuerdo (2)</th>
<th>Más o menos (3)</th>
<th>De acuerdo (4)</th>
<th>Muy de acuerdo (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hay banquetas en casi todas las calles de mi colonia (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Todas las banquetas estan en buenas condiciones (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hay lugares cerca de mi colonia para ir a caminar o andar en bici (3)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Me siento seguro de que no me atropellen caminando por la banqueta (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Los cruces peatonales son a nivel de calle y seguros (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

P6.7 Los alrededores de mi colonia
Selecciona la respuesta que mejor aplique a ti y a tu colonia.

<table>
<thead>
<tr>
<th>Opción</th>
<th>Muy en desacuerdo (1)</th>
<th>En desacuerdo (2)</th>
<th>Más o menos (3)</th>
<th>De acuerdo (4)</th>
<th>Muy de acuerdo (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hay árboles en las calles de mi colonia (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Los árboles proveen de buena sombra para caminar en las banquetas (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hay cosas interesantes que ver mientras camino en mi colonia (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>En mi colonia hay poca basura en las calles (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hay paisajes bonitos que ver desde mi colonia (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hay edificios y/o casas que me gustan en mi colonia (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
P6.8 Seguridad del tráfico: Selecciona la respuesta que mejor aplique a ti y a tu colonia.

<table>
<thead>
<tr>
<th>Enunciado</th>
<th>Muy en desacuerdo (1)</th>
<th>En desacuerdo (2)</th>
<th>Más o menos (3)</th>
<th>De acuerdo (4)</th>
<th>Muy de acuerdo (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hay mucho tráfico en la calle donde vivo que hace difícil o poco agradable caminar en mi colonia (1)</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
</tr>
<tr>
<td>Hay mucho tráfico en las calles aledañas a la mía que hace difícil o poco agradable caminar en mi colonia (2)</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
</tr>
<tr>
<td>La velocidad del tráfico en la calle donde vivo es lenta (de 40 km/hr o menos) (3)</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
</tr>
<tr>
<td>La velocidad del tráfico en las calles aledañas a la mía es lenta (de 50 km/hr o menos) (4)</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
</tr>
<tr>
<td>La mayoría de los carros van a exceso de velocidad en mi colonia (5)</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
</tr>
<tr>
<td>Hay cruces peatonales y señalamientos que me ayudan a cruzar las calles de mi colonia (6)</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
</tr>
<tr>
<td>Los cruceros en mi colonia ayudan a los peatones a cruzar seguros las calles (7)</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
</tr>
<tr>
<td>Cuando camino por mi colonia hay mucha contaminación por el humo de los carros (8)</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
<td>🌟</td>
</tr>
</tbody>
</table>
P6.9 Seguridad de crimen: Selecciona la respuesta que mejor aplique a ti y a tu colonia.

<table>
<thead>
<tr>
<th></th>
<th>Muy en desacuerdo (1)</th>
<th>En desacuerdo (2)</th>
<th>Más o menos (3)</th>
<th>De acuerdo (4)</th>
<th>Muy de acuerdo (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Las calles de mi colonia están bien iluminadas (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Es fácil ver a los peatones y ciclistas desde las casas (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Normalmente platico con otras personas cuando camino por mi colonia (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Mi colonia es segura (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
</tr>
<tr>
<td>La inseguridad en mi colonia me limita a salir durante el día (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>La inseguridad en mi colonia me limita a salir durante la noche (6)</td>
<td>○</td>
<td>○</td>
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<td>○</td>
</tr>
</tbody>
</table>

P7.1 7. Experiencia de Traslado

P7.2 ¿Qué relación tienes con el Instituto Nuevo Amanecer? selecciona todas las que apliquen

- Trabajo ahí (I)
- Mi hija(o) recibe terapia o va a la escuela ahí (2)
- Soy voluntaria(o) (3)
- Ninguna (4)

Answer If Tiene un hijo o hija con parálisis cerebral u otro tipo de discapacidad o enfermedad crónica? Si la Selected

P7.3 ¿Qué días de la semana vas a algún lugar especial para el tratamiento de tu hija(o)? por ejemplo: INA, hospital, clínica, etc. Selecciona todas las que apliquen.

- Lunes (1)
- Martes (2)
- Miércoles (3)
- Jueves (4)
- Viernes (5)
P7.4 ¿Cuál es tu principal modo de transporte para moverte en la ciudad?

- Auto propio (1)
- Transporte público (2)
- Transporte del INA (3)
- Taxi (4)
- Me llevan (5)
- Otro (6)

Answer If ¿Qué relación tienes con el Instituto Nuevo Amanecer? selecciona todas las que apliquen Ninguna Is Not Selected

P7.5 Tiempos de traslado

<table>
<thead>
<tr>
<th></th>
<th>10-30 min (1)</th>
<th>30-60 minutos (2)</th>
<th>1-1:30 hrs (3)</th>
<th>1:30-2:00 hrs (4)</th>
<th>2:00 hrs o más (5)</th>
<th>No aplica (no trabajo) (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiempo en llegar al INA desde la casa (1)</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiempo en regresar a casa del INA (2)</td>
<td>O</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Tiempo al trabajo desde la casa (3)</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Tiempo del trabajo a la casa (4)</td>
<td>O</td>
<td></td>
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P7.6 Calidad de servicio del transporte

<table>
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<tr>
<th>Actitud del usuario</th>
<th>Muy en desacuerdo (1)</th>
<th>En desacuerdo (2)</th>
<th>Más o menos (3)</th>
<th>De acuerdo (4)</th>
<th>Muy de acuerdo (5)</th>
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</thead>
<tbody>
<tr>
<td>El costo del transporte es justo (1)</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Los camiones pasan seguido (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Es fácil subir al camión (3)</td>
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<tr>
<td>Hay lugar para sentarse (4)</td>
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<tr>
<td>Siempre llego a mi destino a la hora que necesito (5)</td>
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<tr>
<td>Los choferes son profesionales (6)</td>
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<tr>
<td>Los pasajeros son educados (7)</td>
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<tr>
<td>No hay discriminación (no me tratan diferente por mi género, discapacidad, u otra razón) (8)</td>
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<tr>
<td>El camión es seguro en el día (9)</td>
<td>○</td>
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<tr>
<td>El camión es seguro en la noche (10)</td>
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<tr>
<td>Siempre hay paradas cerca de donde quiero llegar (11)</td>
<td>○</td>
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</tbody>
</table>
P8.1 8. Tiempo
Por favor indique el número de horas que le dedica o toma cada actividad al día. (ejemplo: 3 para tres horas, 3.5 para tres horas y media).

Dormir (1)
Comprar alimentos (2)
Preparar alimentos (3)
Comer (12)
Traslados en la calle (4)
Trabajo (5)
Escuela (6)
Cuidado Personal (7)
Cuidado de sus hijos (8)
Cuidado de personas mayores (9)
Ver televisión (10)
Ejercicio (11)
Terapias o cuidado de la salud de sus hijos (14)
Limpieza del hogar (15)

P9.1 9. Capital Social en la Colonia
P9.2 Para cada uno de las siguientes preguntas, por favor indica que tan seguido pasan estas cosas en un año en tu colonia.
Nota: un pariente o familiar cuenta como vecino.
<table>
<thead>
<tr>
<th></th>
<th>Nunca (1)</th>
<th>Una vez al año (2)</th>
<th>Pocas veces al año (3)</th>
<th>Una vez al mes (4)</th>
<th>Una vez a la semana (5)</th>
<th>Casi todos los días (6)</th>
<th>No se (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. ¿Cada cuánto los vecinos cuidan los hijos de otros vecinos? (1)</td>
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<tr>
<td>B. ¿Cada cuánto los vecinos comen juntos? (2)</td>
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<tr>
<td>C. ¿Cada cuánto ves a vecinos platicando por más de 10 minutos? (3)</td>
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<tr>
<td>D. ¿Cada cuánto se prestan cosas los vecinos? (4)</td>
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<td>E. ¿Cada cuánto se saludan los vecinos en la calle? (5)</td>
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<tr>
<td>F. ¿Qué tan probable es que los vecinos hagan algo sobre niños faltando clases o estén de vagos en la calle? (6)</td>
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<tr>
<td>G. ¿Qué tan probable es que los vecinos hagan algo sobre gente grafiteando las paredes? (7)</td>
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<tr>
<td>H. ¿Qué tan probable es que vecinos regañen a niños que estén faltando al respeto? (8)</td>
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<tr>
<td>G. ¿Qué tan probable es que veas a un vecino separando una pelea enfrente de su casa? (9)</td>
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<tr>
<td>1. ¿Qué tan probable es que un vecino haga algo si no ve a policías patrullando las calles? (10)</td>
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</tbody>
</table>

### P10.1 10. Selección de Vivienda

### P10.2 ¿Se ha movido de casa en los últimos 12 meses?
- Sí (1)
- No (2)

### P10.3 ¿Cuántas veces ha cambiado de casa desde que nació su primer hijo(a)?
- Ninguna (1)
- 1 vez (2)
- 2 veces (3)
- 3 veces (5)
- Más de 3 veces (favor de especificar) (4) _____________
- Ninguna (6)
Como familia, ¿cuántas veces ha cambiado de casa desde que nació su primer hijo(a)? Ninguna ls Not Selected

Ubicación de su casa anterior: Por favor sólo indicar el nombre de la Colonia y el Código Postal como se indica abajo. Favor de no poner nombre de calle y número.

Colonia (1)
Código Postal (2)
P10.5 Comparando su casa anterior con la casa donde vive ahorita...
<table>
<thead>
<tr>
<th></th>
<th>Mejoró mucho (1)</th>
<th>Mejoró (2)</th>
<th>Es igual (3)</th>
<th>Empeoró poco (4)</th>
<th>Empeoró mucho (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>La calidad de la casa (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>La accesibilidad en la casa (ej. rampas, barandales, etc) (2)</td>
<td>○</td>
<td>○</td>
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<td>○</td>
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<tr>
<td>El costo de los servicios (3)</td>
<td>○</td>
<td>○</td>
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<tr>
<td>El acceso a tiendas de comida (4)</td>
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<tr>
<td>El acceso a transporte público (5)</td>
<td>○</td>
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<tr>
<td>El acceso a farmacias o clínicas (6)</td>
<td>○</td>
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<tr>
<td>La seguridad de la colonia (7)</td>
<td>○</td>
<td>○</td>
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<tr>
<td>La calidad de las calles y banquetas (8)</td>
<td>○</td>
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<tr>
<td>La relación con los vecinos (9)</td>
<td>○</td>
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<tr>
<td>El acceso a parques y espacios públicos (10)</td>
<td>○</td>
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<tr>
<td>La calidad del aire (11)</td>
<td>○</td>
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</tbody>
</table>
Las oportunidades de trabajo (12)  
El acceso a escuelas (13)  

P10.6 Por favor seleccione las tres razones principales por las cuales no se ha cambiado de casa en los últimos 10 años.

- Precio de la casa (1)
- Casa propia (4)
- Calidad de la casa (5)
- Tamaño de la casa (6)
- Calidad de la colonia (7)
- Cerca de familia y/o amigos (8)
- En donde vivo ahora me ayudan con los niños (9)
- Conveniente por buenas escuelas (10)
- Conveniente por trabajo (11)
- Conveniente por transporte público (12)
- Precio de la renta (2)
- Otro (3)

P10.7 Por favor seleccione las tres razones principales por las cuales escogió vivir donde vive ahora.

- Precio de la casa (1)
- Casa propia (2)
- Calidad de la casa (3)
- Tamaño de la casa (4)
- Calidad de la colonia (5)
- Cerca de familia y/o amigos (6)
- En donde vivo ahora me ayudan con los niños (12)
- Conveniente por buenas escuelas (7)
- Conveniente por trabajo (8)
- Conveniente por transporte público (9)
- Costo de la renta (11)
- Otro (10)

P11.1 11. Sacrificios
P11.2 Normalmente, las personas tienen que hacer sacrificios difíciles en la vida. Por favor selecciona de la lista de abajo, lo que has tenido que dejar pasar por darle prioridad a la salud de tus hijos. Por favor selecciona 3 opciones como máximo.

- Un buen trabajo (1)
- Seguir con los estudios (2)
- Relaciones con la familia (3)
- Relaciones con los amigos (4)
- Relaciones románticas (5)
- Una buena escuela para mis hijos (mi hijo/a) (6)
- Una buena casa (7)
- Un buen vecindario (8)
- Buena salud física (9)
- Buena salud mental (10)
- Sentirme cómoda/o (11)
- Dinero (12)
- Otras cosas (13)
- No aplica / no tengo hijos (14)

P12.1 12. Salud
Por favor complete la siguiente tabla sobre su condición de salud actual.

<table>
<thead>
<tr>
<th></th>
<th>¿Alguna vez le ha dicho un doctor que tiene una de las siguientes condiciones de salud?</th>
<th>¿Se lo diagnosticaron antes o después de tener su primer hijo?</th>
<th>¿Ha tenido problemas con la condición en el último mes?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Si (1)</td>
<td>No (2)</td>
<td>Si (1)</td>
</tr>
<tr>
<td>Hipertensión o Presión alta (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Diabetes (2)</td>
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<tr>
<td>Asma o problemas respiratorios (3)</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Infarto u otro problema neurológico (4)</td>
<td>☐</td>
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<tr>
<td>Cancer (5)</td>
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<tr>
<td>Problemas en el corazón (6)</td>
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<tr>
<td>Depresión, ansiedad, u otra condición mental (7)</td>
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</tbody>
</table>
Las siguientes preguntas tratan sobre su salud en los últimos 30 días.
<table>
<thead>
<tr>
<th>En los últimos 30 días, ¿qué tanto ha sentido cansancio por ninguna razón en específico? (1)</th>
<th>Nunca (1)</th>
<th>Casi nunca (2)</th>
<th>Pocas veces (3)</th>
<th>Muchas veces (4)</th>
<th>Todo el tiempo (6)</th>
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<tr>
<td>En los últimos 30 días, ¿qué tan seguido se siente nervios(a)? (2)</td>
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<tr>
<td>En los últimos 30 días, ¿qué tan seguido se siente tan nerviosa(a) que nada puede calmárla(a)? (3)</td>
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<tr>
<td>En los últimos 30 días, ¿qué tan seguido se siente desesperanzada(a)? (4)</td>
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<tr>
<td>En los últimos 30 días, ¿qué tan seguido se siente muy alterada(a) o ansiosa(a)? (5)</td>
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<tr>
<td>En los últimos 30 días, ¿qué tan seguido se siente tan alterada(a) o ansiosa(a) que no puede calmarse? (6)</td>
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<td>En los últimos 30 días, ¿qué tan seguido se siente deprimida(a)? (7)</td>
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<tr>
<td>En los últimos 30 días, ¿qué tan seguido siente que todo requiere de esfuerzo extra? (8)</td>
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<tr>
<td>En los últimos 30 días, ¿qué tan seguido se siente tan triste que nada puede animarla(o)? (9)</td>
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<tr>
<td>En los últimos 30 días, ¿qué tan seguido se siente desvalorada(o)? (10)</td>
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</tbody>
</table>

Q85 ¿Con qué seguro cuenta usted?

- Seguro Social (1)
- Seguro Popular (2)
- Privado (3)
- Otro (4)
- No tengo (5)
- No se (6)

P13.1 13. Seguridad de Ingreso y Egreso

P13.2 Considerando todas las fuentes de ingreso incluyendo sueldos, apoyos de gobierno, regalos de familiares, etc... ¿Tienes idea de cuál va a ser el ingreso de tu familia del próximo año?

- Si tengo buena idea (1)
- Tengo un poco de idea (2)
- No estoy muy segura(o) (3)
- No tengo idea (4)
P13.3 Considerando todos los costos mensuales, incluyendo pagos de renta o crédito, transporte, comida, costos de salud, gastos de escuela, etc... ¿Tienes idea de cuáles van a ser los egresos de tu familia del próximo mes?

- Si tengo buena idea (1)
- Tengo un poco de idea (2)
- No estoy muy segura/o (3)
- No tengo idea (4)