

## SPATIAL PATTERNS OF SOCIAL MOBILITY PERCEPTION DERIVED FROM ACCESS TO SOCIAL HOUSING IN A MEXICAN BORDER CITY

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### Abstract

Homeownership has become a crucial element in constructing and confirming social position in western societies. Housing can be an effective social mobility strategy. In the societies of developing countries, however, the potentially positive effects of homeownership might be hindered by financial conditions and quality of housing to which large population sectors can have access. Taking into account the main implications of housing access for social welfare and the unwanted effects produced by national housing policy in Mexico, due to the distortions of the housing and land markets, is necessary to assess if such a policy has produced the desired positive effects in terms of social mobility and if those are being perceived so by the beneficiary population. Thus, the objective of this study is to assess the perception of social mobility derived from the access to social housing in Ciudad Juárez, Chihuahua from 2002 to 2010. For this purpose, we derive and represent spatially three indices of households social mobility perception related to dwelling quality, complex location and urban environment, and housing ownership advantages of their current housing in comparison with their previous or parents' homes. In general, we found that households have a perception of social descent derived from the quality of their new dwelling units; an even more pronounced perception of social descent with respect to the complex location and urban environment conditions; and a regular perception of social ascent with regards to the housing ownership advantages. These results indicate that the supposedly positive social effects of the national housing policy in Ciudad

Juárez have not been fully deployed or at least perceived by the intended beneficiaries. This requires a review of the basic definitions of the policy and to emphasize the social character of housing provision in order to promote the conditions for ascending social mobility.

## Introduction

In most western cultures, homeownership contributes strongly to affirm household position in local society (Bertaux-Wiame and Thompson 2006). Homeownership has become a critical step in attaining membership to an expanding middle class for whom housing value is a key for accessing a 'broader lifestyle of credit based and housing equity fuelled consumption' (Forrest, Kennett, and Leather, 1999). Thus, some researchers have pointed out the growth of homeownership as one of the most significant changes in twentieth century societies (Stephens et al., 2008). Concurrently, at the macro level, contextual factors including globalization and the associate rise of neoliberalism have underlain the tendency for states to favor private forms of housing provision, especially homeownership (Doling, 2010).

In this context, a house may be seen as a marketable asset with a central role in the social advance strategy of many families. Homeownership, therefore, is considered a crucial element in constructing, confirming, and communicating social position and movement. Housing, itself, can be an effective social mobility strategy since it has become a main symbol of social class (Bertaux-Wiame and Thompson, 2006). In societies from developing countries, however, the potentially positive effects of homeownership might be hindered by financial conditions and quality of the housing to which large sectors of the population have access.

In advanced economies, social housing \_\_\_\_ along with emergency shelters, transitional housing, formal and informal rental, and indigenous housing \_\_\_\_ is considered one of the many forms of affordable housing. In this case, social housing, mostly promoted by government and not-for-profit organizations, is aimed at providing low rent housing to people struggling with their housing costs.

### *Current housing scenario in Mexico*

For the purpose of this study in the Mexican scenario, we frame our understating of accessibility to social housing through the political mechanisms that define the eligibility of working population for housing as a primary resource. This access to social housing in Mexico was first established in the political constitution of 1917, where patrons were required to provide clean and comfortable dwellings to their employees. Thereafter, several governmental funds and institutions have been constituted to subsidized and supervised access to housing, through the incorporation of workers to the social security system. Nonetheless the right to housing as an individual guarantee was just recently elevated to constitutional rank in 1983. Thus, we consider social housing as a form of affordable homeownership subsidized and promoted by the government through social credits, for the mid-low and low income sectors of society. This type of housing, as established in the Ley de Vivienda 2006, is aimed at providing working families with decent habitable dwellings that meet applicable legal provisions on human settlements,

construction, basic services and ownership security, through the establishment and regulation of the national housing policy (Congreso de la Unión, 2006).

In housing and basic social infrastructure, Mexico has seen significant progress over the past 20 years. Between 1990 and 2010, the proportion of the population lacking basic housing services decreased from 44 to 19%. Advances in this area, however, have not been uniform in all regions and localities. In 2010, the lack of basic dwelling services affected 9.4% of urban population and 50.4% in rural areas. Similarly, the need for housing replacement or improvement is concentrated in 73% of the population not affiliated to the social security system, who only receives 30% of the total financing for housing (Plan Nacional de Desarrollo, 2013).

Despite advances in housing coverage, still was estimated that 10.8 more million housing units were going to be needed to meet population growth demands in the following 20 years in Mexico. This supposed demand for housing was one of the main factors behind the boost of a restructuring process of the housing sector, aimed at raising massive production of social housing and accelerating the pace of financing between 2000 and 2007 (CIDOC and SHF, 2011). In the current federal administration, the Plan Nacional de Desarrollo 2013-2018, has established among its main strategies: 1. Reducing the backlog of housing; 2. Improving and expanding existing dwellings; 3. Fostering the purchase of new housing by strengthening the role of private and development banks, public mortgage and micro financing institutions; 4. Developing a new model of housing provision for population segments not covered by social security; and 5. Securing housing quality and community social infrastructure in priority areas with high levels of marginalization.

The implementation of the national housing policy has been transforming the national housing scenario, now for more than a decade. Some unwanted effects, however, have appeared in the process, among other reasons, because initial response to housing demand focused mainly on building dwelling as a product, without taking into account that housing by itself was not necessarily creating cities and livable communities. The financing programs centered the attention on solutions that distorted the housing market, stimulating more credit for purchase of new single-family dwellings, and creating a greater demand for land, basic services and transportation infrastructure, which required increasingly larger investments by local governments, and triggered urban sprawl in many of the country's major cities due to the high cost of land in consolidated urban areas (CIDOC and SHF, 2011).

This model of extensive urban growth with housing complexes located in peri-urban areas far from workplaces, schools, hospitals, supplies, and efficient transportation alternatives, generated scattered and vulnerable communities (Plan Nacional de Desarrollo, 2013). In a short period of time, this resulted in a significant number of uninhabited or abandoned dwellings and housing complexes that were being built at a faster pace than demanded. According to the General Population and Housing Census 2010, there were almost 5 million unoccupied dwellings that year in Mexico. Among the municipalities with the highest rates, many located in the northern Border States, 11 had at least 40% of unoccupied private dwellings. This scenario

indicates a wide gap between the desired effects of the housing policy and the intended social mobility opportunities that housing should provide to population.

### *Social mobility and housing*

Social mobility can occur in a variety of ways along two main dimensions: horizontal mobility and vertical mobility. Horizontal mobility is commonly referred as the movement within the same status group and it often involves the physical move of an individual from one area to another (Miller, 1960). Regular movements that occur on a daily basis and involve the change in location, as well as sporadic movements that involve the permanent or temporal change of residence or job, might be considered within this category, as long as they do not imply a change in social status. This type of mobility, also known as spatial mobility, is an important aspect of daily life, since it becomes essential in the context of the spatial dispersion of spheres of activities, and is considered the fundamental dynamic of change in urban spaces (Dieleman, 2001; Kaufman and Widmer, 2005; Faist 2013).

Even though the idea of mobility is not new, the emerging paradigm shift in the social sciences known as the 'mobility turn', seeks to set the basis for understanding the trend towards the consideration of spatial mobility, its patterns and manifestations as a useful frame to analyze phenomena like residential mobility (Faist 2013). In this context, the socioeconomic characteristics of a household, along with the dwelling's location and attributes produce population shifts, shape housing markets and configure urban spaces. Mobility turn, thus provides a means of analyzing the interplay of different dimensions that go beyond the corporeal relation to housing (Dufty-Jones, 2012).

Within this frame, housing should be seen as a key object to understand mobile practices and the politics of mobility, since it is not only the source from which both every day and long term movements are launched, maintained and concluded; but is also the physical object from which the relationship between citizenship and its associated rights and responsibilities are made meaningful and real. Thus, housing is a necessary object from which a right to place and the potential for mobility are established and performed. This approach, that considers the governmental dimension of mobility, raises the need to not only recognize housing as rationalized through government discourse, but as a government instrument used to direct the way individuals practice their freedom to be mobile, acting in response to a coercive situation rooted in the lack of choice (Dufty-Jones, 2012).

On the other side, the second dimension of social mobility, the vertical or better conceived as social mobility, refers to the movement that occurs between one functionally significant social role and another that is evaluated as either higher or lower, in terms, for example, of social class or income level (Saunders 2012). According to Giddens and Sutton (2009), this type of social mobility fits better with sociological considerations. In this context, earlier definitions by Sorokin (1959) and Barber cited by Miller (1960) refer to social mobility as the movement or transition of an individual, social object or value, either upward or downward, between higher and lower social or socioeconomic positions. Upward mobility or social climbing occurs when an individual achieves a better position in the social pyramid, while downward mobility or social

sinking occurs when an individual lowers his status by moving down in the social ladder (Giddens and Sutton, 2009).

Besides the apparent high positive correlation between social and spatial mobility (Williams, 2009); social mobility processes are essential for the metabolism and core regulation of societies, and help to determine both their continuity and change over time (Bertaux and Thompson, 2006). Social mobility is a central dimension of social inclusion in advanced modern societies. At the theoretical level, approaches linking mobility and inequality focus on two main perspectives: A resource perspective indicates that high inequality will result in decreased mobility because the uneven distribution of resources benefits those most advantaged in the competition for success, maintaining the status quo. In contrast, an incentive perspective argues that inequality will raise competition, inducing higher mobility (Torche, 2005). Some empirical evidence suggest that social mobility is indeed positively related to inequality (Breen, 2004 cited in Yaish and Andersen, 2012), since it links to access, skills and appropriation that allow individuals the assessment of possibilities for new social status (Kaufman and Widmer, 2005).

Despite the supposed dependence on inequality, causes of social mobility seem to have multiple origins. Industrialization level, emphasizing the role of economic development, is among the many contextual factors that could possibly influence social mobility. Individuals' attributes, such as equality of condition, immigration, political regime, and especially education, are other often mentioned contextual factors explaining a substantial amount of variability in mobility rates (Yaish and Andersen, 2012). Muster, Ostendorf, and De Vos, (2003) identified a close relationship between social mobility and household economic position. They found that the composition of residential environment has only a modest influence on the social mobility of households with a weak economic position, while has a higher influence on those with stronger economic position. Hedman, Manley, van Ham, and Östh (2013) explain that there is an intergenerational transmission of adverse long-lasting effects, when exposure to impoverished environments occur later in life, thus emphasizing the importance of access to suitable neighborhood and housing conditions, for improving socio-spatial mobility opportunities that reduce inequality effects.

Taking into account the main implications of housing access for social welfare and mobility, and the unwanted effects produced by the Mexican housing policy due to the distortions of the housing and land markets in the national scenario, it is necessary to assess if such a policy has produced the desired positive effects in terms of social mobility and if those are being perceived so by the beneficiary population sector. For this reason, the objective of this study is to assess the perception of social mobility derived from the access to social housing in Ciudad Juárez, Chihuahua. This work is part of the larger project "Determination of indicators and methodology design to characterize the social mobility of residents/owners of housing produced under the 2002-2010 government housing programs", which aims to understand better the social mobility effects of the national housing policy implementation in Ciudad Juárez, and seeks to

characterize the improvement in the wellbeing conditions provided by the social housing and urban environment produced during that period.

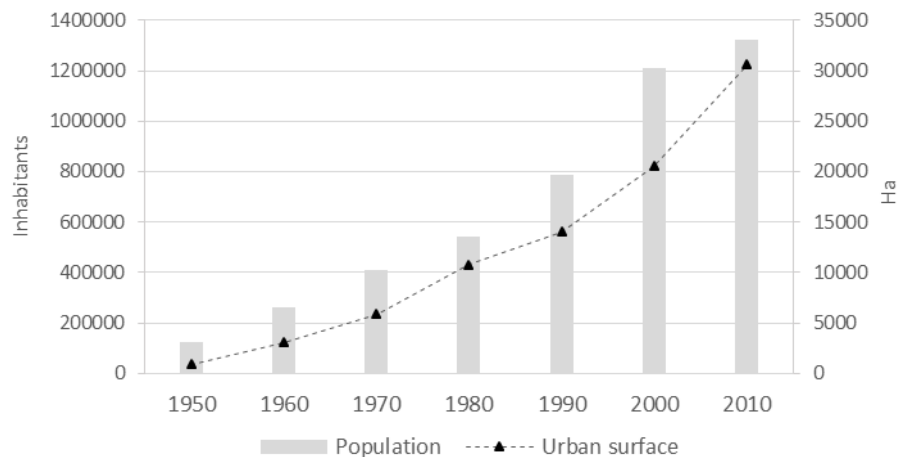
Given the subjective nature implied in understating the perception of social mobility from the assessment of living conditions in social housing, we based our notion of perception in the principles of perception theory, which rooted in modern psychology, seek to frame the knowledge of the processes used by people to gain understanding of the world in which they live (Allport, 1955). Beyond the perceptual capacities and the associated theories used to explain formally the perception of the physical world, it is important recognize that perception is, at the end, an inferential process, generally biased and deductively invalid (Bruce et al., 1989). Nonetheless, the mechanisms used to apprehend and interpret the environmental stimulus are the most common ways to approach to a feasible material construction of such a reality.

In this context, we assume that the whole idea of social mobility can be attributed at some extent to the perception of the environment associated to dwelling conditions, since the symbolic content of that environment can set the basis for self-perception and actions of groups and individuals (Bem, 1972; Appleyard, 1979). Perception is then for this research, the set of physical and cultural mechanisms used by individuals to construct a self-conception of their own social status in relation to their living conditions.

## Data and Methods

The study was carried out in the metropolitan area of Ciudad Juárez, Chihuahua, contained mostly in the municipality of Juárez with conurbations in the municipalities of Praxedis G. Guerrero and Guadalupe, which in 2010 registered 61.3% and 43.2% unoccupied private dwellings respectively (CIDOC and SHF, 2011). This industrial metropolitan area, across the border from El Paso, TX in the United States, has an approximate extension of 30,605.49 ha (Instituto Municipal de Investigación y Planeación, 2010), a population of 1,321,004 inhabitants and a total of 479,624 dwelling units, according to the General Population and Housing Census 2010 (INEGI, 2010).

Decadal urban surface growth rates in Ciudad Juárez have decreased from 0.93 in 1970 with ~5900 ha. to 0.49 in 2010 with ~30,600 ha, while population growth rates have gone down from 0.55 in 1970 to 0.09 in 2010 with an increase of 913, 634 inhabitants (Figure 1). This is related to a decrease in population density from 85 to 43 inhabitants per hectare in the same 40 year period, which reflects the effects of the extensive application of the housing policy and its associated urban expansion. Due to the territorial configuration of this border city, most the urban growth in the form of new social housing complexes has occurred in its southeastern portion, in areas poorly equipped with services and urban infrastructure (Sánchez, et al., 2009).

**Figure 1. Population and urban surface growth from 1950 to 2010**

**Source:** Instituto Nacional de Estadística y Geografía, 2010; Instituto Municipal de Investigación y Planeación 2010

### *Data collection and processing*

In order to ascertain social mobility perception of households in social housing complexes promoted as part of the national housing policy in Ciudad Juárez during the 2002-2010 period, we designed and applied a survey to address specific aspects of dwelling quality, complex location and urban environment conditions, as well as housing ownership advantages of households with regard to their previous or parents' homes. A total of 382 questionnaires were applied to households in 84 housing complexes, built during the analysis period and located mostly in the southeastern part of the city. The sample was distributed using a stratified random approach according to the number of dwellings per housing complex based on the census variable Total of inhabited dwellings (TVIVHAB) at the block level, which represents a total of 77,347 individual occupied private homes for the selected complexes, according to the General Population and Housing Census 2010 (INEGI, 2010).

The questionnaires were coded according to the type of questions to obtain a representative record for each of the selected complexes, standardizing answers and eliminating null and incomplete records. Non-representative complexes with only one survey were eliminated from the sample, with 69 of the original complexes remaining. We then calculated the statistical mean for quantitative answers, and the statistical mode for categorical answers to obtain a representative record for each one of the complexes.

### *Social mobility perception indices*

A condition of social mobility perception was estimated for each record taking into account the answers regarding previous and parent home conditions. From this information, an ascending, equal or descending social mobility perception condition was established for each complex. These categories were coded with 3, 0, and -3 respectively to assign a ranking value to the social mobility perception condition. The average of these values was calculated to obtain composite measures, which aggregate different aspects of the following housing derived conditions into three indices: Social Mobility Perception Index derived from Dwelling Quality

(SMIDQ); Social Mobility Perception Index derived from Location and Urban Environment (SMILUE); and Social Mobility Perception Index derived from Housing Ownership Advantages (SMIHO). In Table 1 we listed the 62 variables derived from each questions that served to integrate the three social mobility perception indices.

**Table 1. Housing derived conditions used to integrate each of the social mobility perception indices**

Index	Variable
SMIDQ	Lot size, Dwellings in lot, Garden, Patio, Independent kitchen, Kitchen size, Garage size, Number of vehicles, Living room, TV room, Number of bathrooms, Number of rooms, Room size, Other spaces used as bedrooms, Privacy in rooms, Wall material, Roof material, Floor material, Electricity, Water, Sewage, Air conditioning, Gas, Telephone, Paved road
	Dwelling additions
	Closeness to:
SMILUE	Extended family, Friends, Job, Partner job, Childcare, Pre-school, Elementary school, Middle School, High School, Hospital, Government office, Community centers, Park, Public transportation, Firefighter station, Police station, Corner store, Convenience store, Supermarket, Mall
	Accessibility to:
SMIHO	Family living, Friends' relations, Neighbors' relations, Neighborhood participation, Likeminded people, Children playing space, Financing and credit, Employment opportunities, Recreational opportunities, Educational opportunities, Security,
	Relation between:
	Dwelling value-cost, Lot surface-cost, Dwelling construction-cost, Housing location-cost

Perception of ascending or descending social mobility condition was established on the basis of larger sizes, better equipment and better building material, in the case of dwelling quality for the SMIDQ index. For the location and urban environment attributes used to construct the SMILUE index, the social mobility condition was determined by better accessibility to urban facilities and services such as transportation and utility networks. Finally, better access to development opportunities related to social networks, employment, or education set the basis for ascending or descending condition in the case of ownership advantages used for the SMIHO index.

An overall Social Mobility Perception Index derived from access to Social Housing (SMISH) was calculated as the average of the partial indices, according to equation 1. This index, with values ranging from -3 to 3, was proposed as a general measurement of social mobility perception for each of the complex surveyed in the study.

$$SMISH = \sum_{i=1}^n (SMIDQ, SMILUE, SMIHO) / 3 \quad (1)$$

For geocoding the survey results, each individual record was joined to a georeferenced spatial database of the housing complexes in shape format. These data were classified into five categories using Jenk's intervals and represented in maps to analyze the spatial patterns of the social mobility perception in Ciudad Juárez.

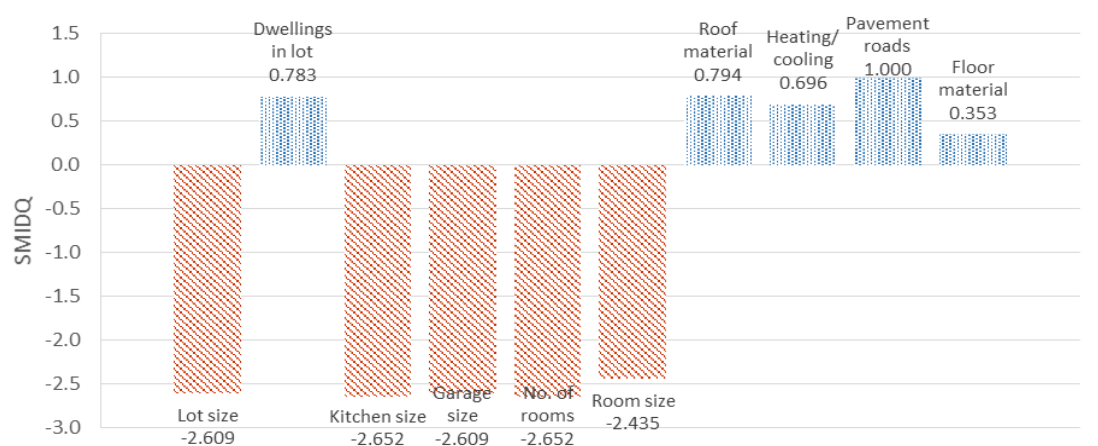


## Results and discussion

### *Social mobility perception index derived from dwelling quality*

The SMIDQ shows a general value of -0.640, which indicates that dwelling's physical characteristics are strongly perceived as a weak factor of improvement or ascending social mobility. Amongst the dwelling physical characteristics with the lowest rank evaluation, very close to -3.0 are: lot, kitchen, room, and garage sizes; and number of rooms. Conversely, the characteristics best positively evaluated by households: number of dwellings per lot; availability of heating and cooling systems; paved roads; and quality of roof and floor materials, did not exceed the 1.0 value (Figure 2). This indicates that, in general, dwelling physical characteristics are mostly perceived as factors of descending social mobility, with respect to those in their previous or parents' homes; being the size of the dwelling components one the most cited adverse factors. For many of the surveyed complexes, lot surfaces starting at 34.0 sq. meters are common (Argomedo, et al., 2008).

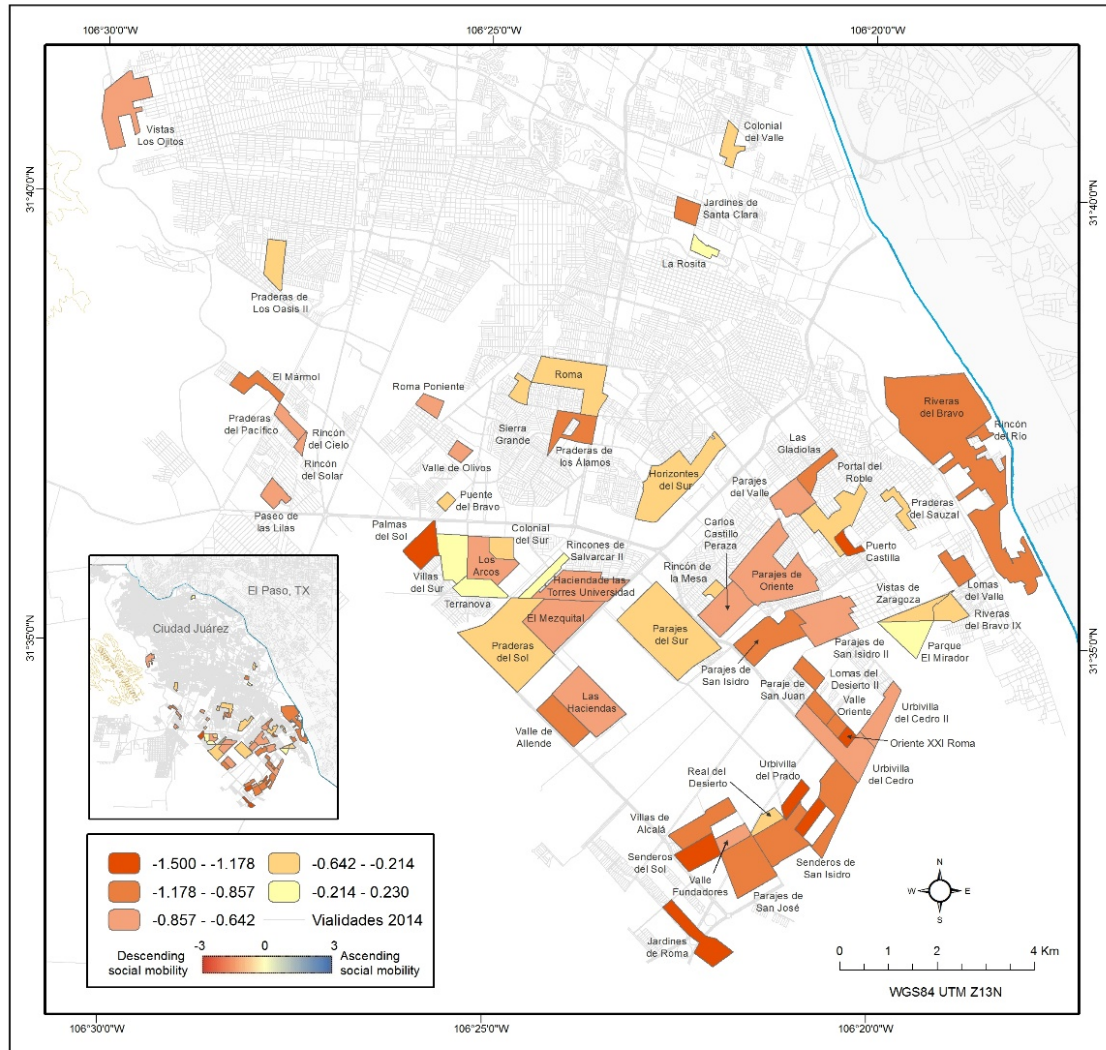
**Figure 2. Highest and lowest ranked dwelling physical characteristics**



On the other hand, the characteristics perceived as positive were related mostly to the materials and equipment of dwellings and complexes, as well as to a greater privacy facilitated by individual units per lot, but showed only modest positive values. The fact, for example, that paved roads showed the highest positive value is explicable since much of the people recently moving to this part of the city came from rural communities in southern states or from the western part of the city where paving coverage is extremely low.

Average values of SMIDQ per housing complex range from -1.5 to 0.23 and show in general a heterogeneous distribution, with some of the lowest values observed in some of the most recent complexes built in the extreme southeastern part of the city (Figure 3). As established by the housing policy, developers who created these complexes were supposed to play an important role in providing quality housing that meets the applicable regulations to guarantee proper living conditions. Nonetheless, developers like IVIECH, dependent of the state government, were responsible of 4 out of 7 of the complexes evaluated with lowest perception about dwelling quality, which might reflect important fails in the application of the housing policy in the region.

**Figure 3. Social mobility perception index derived from dwelling quality**

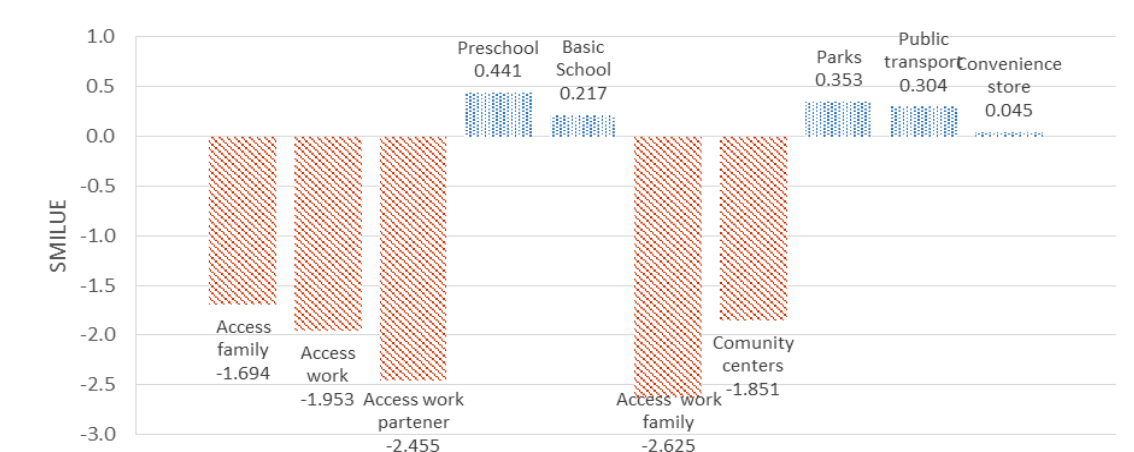


### *Social mobility perception index derived from location and urban environment*

The SMILUE shows a general average value of -0.734, which indicates that location and urban infrastructure conditions are a big concern for households. Amongst the conditions with the lowest rank evaluation are: access to family (-1.694) and work (-2.625), either for households or their family members. This is clearly explained if we observe the long distances of many of the complexes with respect to any of the city's functional centers and to the consolidated part of the city, where many of the households still maintain strong social and family networks. As Chang, Chen, and Somerville (2003) state, individuals living in a place develop a complex network of friends, social organizations and casual economic relationships. If distance attenuate these connections, the cost of horizontal mobility increases, which affects the perception of social or vertical mobility for working families, who have to invest an important part of their income in overcoming those distances on a daily basis.

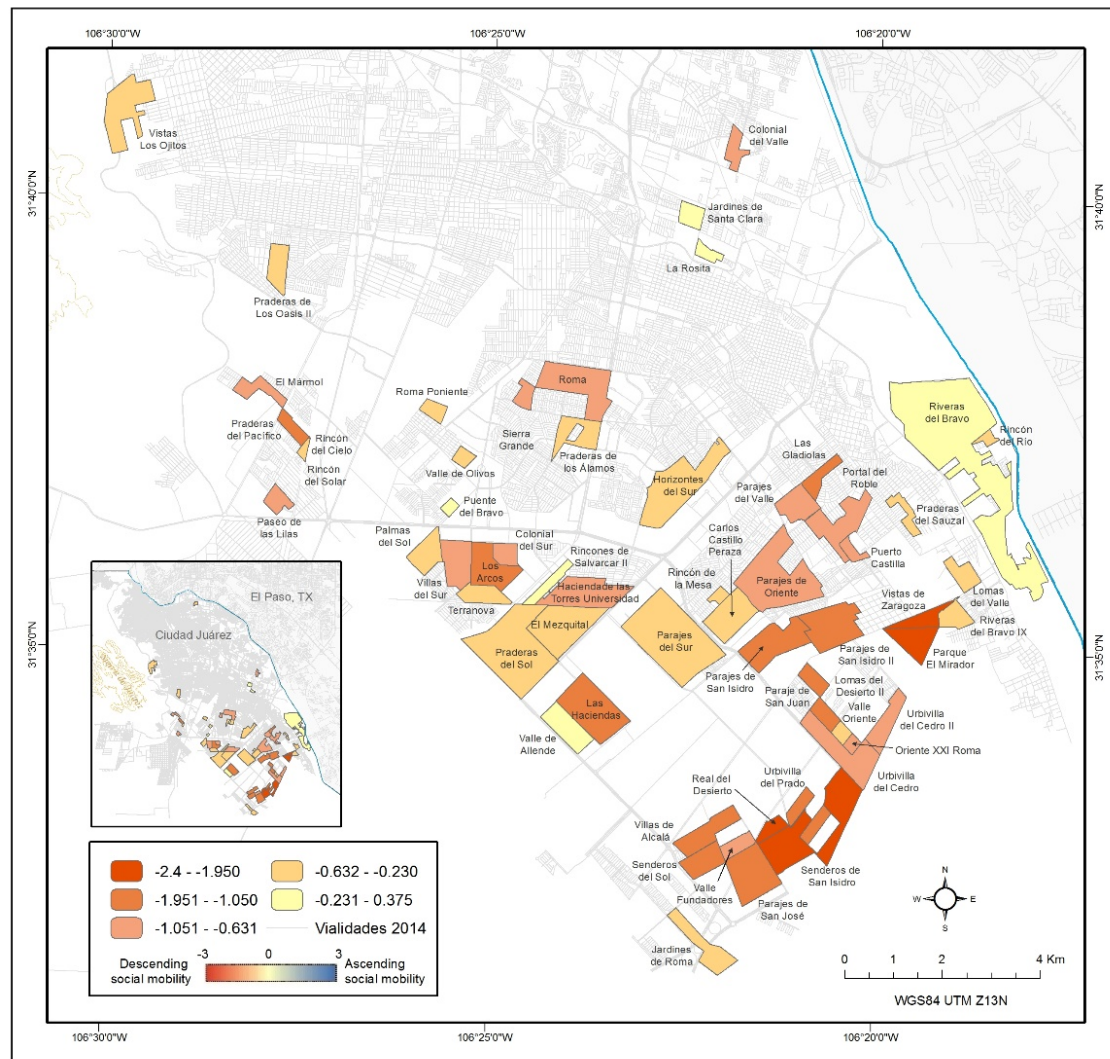
The conditions evaluated positively include: ease access to preschool and basic educational facilities, parks, public transportation and convenience stores (Figure 4). This seems to contradict the findings of previous research (Sánchez et al., 2009), which indicates that equipment and urban infrastructure are weakly developed in this area. However, positive SMILUE values rank very low from 0.045 to 0.441, and may be due to the fact that new facilities have been developed in the last 5 years, which ultimately is perceived by households as a positive factor for social mobility. Preschool and basic school services are considered more accessible in general, since facilities of this level tend to cover smaller areas. Higher level education facilities, however, are considered less accessible. In the case of access to parks, is important to mention that household perception might be influenced by the availability of areas that developers are obligated to assign as parks to each complex, according to urban regulations. Nevertheless, just in rare cases, those are fully vegetated or equipped, which agree with the observations of Romo and Córdova (2009) about the per capita urban parks deficit in Ciudad Juárez.

**Figure 4. Highest and lowest ranked location and urban environment conditions**



Spatial distribution of SMILUE values shows that households in complexes located in the extreme southeastern portion of the city, farther from the consolidated urban area, tend to perceive their location and urban environment condition as adverse factors for social mobility (Figure 5). Average SMILUE values rank from -2.4 to 0.375, with at least five complexes in the lowest category. These are mostly located in the urban fringe, where horizontal mobility costs increase by distance. Recent studies show that working families in the industrial sector spend a large share of their monthly wages in public transportation (Fuentes Flores, 2012). Conversely, one of the largest and best represented complex in the survey, Riveras del Bravo, showed the best positive score, which contrasts with the community perception about its poorly developed urban infrastructure. However, this might indicate that, in fact, size of the complexes has attracted the location of enough urban facilities that improve social mobility perception of the population.

**Figure 5. Social mobility perception index derived from complex location and urban environment**



### *Social mobility perception index derived from housing ownership advantages*

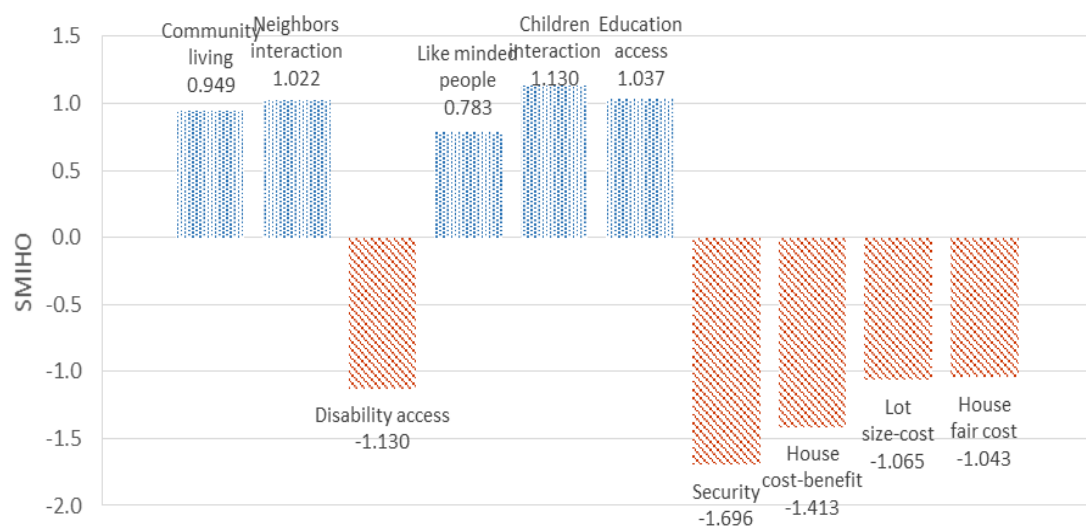
SMIHO was the only index with an average positive value. In spite of being modestly low (0.035), its score represents an important difference with respect to the other two indices. SMIHO values mean that, regardless the poorly evaluated physical and locational characteristics of their dwellings, households appreciate, at least partially, the advantages that come with housing acquisition as a factor for social mobility. Community living, interaction with neighbors, feasibility of getting along with like-minded people, neighborhood children interaction, and accessibility to education opportunities, are amongst the best evaluated aspects, all with scores very close to 1.0. These relatively high positive SMIHO values seem to reveal a contradictory perception in many of the complexes that supposedly suffered some level exclusion and social violence during the period of study. However, as has been illustrated by



other studies (Loera, 2013), income segregation provoked by differential access to social housing at urban level also propitiated processes of community integration at complex level. This might explain why households seem to appreciate living around people with their same interests and economic status, which facilitates community integration and children interaction with neighbors. Positive values regarding education access are mostly explained by the greater access to basic education facilities.

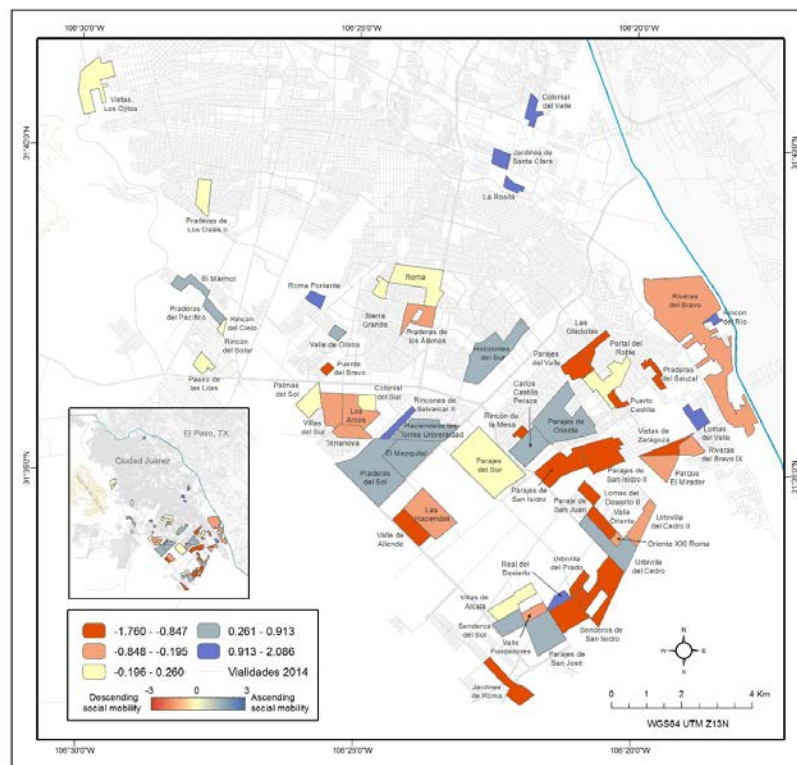
Conversely, the characteristics with the worst evaluation by households, all with values below -1.0, include disability access, three variables related to the house cost-benefit relationship, and security, which still remains as factor of main concern with -1.696 (Figure 6). This agrees with the areas that concentrate medium and high level threats to urban security related to crime and violence in the study of Morales, et al., (2013).

**Figure 6** Highest and lowest ranked housing ownership advantages.



SMIHO values show a very heterogeneous spatial distribution ranking from -1.760 to 2.086. In the map appear represented clearly the lowest and highest intervals, with 15 complexes, mostly located in the southern portion, with the lowest values, and 8 complexes in the highest category, towards the northern portion (Figure 7). This spatial distribution seems to indicate that perception of the advantages derived from housing ownership is also related to location.

**Figure 7 Social mobility perception index derived from housing ownership advantages**



From the collected dataset, we found no significant correlation \_\_\_\_ values ranging from 0.0081 to 0.2123\_\_\_\_ between any of the social mobility perception indices and the average values of variables like household age, years inhabiting the house, years living in the city, and daily hours remaining in the house. This indicates that households perception about their social mobility derived from housing condition seems constant along time and age group. Other explanatory variables, however, should be explored to find meaningful relationships that serve to address improvements in housing policy. We observe, in general, no other significant spatial patterns in the mobility perception, except for complexes such as Senderos de San Isidro, which systematically appeared in the lowest classification interval of the three indices.

Overall social mobility perception index derived from access to social housing

The integration of the three indices into the composite overall Social Mobility Perception Index derived from access to Social Housing (SMISH) with an average value of -0.446, showed a general distribution accentuating the same low mobility perception in the most southern located complexes; and a higher mobility perception in the northern complexes, more integrated to urban area (Figure 8). Values range from -1.457 to 0.772 with only three complexes in the highest (0.130 - 0.772); 20 in the middle (-0.643 - -0.312), and 10 in the lowest (-1.457 - -1.027) interval. This reveals a general trend towards a moderately negative perception of social

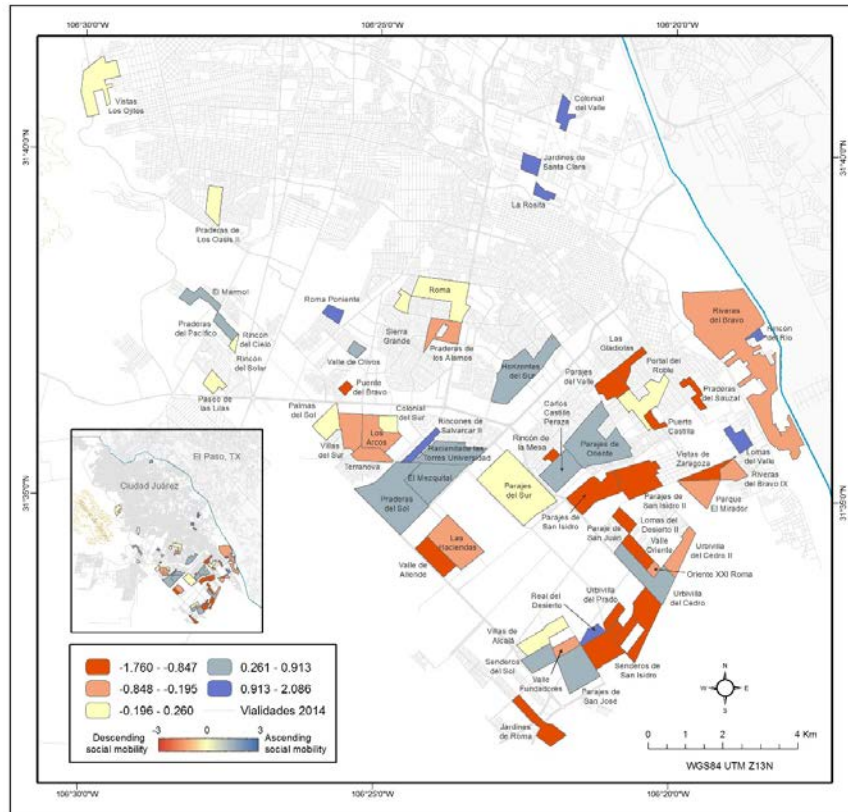
mobility derived from the access to social housing promoted through the national housing policy in Ciudad Juárez.

According to the National Residential Satisfaction Survey (NRSS) (SHF, 2010), which assesses the degree of satisfaction of households acquiring new dwellings through mortgages funded by financing intermediaries like INFONAVIT, the Housing Satisfaction Index evaluating the construction, spatial, functional, adaptations, and environmental characteristics of the housing showed opportunity areas for a better residential satisfaction. For instance, at least 20% of new dwellings had spoilage in roofs, walls or floors. Additionally, overcrowding is observed due to the small size of the dwellings or to the lack of space. In this survey the housing complex characteristics (spaces, dwelling size and number of residents) are still badly perceived, and systematically show the lowest scores. Conversely, complex location is the attribute that improved the most compared to previous assessments; however, it still remained below other attributes assessed in the survey (CIDOC and SHF, 2011).

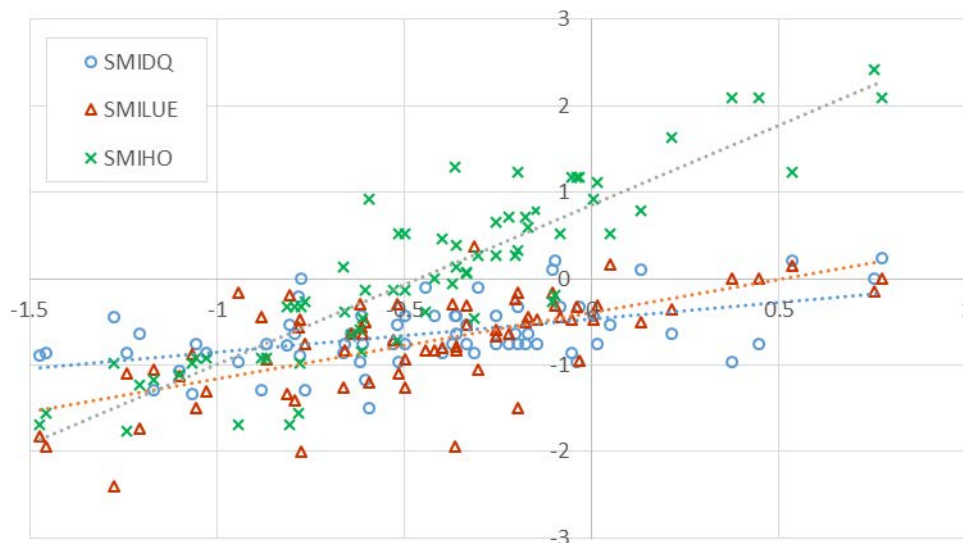
Despite incorporating a much more ample set of questions to characterize household's satisfaction, the NRSS and the survey used in this study, found similar results. The main difference, however, is that the NRSS is intended to provide a yearly scenario at the national level, by randomly selecting complexes in around 4% of the municipalities of the country, considering both social and medium level housing. The survey in this study, however, was focused on a single border municipality considering only social housing complexes, which concurrently were among the worst evaluated in the national level survey.

When comparing SMISH (X-axis) with partial indices values (Y-axis) in the Figure 9, we observe more than 70% of the complexes register SMISH values below 0. As showed by the steeper slope in the trend line of SMIHO values, 50% of the complexes were evaluated either positive or negatively. Conversely, only 10% of the complexes were evaluated above 0 in both the SMILUE and SMIDQ indices. In these cases, the households' perception describes a more gradual slope in the trend lines, with most of the complexes evaluated between 0 and -1.

**Figure 8 Overall social mobility perception index derived from access to social housing**



**Figure 9 Partial social mobility perception indices SMIDQ, SMILUE and SMIHO vs. composite SMISH.**



*Implications for housing policy*



Despite the fact that, according to Miller (1960), perception of mobility cannot be accepted as an accurate statement of what actually occurs, and that many other factors must be taken into account for a comprehensive scenario of the effects of policy housing in social mobility; this set of indicators could be a useful to guide the design of the improvements to the policy, which in line with these results should focus mainly in the physical characteristics of the dwellings and the characteristics associated to their location.

1. Physical characteristics of the dwelling: In this aspect, policy improvements should consider reinforcing the rational relationship that should exist between the cost of developing and building, and the profit margins for developers. This would impact in the size of lots and dwellings, in benefit of quality life and a stronger sense of social mobility when accessing social housing. Policy improvements should also include the promotion of others socially responsible forms of financing, so lower income population sectors are able to access more finance for larger dwelling units. This would eliminate the excuse of developers for building just 'what workers are able to pay'.
2. Complex location and urban environment: Derived from this other set of indicators, housing policy should establish tighter regulations, linked to the observance of the local and regional planning instruments, to avoid that social housing is relegated to marginal land in the urban fringes, creating urban sprawl, environmental impacts and social segregation. Availability of affordable land, protected from speculation, should be one of the priorities attended in the housing policy, since accessible land constitute the territorial requirement for a socially based policy that promotes effective social mobility.

## Conclusions

In seeking to assess the effects of the housing policy in terms of social mobility perception derived from the access to social housing in Ciudad Juárez, we found that households have a perception of social descent derived from the quality of their new dwelling units; an even more pronounced perception of social descent with respect the complex location and urban environment conditions; and a moderate perception of social ascent with regards to the housing ownership advantages. These results indicate that the supposedly positive social effects of the national housing policy in Ciudad Juárez have not been fully deployed, or at least perceived, by the intended beneficiaries. This requires to review the basic definitions of the policy and to emphasize the social character of housing provision to promote the conditions for ascending social mobility.

We also found that no defined spatial pattern, other than related to the distance to consolidated urban areas, could be observed when mapping the indices at complex level. Another important element derived from this analysis that would require additional inquiry, is that despite the incipient social ascent perception, households seem satisfied by the sole fact of owning their own house. This indicates that perception of social mobility can be influenced by different conditions and affected by the social circumstances of household. As observed by Zamorano (2007), while access to housing is supposed allowing families to improve their social status and

living conditions, the final effect varies whether if housing is used as strategy for social mobility or as a mechanism to meet the symbolic and physical needs of accessing to a new social class. General outcome of this exercise reveals the need for strengthening the theoretical and methodological bodies for a better understanding of the social effects of housing policy. In this respect, in the literature is evident the space for formal analyses that provide the basis to develop new approaches that allow elucidating this relationship and suggesting improvements to this kind of policies. From a practical perspective, we suggest that the use of a spatial analysis approach, could reveal specific territorial expressions of the housing policy that can be linked to regional particularities associated to the operation of the land and housing markets. This would allow the design of better adapted policy instruments for a greater impact in beneficiary population sectors.

## References

- Allport**, Floyd H. (1955). Theories of perception and the concept of structure: A review and critical analysis with an introduction to a dynamic-structural theory of behavior. Hoboken, NJ, US: John Wiley & Sons Inc., 709 pp.
- Appleyard**, Donald. (1979). The environment as a social symbol: Within a theory of environmental action and perception. *Journal of the American Planning Association*, 45(2), 143-153.
- Argomedeo**, Miguel Ángel, Elvira Maycotte, Erick Sánchez, Javier Chávez, José Luis Sandoval. (2008). Estudio del Impacto de la Política de Vivienda en Ciudad Juárez, Chihuahua, 2001 – 2006,
- Bem**, Daryl J. (1972). Self-Perception Theory, *Advances in Experimental Social Psychology*, 6, pp. 1–62
- Bertaux**, Daniel and Paul R. Thompson. (2006). Pathways to social class: A qualitative approach to social mobility, Transaction Publishers, 343 p.
- Bertaux-Wiame**, Isabelle and Paul R. Thompson. (2006). The familial meaning of housing in social rootedness and mobility: Britain and France, in Daniel Bertaux, and Paul R. Thompson, Pathways to social class: A qualitative approach to social mobility, Transaction Publishers, 343 p.
- Breen**, Richard (Ed.). (2004). Social Mobility in Europe. Oxford University Press, Oxford, New York.
- Bruce**, M. Bennett, Donald D. Hoffman, Chetan Prakash. (1989). Observer mechanics: A formal theory of perception. Academic Press, San Diego.
- Chang**, Chin-Oh, Shu-Mei Chen, and Tsur Somerville. (2003). Economic and social status in household decision-making: Evidence relating to extended family mobility, *Urban Studies*, 40 (4), 733-746.
- CONAVI**, Unpublished technical report,.
- Congreso de la Unión**. (2006). Ley de Vivienda, available at: [http://www.conavi.gob.mx/images/publicaciones/ley\\_de\\_vivienda.pdf](http://www.conavi.gob.mx/images/publicaciones/ley_de_vivienda.pdf), (accessed 04/20/2014).
- Dieleman**, F. M. (2001). Modelling residential mobility; a review of recent trends in research, *Journal of Housing and the Built Environment*, 16(3), 249–65.

- Doling, J.** (2011). Housing and demographic change. In: Ronald, R. and Elsinga, M. (eds) *Beyond Home Ownership: new perspectives on housing tenure, policy and society*. London: Routledge, 248 p.
- Duffy-Jones, R.** (2012). Moving home: Theorizing housing within a politics of mobility" in housing, *Theory and Society*, 29(2), 207-212.
- Faist, Thomas.** (2013) The mobility turn: a new paradigm for the social sciences?, *Ethnic and Racial Studies*, 36 (11), pp. 1637-1646.
- Forrest, Ray, Patricia Kennett, and Philip Leather.** (1999), *Home ownership in crisis? The British experience of negative equity*. Aldershot: Avebury, 135 p.
- Fundación Centro de Investigación y Documentación de la Casa, A.C (CIDOC).** and Sociedad Hipotecaria Federal (SHF). (2011). *Current Housing Situation in Mexico 2011*, 1st ed, SHCP/SEDESOL, México D.F.
- Fuentes Flores, C. M.** (2012). Los costos de accesibilidad al subsistema empleo-transporte-vivienda para población de bajos ingresos en Ciudad Juárez, Chih, (2005), *La Pobreza Urbana en México: Nuevos enfoques y retos emergentes para la acción pública*, COLEF, Vol. 1, 25p.
- Giddens, A. and Sutton P. W.** (2009). *Sociology*. 6th ed. Cambridge: Polity
- Hedman, Lina, David Manley, Maarten van Ham & John Östh.** (2013). Cumulative exposure to disadvantage and the intergenerational transmission of neighborhood effects, *Journal of Economic Geography*, 1–21.
- Instituto Municipal de Investigación y Planeación.** (2010). *Plan Municipal de Desarrollo 2010*.
- Instituto Nacional de Estadística y Geografía. (2010). *Censo General de Población y Vivienda 2010*, available at: <http://www.censo2010.org.mx/>, (accessed 04/15/2014).
- Kaufmann, Vincent y Widmer, Eric.** (2005). L'acquisition de la motilité au sein des familles État de la question et hypothèses de recherche, *Espaces et sociétés*, 2 (120-212), 199-217.
- Loera Espinoza, Mariana.** (2013). *Segregación residencial, políticas de suelo y vivienda y las prácticas del Mercado en Ciudad Juárez, Chih. 1995-2010*, Unpublished Ph.D. Thesis, Doctorado en Estudios Urbanos, UACJ.
- Miller, S. M.** (1960). Comparative social mobility, *Current Sociology*, 9, pp. 1-89.
- Morales Cárdenas, S., M. Rodríguez Sosa y E. Sánchez Flores.** (2013). Seguridad urbana y vulnerabilidad social en Ciudad Juárez. Un modelo desde la perspectiva de análisis espacial, *Frontera Norte*, 25(49), pp. 7-34,
- Musterd, Sako, Wim Ostendorf & Sjoerd De Vos.** (2003). Neighbourhood effects and social mobility: a longitudinal analysis, *Housing Studies*, 18 (6), pp. 877-892.
- Plan Nacional de Desarrollo 2013-2018.** (2013). DOF: 20/05/2013, available at: <http://pnd.gob.mx/>, (accessed 04/17/2014).
- Romo Aguilar, María de Lourdes and G. Córdova Bojórquez.** (2009). Áreas verdes y participación ciudadana en Ciudad Juárez, Chihuahua", *Gestión ambiental y participación ciudadana en el estado de Chihuahua: cuatro casos de estudio*. Breviarium, El Colegio de la Frontera Norte, Vol. 1, 25p.
- Sánchez Flores, E., E. Maycotte Pansza, J. Chávez, M. A. Argomedo Casas.** (2009). Análisis espacial de la ocupación unifuncional del suelo urbano en Ciudad Juárez, Chihuahua.

Memorias del 3er Congreso Nacional de Suelo Urbano. Impacto de la vivienda en el desarrollo urbano, una mirada a la política habitacional en México, 733 - 752 pp.

**Saunders**, Peter. (2012). Social mobility delusions, Civitas report.

**Sociedad Hipotecaria Federal** (SHN). 2010, Estudio sobre la Satisfacción Residencial y Financiera del Cliente, Dirección de Estudios Económicos de la Vivienda.

**Sorokin**, Pitirim A. (1959). Social and cultural mobility, Glencoe, IL: Free Press, 656 p.

**Stephens**, Mark (editor), Janet Ford, Peter Spencer, Alison Wallace, Steve Wilcox, and Peter Williams. (2008). Housing market recessions and sustainable home-ownership, York: Joseph Rowntree Foundation, available at: <http://www.jrf.org.uk/publications/housing-market-recessions-and-sustainable-home-ownership>, (accessed 04/24/2014).

**Torche**, Florencia. (2005). Unequal But Fluid: Social Mobility in Chile in Comparative Perspective, American Sociological Review, 70, pp. 422-450.

**van Leeuwen**, Marco H. D. (1996). Long-term social mobility: research agenda and a case study (Berlin, 1825–1957), Continuity and Change, 11(3), pp. 399-433.

**Williams**, Dominic. (2009). Spatial Dimensions of Social Mobility, Local Economy, 24 (8), pp. 669–680.

**Yaish**, Meir and Robert Andersen. (2012). Social mobility in 20 modern societies: The role of economic and political context, Social Science Research, 41, pp. 527-528.

**Zamorano**, Claudia (2007). Los hijos de la modernidad: movilidad social, vivienda y producción del espacio urbano en la ciudad de México, Alteridades, 17(34), pp. 75-91.