Capability and Group Inequalities: Revealing the latent structure[1]

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1. Introduction

There has been growing interest in issues of multidimensionality, diversity in preference, agency, and freedom of choice in the recent literature on poverty and inequality. The capability approach and seminal works of Amartya Sen (1999 1992 1985a 1980) and Martha Nussbaum (Nussbaum 2000, 2006) have particularly contributed to this debate. They propose that capability rather than commodities or utility should be the space for the evaluation of wellbeing and social justice. Some capability scholars argue that the approach has not paid enough attention to groups, and debate about whether an individualistic perspective is still dominant (Alkire 2008; Burchardt and Vizard 2007; Deneulin 2006; Stewart and Deneulin 2002; Stewart 2003, 2005; Majumdar and Subramanian 2001; Robeyns 2005). These authors call attention to the importance that groups may have in individual well-being, in shaping individual preferences, and in generating social mobilization and collective action. This debate has important similarities with the sociological academic tradition on social stratification (cf. Grusky and Kanbur 2006; Grusky and Weenden 2007). In this paper I shall argue that the sociological academic tradition in social stratification can complement the capability approach theoretically and methodologically in order to enhance the study of group inequalities. I will argue that the study of group inequalities implies not only dealing with the complexity of multidimensional space and the measurement of capabilities, but also dealing with its multiple social determinants.

[1] This paper corresponds to an extension of the last chapter of my doctoral thesis (Roche 2009).

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2. Groups, stratification and inequalities

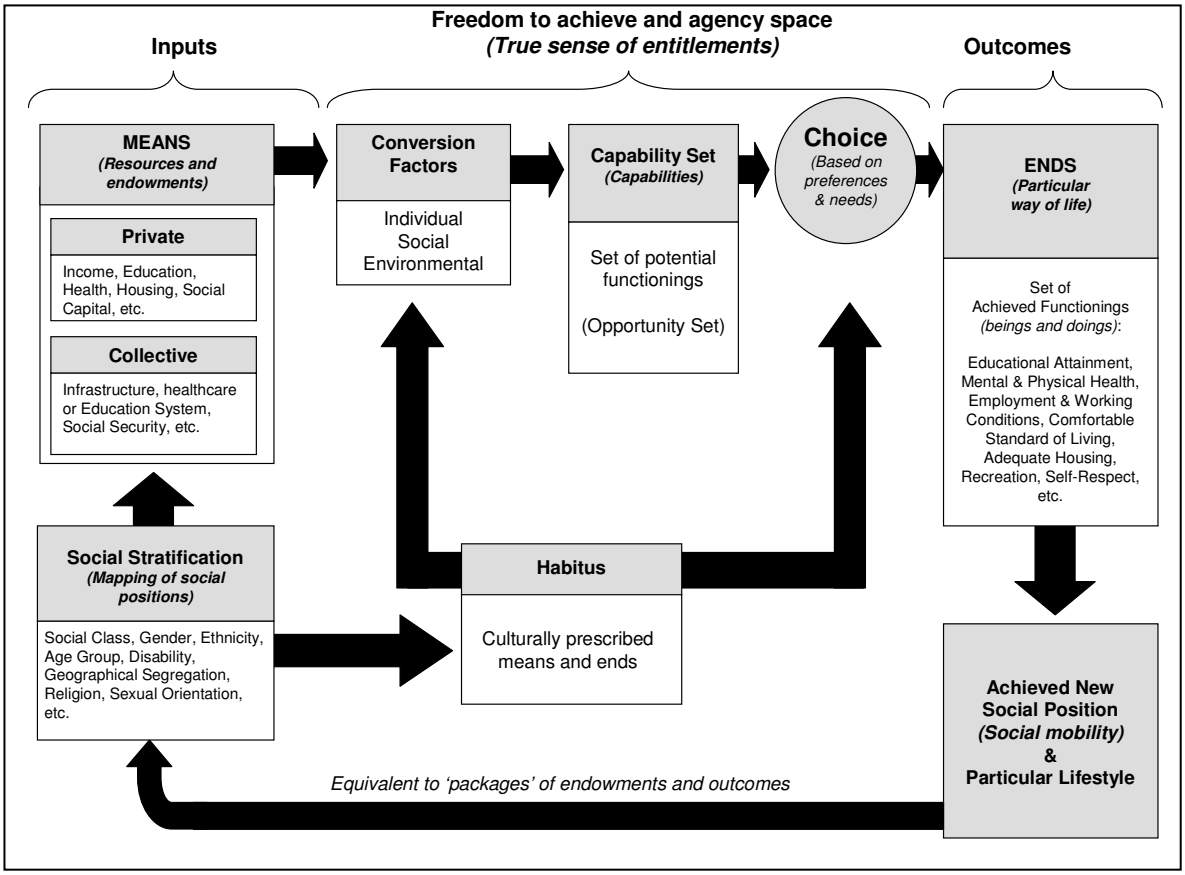
The capability approach proposes an alternative space for social justice evaluation related to the notion of capabilities and freedom of choice. This approach distances itself from those perspectives more centred in commodities and utility, giving special attention to individual agency and human diversity. The sociological analyses highlight the relation between social structure and the arrangement of life chances and choice. The first one is defined as the structure of social position in society and the respective 'package' of endowments and outcomes, while the second one is defined as the space for social action and social mobility given these social constrains. I shall briefly explain the integration between both approaches[3].

A synthetic illustrative integration between these two academic traditions is presented schematically in figure 1. This flow diagram integrates other schematic representations of the capability approach in relation to group inequalities, with the sociological analysis of social stratification[4]. The upper part of the scheme refers to the capability approach while the bottom part illustrates the sociological framework. While both approaches are clearly more complex than this graphical representation, the scheme provides a way of highlighting the complementarities of these approches.

The capability approach makes a clear distinction between means, functionings and capabilities, indicating that capabilities are the real space of concern for social justice evaluation (Nussbaum 2000, 2003a; Sen 1992, 1999).. The means consist of resources or endowments, which are instrumental to the achievement of other ends. These include individual resources (such as income, education and health) and collective resources (such as public infrastructure, healthcare and the education system, among others). People use these resources instrumentally in order to achieve intrinsically valuable ends, understood as functionings ('beings' and 'doings').

Figure 1 Illustrative integration of both analytical traditions

[3] I have explained this in more detail in the first chapters of my doctoral thesis (Roche 2009).
[4] In particular, it takes into account Robeyns' scheme of a person's capability set and her social and personal context (Robeyns 2005: 98, figure 1), and Buchardt and Vizard's scheme for a capability measurement framework (Burchardt and Vizard 2007: 16, figure 1).



Source: Own scheme that partially takes into account Robeyns (2005: 98, figure 1), and Buchardt and Vizard's (2007: 16, figure 1).

The conversion of these resources into functionings is affected by individual, social and environmental factors. The capability set is constituted by the potential set of functionings from which people can choose one particular set in relation to their resources and conversion factors. This is the real opportunity set available from which a person can choose. Based on their preferences and needs, people choose a particular set of functionings, which is considered to embrace a particular way of life. The result is the actual set of achieved functionings that a person enjoys, which in turn include different 'beings' and 'doings', from educational attainment and health to self-respect.

While the scheme is static, the processes behind the attainment of people's sets of resources, endowments, achieved functionings and capabilities are very much dynamic. This is illustrated in the scheme with the circular arrow at the bottom. Making a choice at any given time clearly affects a person's set of opportunities in the future. Despite paying attention to resources and outcomes, the capability approach considers that for evaluative purposes, the focus should be on actual capabilities and substantive

freedoms. This is in accordance with the true sense of 'entitlements': the freedom to achieve within the agency space.

The sociological approaches have a perspective that could complement the capability approach, as illustrated at the bottom of the diagram. While they acknowledge the multidimensional nature of inequality, the sociological approaches consider that the multidimensional distribution of resources and endowments is associated with the structure of social position in society. That is, the background situation – class, ethnicity, geographical location, origin in general – are already determinants of the initial distribution of resources and endowments. While social class analysis focuses on production and employment relationships, a broader analysis of social stratification pays attention to a multiplicity of groups, including social class, gender, ethnicity, caste, age, disability and geographical location, among others.

The sociological approaches argue that this structure of social positions in society delimits potential packages of endowments and outcomes (Grusky and Kanbur 2006; Grusky and Weenden 2007). People's life chances are affected by this hybrid social positioning, which produces complex processes of advantages and disadvantages. In this sense, the sociological analysis argues that groups also have an influence on people's life chances by means of habitus or dispositions, which are culturally prescribed means and ends (Bourdieu 1979 [1984]; Grusky and Kanbur 2006). As the scheme illustrates by mean of this habitus disposition the social structure has an effect on the conversion factors and individual preferences. The capability set is not only the set of potential functionings that a person can achieve according to her resources/endowments and conversion factors, but is also the resultant set of potential functionings that she identifies as possible or desirable in relation to her habitus.

While part of this argument is contained in the debate related to group inequalities in the capability approach, it is indeed central to the sociological approaches[5]. Within the parameters of existing cultural and material constraints, people make choices and practice their agency. As an output, people enjoy particular lifestyles and, in some cases, achieve new social positions by means of social mobility. Here, lifestyle is defined as a set of achieved functionings or 'beings' and 'doings'. As with the capability approach, it is worth noting the dynamic processes behind this scheme. People's agency is practiced within the scope of social and cultural constraints, which in future becomes a new starting point for social action – indicated by the circular arrow. Finally,

[5] It could be argued that to some extent these social constraints are already considered to be among the social and environmental conversion factors.

I propose to define life chances in terms of the capability set or set of potential functionings. While this definition can be contested, the capability set is conceptually a more appropriate evaluative space for social justice assessment.

The diagram illustrates the way in which the sociological academic tradition can complement the capability approach in the study of group inequalities, in relation to life chances or capabilities. Nevertheless, there are some other important considerations that it does not cover, such as the formation of group membership; and group consciousness, identity and antagonism. These are also significant aspects of the capability approach and clearly give rise to important anchoring questions in many sociological analyses. However, these perspectives are less oriented towards life chances and more towards collective action and processes of social change. Instead, this paper focuses on contributing theoretically and methodologically to the assessment of inequality among social groups for monitoring purposes, for public action and as a way of producing social awareness.

As will be seen, the capability approach and the sociological tradition can be complementary for the measurement and monitoring of group inequalities. A fundamental methodological question has to do with defining, conceptually and operationally, the relevant social groups that are part of what we have named as 'the mapping of social position in society'. Another set of methodological issues have to do with finding ways to operationalize the capability approach for measurement applications. These questions are addressed systematically in the following application.

3. The case study

Naturally, these methodological issues are not abstract questions. Instead, the specific operationalization and application of this framework depends on the particular context under study. The measurement application that follows is set in Venezuela as a result of both an instrumental motivation and an intrinsic interest in this country. This case is considered instrumentally in later as a way to develop methodological principles for the study of group inequalities based on the capability approach. However, there is also the intrinsic motivation to provide insights into the understanding of the structure of

group inequalities in this particular country. Let us first contextualize the case of study and explain the reasons that motivate studying this case[6].

Venezuela has experienced two decades of severe social and political unrest, which, in the view of many, is associated with processes of inequality and social polarisation (Lopez Maya 2008; Petkoff 2002). Venezuela has experienced two decades of severe social and political unrest, which, in the view of many, is associated with processes of inequality and social polarisation (Lopez Maya 2008; Petkoff 2002). It seems, nevertheless, quite clear to all parties, that the social and political unrest is rooted in the deep structure of social inequality in this country. It is worth noting that other countries in the region are experiencing sociopolitical processes with significant parallelisms to the Venezuelan case. It is in this context that studying and monitoring inequalities among groups becomes particularly relevant.

Capability theorists have shown interest in studying group inequalities in a variety of contexts. For example, Robeyns (2006), and Burchard and Vizard (2007), who focus on the United Kingdom, have concentrated on gender inequality; or on monitoring inequalities among a variety of groups, including social class, gender, ethnicity, age, disability, religion and sexual orientation, among others. Stewart (2005) is clearly the most significant exponent of capability theory, whose line of research is oriented towards the study of group inequalities in developing contexts. She is particularly interested in the relation between-group inequalities and violent conflicts. As a result, her research has particularly focused on groups that have a strong sense of identity and where social mobility is limited. This explains her choice of countries where ethnic groups and geographical segregation are associated with violent conflict (a compilation of studies in: Stewart 2008). Nonetheless, Stewart (2003: 2) also recognises the relevance that other groups might have, such as those designated by religion, race, region, or even social class. Moreover, Nussbaum (2003b: 62) argues:

> *It is easy to focus on ethnocultural groups, because they are conspicuous, easy to pick out, and often geographically concentrated. But for many people, their most fundamental identification may be with groups that I shall henceforth call 'dispersed groups' – groups that are communities of interest and aspiration across regional and even national boundaries.*

This is certainly the case with social class, gender groups, disabled groups and sexual orientation, among others.

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[6] This debate is explained in more detail in my doctoral thesis (Roche 2009).

There seems to be strong evidence that social and political conflicts in Venezuela have been associated most significantly with socio-economic and geographical inequalities. Public opinion studies have found a very strong relation between socio-economic status and political attitude, particularly during the period of most intense conflict [7]. Electoral results also show important indications of socio-economic polarisation, particularly when comparing the voting patterns in middle class neighbourhoods with those of shanty towns[8]. Geographical differences in political attitudes are quite significant as well. The parties that support the political process initiated by President Chavez tend to have greater support in more rural and less developed provinces. By contrast, the parties of the opposition have obtained greater support in the largest cities and better-off provinces[9]. Interestingly as well, support for President Chavez's government is significantly lower in the shanty towns of Caracas than is the case in the disadvantaged communities of other less urban areas[10].

Ponce et al. (2008) have more systematically analysed the geographical patterns in electoral results at the municipality level, finding important correlations between poverty indices and the percentage of support for President Chavez. They have also seen a strong relation between the urbanisation level and this support, controlling for socio-economic variables. Overall, it seems that there is an important correlation between social and political conflict, and socio-economic and geographical inequalities in Venezuela.

Ethnic inequality might also be partly associated with conflict, but this is more difficult to assess. The first and most obvious reason for this is related to the lack of statistical data on ethnicity in Venezuela. In spite of some broad questions on ethnicity in a census every ten years, ethnic groups are totally absent from official statistics in Venezuela (see discussion in: Briceño-León et al. 2005; Colmenares 2005). This is partly due to a second factor, which has to do with Venezuela's complex ethnic differentiation.

According to official figures, Venezuela has only a 2.3% indigenous population. These figures would make Venezuela appear quite homogeneous in contrast to other Latin American countries; most notably Bolivia, Peru and Guatemala, with over 30% of

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[7] There is a range of public opinion studies that cover this aspect, for one example see DATANALISIS (2006).

[8] This comparison is easily observed in public data from the Venezuelan Electoral Council (http://www.cne.gov.ve/).

[9] This polarisation is even more evident in the most recent electoral processes: the 2008 regional elections and the 2009 referendum. See results at http://www.cne.gov.ve/divulgacion_regionales_2008/

[10] A good example is the crowded shanty town of Petare in Caracas, where the opposition won in the last local elections of 2008. The contrast in well-being between this constituency and neighbouring Caracas constituencies is illustrated later in Roche (2008).

indigenous population; (see comparison in: ECLAC 2006). Rather, ethnic differentiation in Venezuela is more akin to countries like Brazil or Colombia. These countries have a variety of ethnic groups that are the product of the 'mestizaje' (racial mixing) between indigenous people, African descendants and European settlers[11]. Briceño-León et al. (2005) explore this differentiation in Venezuela, using subjective measures and national representative samples[12]. They have found that in addition to its 2% indigenous population, Venezuela is composed of 5% 'negros' (black), 36% 'mulatos' (mixed brown), 30% 'mestizos' or 'trigueños' (mixed light-brown) and 25% 'whites'[13].

In the same exploratory research, Briceño-León et al. (2005) illustrate important inequalities among these ethnic groups in Venezuela. Other studies have also documented the degree of inequality among ethnic groups in this country, using the very limited available data (Colmenares 2005; ECLAC 2006). Therefore, it seems important to improve the production of statistics related to ethnicity in Venezuela in order to allow further research on ethnic inequalities. Although this complex ethnic differentiation is difficult to measure, in Brazil greater inclusivity of comparable categories can be found in official statistics (Travassos and Williams 2004; Lovell and Wood 1998).

Given the limitations of ethnic classification in Venezuela, I shall focus only on measuring and monitoring inequalities among geographical locations and social classes. Naturally, this is not to say that other groups do not deserve attention. Indeed, I consider that a comprehensive monitoring system should be able to assess inequalities among multiple groups, including social class, geographical segregation, ethnicity, gender, age group, religion, sexual orientation and disability, among others (as in Burchardt and Vizard 2007 for the United Kingdom; Burd-Sharps et al. 2008 for the United States).

While in this paper the empirical applications partially measure inequality among other groups (most notably gender, age groups, and household type), they more closely concentrate on the degree of inequality that is associated with geographical locations and social classes. This gives us the chance to discuss the extent to which

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[11] It is worth noting that the indigenous population was considerably higher in the territories that are now Bolivia, Peru, Guatemala and Mexico, even before Spanish and Portuguese colonisation. The territory that is now Venezuela had a smaller and more widely dispersed population. The Spanish conquest of Venezuelan territory was also more violent.

[12] Briceño-León et al. (2005) contrast the self-identity of the respondent with the interviewer's perception, finding few differences of opinion.

[13] These various and mixed-race ethnic groups correspond to the '*preto*', '*pardo*', 'amarelo', 'indigena' and 'branco', in Brazil (Travassos and Williams 2004; Lovell and Wood 1998). Intermediate groups can also be found in Guatemala and Peru, with the appellations 'ladino' and 'cholos' respectively (Caumartin et al. 2008).

the debate on social classes, which was originated in the context of industrialized societies, could also be applied to context like Venezuela[14]. Then, the proposed methodology could be more extensively generalized for the measurement of inequality among other groups in further analysis.

I have also indicated previously, that further research should more systematically test the effect of geography and social class in the overall distribution of endowments or functioning achievements in Venezuela. Indeed, Grusky and Weeden (2007) express substantial concern that assumptions among sociologists are frequently non tested. They indicate that this is a similar situation to the one in which economists might simply assume without testing that income is a good proxy of inequalities in other dimensions or simply a good proxy to utility. Therefore, I have argued, that the studying of the 'mapping of social positions' also implies carrying out these statistical tests which should in addition lead to refining the categorizations.

Following, I take parsimonious categorizations of social class and geographical structure and apply them to the Venezuelan context for the measurement of inequality in housing adequacy. I shall systematically compare these groups within different dimensions of housing adequacy, in order to reveal the latent structure of inequalities in the achievement of this fundamental right. What this analysis shows is that inequalities in housing adequacy are experienced differently by different groups, depending on the dimension under study. While the analysis contributes with concrete findings related to the Venezuelan case, it illustrates the importance of considering and testing these categorizations. It also highlights the benefits of moving beyond the exclusive analysis of income inequality, and paying attention to the space of capabilities and the space of functionings. Finally, the paper provides insights for understanding the latent structure of inequalities in the fundamental entitlement of housing adequacy in Venezuela.

The remaining of the paper is organized as follows. The subsequent two sections explain the categorizations used for measuring geography and social class. At this stage, I test the statistical significance of the differences in housing adequacy for several categorizations based on analyses of variance (ANOVA). The following section integrates geography and social class, and illustrates graphically the different patterns of inequalities in each dimension of housing adequacy. Finally, I present a multivariate analysis that allows revealing in more detail the latent structure of inequalities in housing adequacy in Venezuela.

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[14] This would be particularly interesting, considering the nature of the political process in Venezuela. The social and political conflict in the country is frequently seen as the result of a social class conflict.

4. A parsimonious scheme of geographical inequalities

The geographical location was analysed according to a categorization that combined regional division and the level of urbanisation in Venezuela. This scheme is an adaptation of the classification that Gruson (1993, 2008) and Cisor (2004) have implemented to analyse spatial inequalities in Venezuela. It combines the size of the locality with the regional division of the country, producing a number of intersections that are later clustered in order to obtain a synthesis of the geographical inequalities in Venezuela. The subjacent criteria in this classification has proved to be more appropriate than geographical analyses based on local administrative units such as state level (INE 2006; OCEI 2001), or municipality level (Giménez et al. 2002; INE 2004). While the classification was initially defined for the analysis of geographical inequality using the Venezuelan Household Survey, similar categorisations have also been applied for analyses that have used other surveys or macro data (Cursio 2004; Molina and González 2000).

In our scheme, the country has been divided into five regions (ZXR) and five urban–rural domains (ZXT). This differs from Gruson (1993, 2008) and Cisor (2004), who divide the country into six regions and seven urban–rural domains. While their classifications seem to be suitable for synthetic purposes, the scheme used in this paper is more appropriate for interpretation of multiple regression models[15]. The final scheme allows differentiation of the degree of inequality that can be attributed to regional variations and that which corresponds to urban–rural domains.

Figure 2 presents the final scheme and possible combinations of size (ZXT) and region (ZXR). There are only eighteen possible combinations, given that some regions do not have localities of certain sizes. The values in each cell correspond to the percentage of the population in each possible combination of region and size. It shows synthetically the geographical distribution of the population in the country. Figure 3 presents a synthesis of the geographical domains (ZXU) with six clusters instead of eighteen. Most of the following analyses are based on regional (ZXR) and urban–rural domains (ZXT). When a synthesis is required, I shall make use of the synthetic geographical domain (ZXU) instead[16].

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[15] This is primarily because Gruson (1993, 2008) and Cisor's (2004) classification generates significant colinearity between the capital region and Caracas.

[16] This variable partially differs from the synthesis used by Gruson (2008) and Cisor (2004) because it attributes more relevance to ZXT over ZXR. The rationale behind this decision was empirically grounded and, as will be seen in the following analysis, the urban-rural domains (ZXT) are much more a factor of differentiation in housing adequacy than the regions (ZXR).

Figure 2 Regions (ZXR) and urban–rural domains (ZXT)

ZXR	ZXT					Total
	TC	TL	TM	TS	TR[1]	
NC	10.8	10.9	6.6	5.7	-	34.0
AA	-	-	3.1	4.1	2.3	9.5
EE	-	4.7	5.0	5.8	2.6	18.1
NW	-	3.6	10.3	9.1	3.6	26.6
LL	-	-	5.5	3.0	3.4	11.8
Total	10.8	19.2	30.6	27.7	11.8	100

(ZXR) Regions

NC North Central Region (DF, MI, AR, CA)
AA Andean Region (ME, TA, TR)
EE Eastern Region (AN, MO, NE, SU, BO, DA, AZ)
NW North Western Region (ZU, FA, LA, YA)
LL 'Llanos' Region (AP, BA, CJ, GR, PO)

(ZXT) Urban–Rural Domain

TC Caracas Metropolitan Area
TL Large cities (more than 400 thousand inhabitants)
TM Medium cities (45–400 thousand inhabitants)
TS Small cities (2.5 < 45 thousand inhabitants)
TR Rural towns (< 2.5 thousand inhabitants)

Figure 3 Synthetic geographical domains (ZXU)

ZXR	ZXT					Total
	TC	TL	TM	TS	TR[1]	
NC	CS	UC				34.0
AA						9.5
EE		UL	UM	US	UR	18.1
NW						26.6
LL						11.8
Total	10.8	19.2	30.6	27.7	11.8	100

(ZXU) Synthetic Geographic Domain

CS: Caracas
UC: Large and medium cities in the central region
UL: Large cities (not in the central Region)
UM: Medium cities (excluding those in the central region)
US: Small and rural towns in the central region
UR: Rural towns (not in the central region)

[1] There are only a few localities with less than 2,500 people in the central region (NC). As a result, they were grouped with TS in NC.

A preliminary analysis shows the degree of inequality in housing adequacy that is explained by inequality among these geographical groups. Table 1 presents the summary of the one-way ANOVA while tables A1, A2 and A3 in the appendix present the detailed figures. Although all the categorisations show statistically significant differences, the percentage of variance that can be explained by differences between-groups fluctuates considerably between categorisations and dimensions. Overall, the urban–rural domains (ZXT) show greater variance than the regions (ZXR) and only slightly less than that of the synthetic geographical domains (ZXU). Similarly, geographical domains are most importantly associated with differences in services, only partially with differences in structure and scarcely at all related to differences in space and density. This is clear when, for example, analysing synthetic geographical domains (ZXU). This categorisation accounts for 22.9% of the variance in services (HSI), 12.9% in the housing structure (HTI), but only 0.5% in the space and density (HDI). I shall analyse the joint effects of these categories later in this paper.

Table 1 Variance attributable to differences in geographical location between and within-groups

	Overall Adequacy HAI	Services HSI	Structure HTI	Space and Density HDI
Urban-Rural Domains (ZXT)				
% Between groups Sum of Square	13.0	22.8	12.5	0.4
% Within groups Sum of Square	87.0	77.2	87.5	99.6
F value	714.5	1414.2	684.6	17.5
Regions (ZXR)				
% Between groups Sum of Square	5.7	5.3	6.2	0.8
% Within groups Sum of Square	94.3	94.7	93.8	99.2
F value	292.3	265.7	316.8	36.5
Synthetic Geographical Domains (ZXU)				
% Between groups Sum of Square	13.3	22.9	12.9	0.5
% Within groups Sum of Square	86.7	77.1	87.1	99.5
F value	588.8	1137.2	566.4	18.0

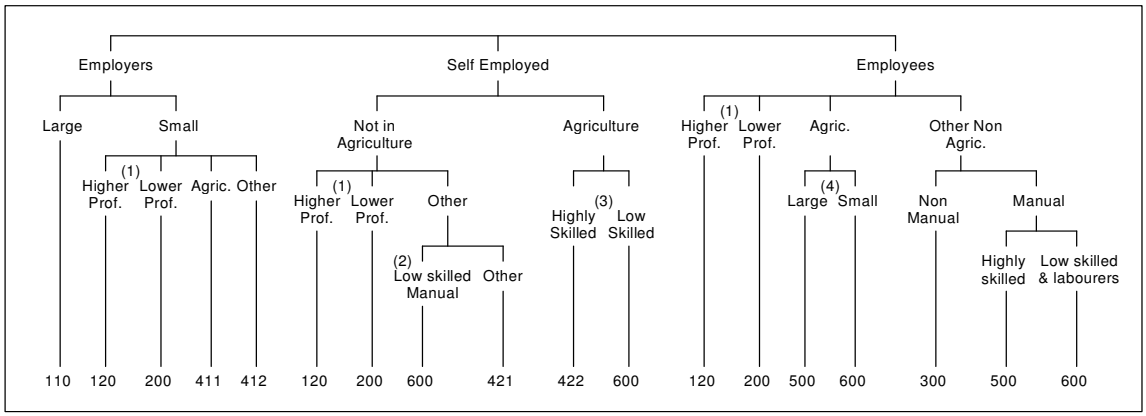
Note: The F critical value for a 0.05 level of significance is 5.63 for ZXT and ZXR (4df denominator), and 4.37 for ZXU (5df denominator). See detailed figures in tables A1, A2 and A3 in the appendix.

5. Social Class Scheme

Social class was measured with an adaptation of the Erikson–Goldthorpe–Portocarero class scheme (Goldthorpe et al. 1987; Erikson and Goldthorpe 1992). This classification has proved to be consistent in different contexts, gaining significant international recognition[17]. The scheme used in this paper takes into account the recent adaptations carried out for the United Kingdom (Rose et al. 2005), and the European context (Rose and Harrison 2008). It also takes into account previous adaptations carried out for Latin America by Portes and Hoffman (2003) and particularly for Venezuela by Gonzalez (2006) and Gruson (2008). The result is a scheme that measures employment relations and conditions of occupation, combining information on labour market and work situations. The first one is related to the source of income, economic security and prospects for economic advancement, while the second refers to location in the system of authority and control at work (Rose and Pevalin 2003). The full methodological description of the classification scheme is briefly summarised in figure 4 and the final codes and labels in table 2.

[17] See discussion in Marshall et al. (1988); Crompton (2008).

Figure 4 Conceptual derivation of social class



(1) Priority is given to professional level.
(2) Including manual jobs such as domestic service, street vendors, security guards, doorkeeper, among others.
(3) Highly skilled is in this case measured by educational attainment. It works as a proxy to identify small holders and subsistence farmers.
(4) A proxy of the type of labour contract.

Table 2 Full and collapse versions of social class (Hsoc)

Full version		Collapsed version	
110	Large employer	Hsoc1	Large employers /higher-grade professionals
120	Higher-grade Professionals, administrative and managerial occupations		
200	Lower-grade professionals	Hsoc2	Lower-grade professionals
300	Routine non-manual workers (intermediate occupations)	Hsoc3	Routine non-manual workers (intermediate occupations)
411	Employers in small organisations (non-professional)	Hsoc4	Micro entrepreneurs & own-account workers
412	Employers in small organisations (agriculture)		
421	Own-account workers (non-professionals)		
422	Own-account workers (agriculture)		
500	Skilled workers	Hsoc5	Skilled workers
600	Non-skilled workers	Hsoc6	Non-skilled workers

Social class and other related occupational categorisations for the household are defined in relation to the circumstances of the main breadwinner[18]. Only households

[18] This is a common practice in social class analysis, since the employment status of the household is more significantly defined by the circumstances of the main breadwinner. The variable, 'head of household' is instead defined by other criteria within the household and is frequently simply the eldest male. Nevertheless, it is worth noting that identification of the main breadwinner might still be gender-biased. A more advanced analysis could explore combinations within the household. However, for the

with classifiable social class and occupational status are included in the following analysis. One important limitation of cross-sectional data in the measurement of social class is that it only considers the current job situation, although occasionally, it can take into account the most recent occupation when the survey registers information for the unemployed. Nevertheless, there is a certain social class mobility in time (e.g. life cycle and transitions) that is not captured with cross-sectional data. In our case, only households with inactive, long-term unemployed members or those looking for a first job are missing values for social class, representing 5.5% of the sample.

In addition to social class, two other variables are included in order to assess other possible criteria for occupational segmentation. The first one refers to economic sector (EcoSec) – indicating the degree to which households belong to the formal–informal sector and public–private sector – while the second one concerns economic activity (EcoAct). These two criteria seem to be important for Latin America, where there is significant segmentation of the labour market. Indeed, Portes and Hoffman (2003) and Gruson (2008) include these criteria in their class schemes for Latin America and Venezuela respectively. Nonetheless, it seems more appropriate to keep this variable separate in order to empirically assess the degree to which these differentiation factors are related to the achievement of housing adequacy.

Table A4 in the appendix shows the final classification and presents the percentage of households by social class (Hsoc) and Economic Sector (EcoSec), highlighting both formal and informal sectors. As the figures indicate, 42% of the households belong to the informal sector, while 19% fall under the public sector. The remaining 39% corresponds to the private formal sector. The other categorisation is by economic activity (EcoAct), which corresponds to the one digit International Standard Industrial Classification (ISIC) of economic activities according to the International Labour Organization (1989). EcoSec and EcoAct allow us to control for economic activity while carrying out analyses at multivariate settings.

A preliminary analysis shows the degree of inequality in housing adequacy that is explained by inequality among groups in these categorisations. Table 3 presents the summary of the One-Way ANOVA, while tables A5, A6 and A7 in the appendix present the detailed figures. The differences are statistically significant for all three categorisations for each indicator, but similar to that which usually occurs with

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purposes of this paper the 'main breadwinner' seems a good representation of social class and occupational status.

geographical groups: the percentage of variance that is explained by differences between-groups varies considerably among categorisations and dimensions.

The analysis shows that social class and economic activity explain considerably more variance than economic sector[19]. Interestingly, social class is highly associated with differences in housing structure (14%), while to a lesser degree with services (4.7%) and space and density (4.3%). It is worth noting that space and density is related to social class, whereas it is scarcely related at all to geography. Finally, it is interesting to note that EcoAct explains a considerable amount of the variance in services (20%). These categorisations have a joint effect on the household's housing adequacy, which is also affected by the influence of geographical groups. I shall explore this joint effect in some detail in the following section, before moving on to a multivariate analysis at the end of this paper.

Table 3 Variance attributable to class differences between and within-groups

	Overall Adequacy HAI	Services HSI	Structure HTI	Space and Density HDI
HH Social Class (Hsoc)				
% Between groups Sum of Square	13.7	4.7	14.1	4.3
% Within groups Sum of Square	86.3	95.3	85.9	95.7
F value	606.6	187.7	627.0	173.0
EcoSec Economic Sector (EcoSec)				
% Between groups Sum of Square	4.6	3.6	3.8	1.6
% Within groups Sum of Square	95.4	96.4	96.2	98.4
F value	152.4	118.3	124.5	51.3
EcoAct Economic Activity (EcoAct)				
% Between groups Sum of Square	12.4	20.4	9.0	2.7
% Within groups Sum of Square	87.6	79.6	91.0	97.3
F value	226.7	409.1	157.1	43.9

Note: The F critical value for a 0.05 level of significance is 4.37 for Hsoc and EcoSec (5df denominator), and 2.30 for EcoAct (12df denominator). See detailed figures in tables A5, A6 and A7 in the appendix.

6. An integration: The mapping of social positions

The preliminary analyses in sections 4 and 5 seem to indicate some considerable inequalities in the fundamental entitlement of housing adequacy among geographical groups and social classes. In sociological terms, geography and social class are interpreted as constitutive parts of the mapping of social positions associated with

[19] This justifies their separate treatment in the multiple regressions later in the paper. However, this is in contrast to Portes and Hoffman (2003) and Gruson (2008), who integrate class and economic sector.

packages of endowments and outcomes (Grusky and Kanbur 2006; Grusky and Weenden 2007). Indeed, Gruson (2008) has proposed a mapping of social positions for Venezuela that combines geography and class with categorisations similar to those used in this paper.

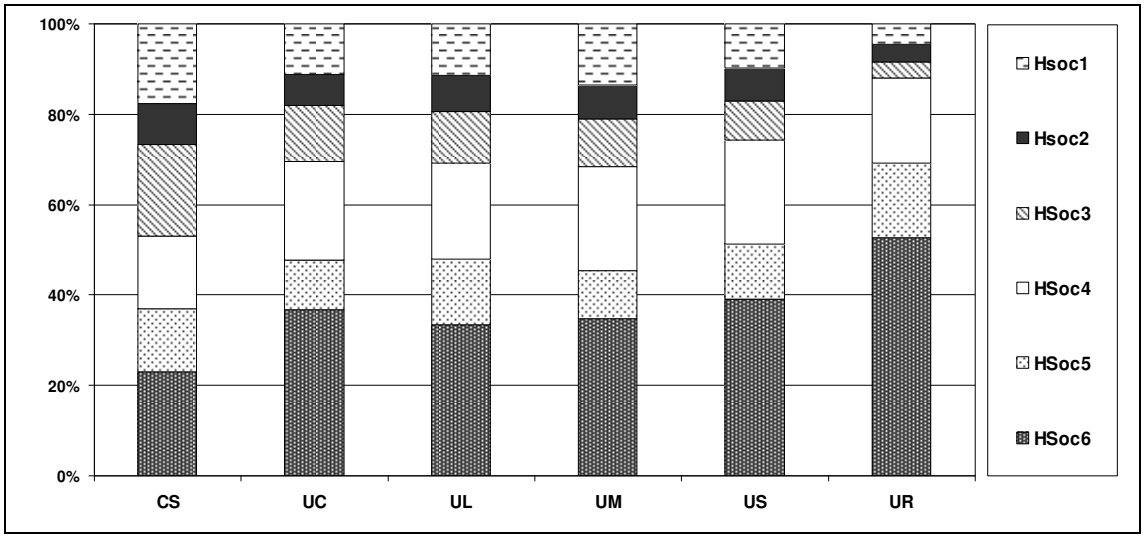
However, the analysis of the combined effect of geography and social class remains mostly at the level of the income space in the reviewed literature. Therefore, I move on to analyse the degree to which these groups are associated with the level of achievement in fundamental entitlements. In particular, I shall make use of the set of indicators on housing adequacy proposed in Roche (2008).

In close relation to Gruson (2008), the combination of social class (Hsoc) and synthetic geographical domains (ZXU) generates a mapping of social positions that lends itself to scrutiny. Since the categorisations in this paper are composed of six classes and six geographical domains, their combination produces thirty-six social positions. Figure 5 graphically represents the distribution of classes by geographical domain, while table A8 shows the figures in more detail. As expected, the class composition varies according to the geographical domain. In fact, there is a significant association between these two factors with an X^2 (25) = 946.89, $p < .001$.

This association is clear when we consider that in Caracas (CS) a considerably high number of households are large employers and higher-grade professionals (Hsoc1 with 18%), lower-grade professionals (Hsoc2 with 9%) and routine non-manual workers (Hsoc3 with 20%). Naturally, the rural towns (UR) are the domains that most clearly contrast with Caracas. Only 12% of their households are in the top three social classes, but 56% comprise non-skilled workers (Hsoc6)[20]. I shall move on to assess the effect that this mapping of social positions has on the fulfilment of the fundamental entitlement to housing adequacy using the set of indicators from Roche (2008).

[20] Table A8 in the appendix presents the number of households in each social position as a percentage of the total population of Venezuela. These figures are also useful in order to have a clearer picture of the distribution in this mapping of social positions.

Figure 5 Percentage of households by social class (Hsoc) and synthetic geographical domains (ZXU)



Notes:

For social class Hsoc1 = large employers/higher-grade professionals; Hsoc2 = lower-grade professionals; Hsoc3 = routine non-manual workers (intermediate occupations); Hsoc4 = micro entrepreneurs & own-account; Hsoc5 = skilled workers; and Hsoc6 = non-skilled workers.

For geographical domain: CS = Caracas; UC = large and medium cities in the central region; UL = large cities not in the central region; UM = medium cities not in the central region; US = small and rural towns in the central region; and UR = rural cities not in the central region.

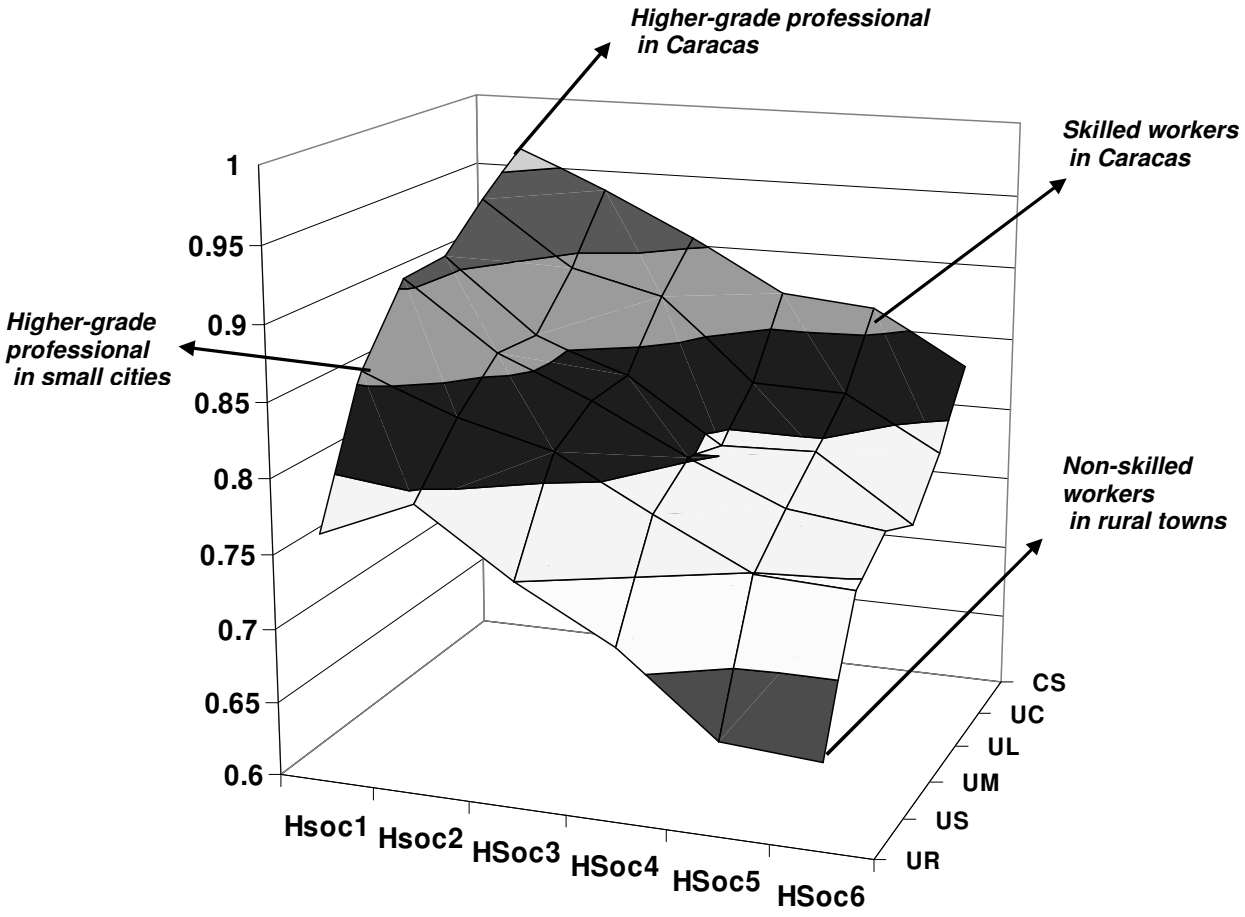
Figure 6 synthetically represents the structure of geographical and social class inequality in overall housing adequacy (HAI) in Venezuela. This graph is similar to the one proposed by Gruson (2008). However, instead of income per capita, I present here fuzzy set measures for overall housing adequacy (HAI). The graph thus presents the thirty-six social positions and their average fuzzy set measures (see detailed figures in table A9 in the appendix). I have highlighted four positions on the graph in order to explain how to read it.

As can be seen at the top, the highest degree of achievement in overall housing adequacy is obtained by large employers and higher-grade professionals (Hsoc1) in Caracas (CS), with an average fuzzy set of 0.963. The lowest degree of achievement is obtained by non-skilled workers (Hsoc6) in rural towns (UR), with an average of 0.658. There is then a gradient in the degree of achievement in intermediate positions between these two extremes.

It is worth noting that different social positions can have similar levels of achievement. For example, skilled workers (Hsoc5) in Caracas (CS) have similar overall housing adequacy to large employers or higher-grade professionals (Hsoc1) in

small cities (US). This partially illustrates the path of social mobility, which is related to social class mobility or internal migration. As can be seen, the graph is a parsimonious representation of geographical and class inequality in overall housing adequacy in Venezuela. It presents in a synthetic fashion the pattern of inequality associated to the mapping of social positions, which results from the combination of class and geography.

Figure 6 Overall adequacy (HAI)
by geographical domains (ZXU) and social classes (Hsoc)



Notes: For social class Hsoc1 = large employers/higher-grade professionals; Hsoc2 = lower-grade professionals; Hsoc3 = routine non-manual workers (intermediate occupations); Hsoc4 = micro entrepreneurs & own-account; Hsoc5 = skilled workers; and Hsoc6 = non-skilled workers. For geographical domain: CS = Caracas; UC = large and medium cities in the central region; UL = large cities not in the central region; UM = medium cities not in the central region; US = small and rural towns in the central region; and UR = rural cities not in the central region.

Figure 7 Overall adequacy (HAI)

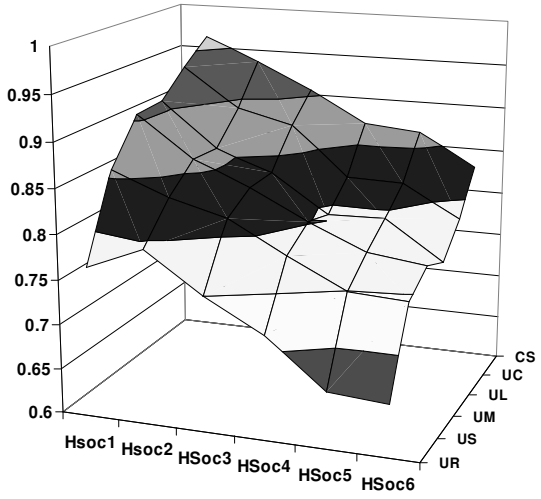


Figure 8 Housing services (HSI)

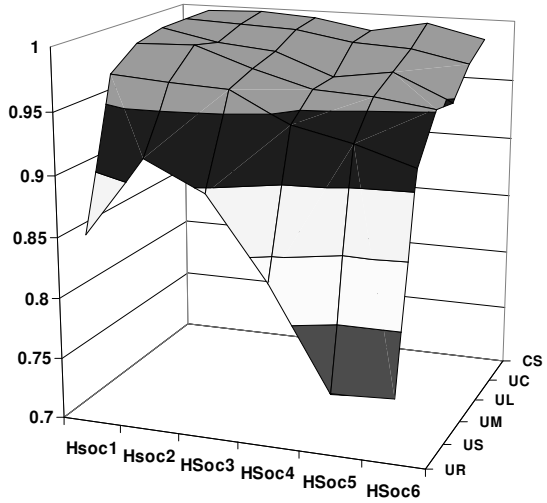


Figure 9 Housing structure (HTI)

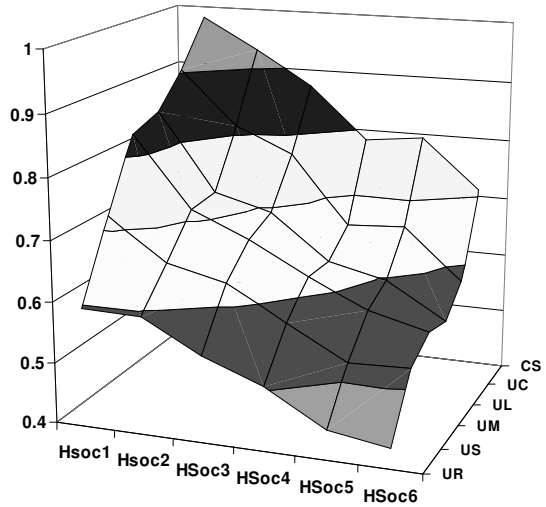
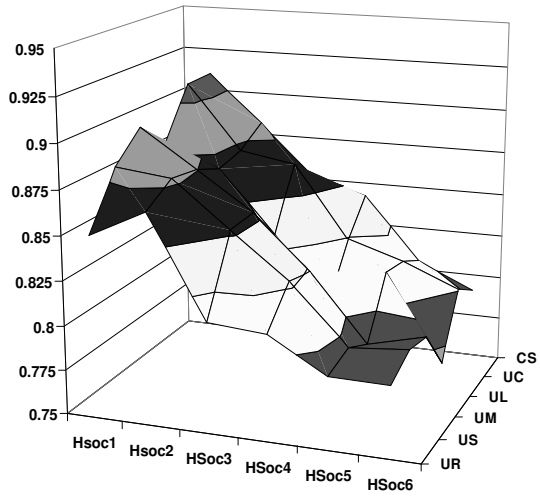


Figure 10 Space and density (HDI)



Notes:

For social class Hsoc1 = large employers/higher-grade professionals; Hsoc2 = lower-grade professionals; Hsoc3 = routine non-manual workers (intermediate occupations); Hsoc4 = micro entrepreneurs & own-account; Hsoc5 = skilled workers; and Hsoc6 = non-skilled workers.

For geographical domain: CS = Caracas; UC = large and medium cities in the central region; UL = large cities not in the central region; UM = medium cities not in the central region; US = small and rural towns in the central region; and UR = rural cities not in the central region.

If the space were truly multidimensional, we would expect to observe different patterns in different dimensions; that is to say, class and geography are associated with each dimension of housing adequacy in different ways. Similar graphs to those above are presented for each dimension and again for overall housing adequacy in figures 7, 8, 9 and 10. As expected, the subdimensions show very distinctive patterns. For example, in services (figure 8), the geographical difference between rural locations (UR) and the rest of the country seems to be the most prominent distinction, whereas class (Hsoc) is important only with regard to rural towns (UR). It is worth noting that the area below the black shadow on this graph, which corresponds to a degree of inadequacy of services, represents more than 30% of the households in the whole country[21].

Housing structure (HTI) shows a pattern that combines class and geography in a particular way (see graph 6.8). For instance, the gradient is steeper among social classes in Caracas (CS) than it is among social classes in rural towns (UR). Nonetheless, the factors of space and density are quite intriguing (see graph 6.9). While there appears to be a clear gradient among classes, the geographical domain seems to have quite an unusual pattern (gentler in UR and UM)[22]. As can be see, the graphs are parsimonious representations of the structure of inequality that already show interesting and quite complex findings. The graph for the overall housing adequacy (HAI) is a synthesis of the different patterns of inequality in each subdimension; that is to say, figure 6.6 is the result of the fusion of figures 6.7, 6.8 and 6.9.

However, this analysis needs to move further. As explainer, earlier studying the mapping of social positions also implies testing the effect of each factor in a multivariate setting more systematically. This implies testing the assumptions that are behind different classification schemes[23]. For instance, a multivariate analysis could assess the extent to which the region (ZXR) or the size of the city (ZXT) function as drivers of inequality in specific dimensions. Similarly, this analysis could reveal the extent to which the economic sector is an important driver of inequality in housing adequacy, as a considerable amount of research in the income space indicates. Indeed, as will be seen, this analysis allows us to reveal the latent structure of inequalities that constitutes the mapping of social position in society.

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[21] This is after adding the percentages from table A8 in the appendix.
[22] As will be seen later in the multiple regressions, this is explained by interaction with other factors, among which is demographic composition.
[23] In close relation to the concerns of Grusky and Weeden (2007), as explained at the beginning of this paper.

7. Multivariate analysis: revealing the latent structure

The synergy of living in a specific geographical location, and belonging to a particular social class, age group and gender, among other social groupings, has a combined effect on people's well-being. This complexity has only partially been captured by the analysis in the previous sections. A multivariate analysis allows the isolation of the effect of a specific group, or personal characteristics within this complex hybrid structure of group membership. In our case, such an analysis allows us to reveal more clearly the latent structure of inequality that is associated with geographical location or social class.

In this section, I shall present some multivariate regressions designed to assess the effect that geography and class have on the degree of achievement overall and in each of the sub dimensions of housing adequacy, controlling for income and other demographic factors, as indicated in the following linear equation:

$$Y = c + \lambda_1 X_1 + \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_3 + e\ ;$$

where Y represents the functioning or dimension measured as a fuzzy set; X_1 is income or resources; Z_1 is the set of indicators for geographical location; Z_2 is the set of indicators for social class and other occupational variables; Z_3 is a set of demographic factors that, for the purposes of this analysis, are taken as controlling variables; and e is a stochastic term reflecting chance events. The coefficient β can be interpreted as the effect that group membership has on the level of achievement in the particular functioning, controlling for income and other groups simultaneously[24].

Income (Y) is measured with the logarithm of the household per capita income, adjusted according to an adult equivalent scale and a scale economy factor. The geographical location set (Z_1) includes the dummies for the categorisation of regions (ZXR) and the urban–rural domain (ZXT), as explained in previous sections[25]. The social class set and other occupational variables (Z_2) include dummies for the social class classification (Hsoc) and the economic activity (EcoAct), also explained in previous sections. The economic sector is measured with two independent dummies, one for the informal/formal sector (SecInf) and the other for the public/private sector

[24] It is worth noting the similarities with other works on the capability approach in relation to disability or ethnic groups (e.g. Kuklys 2005b; Klasen 2000) and in particular the regression analyses with fuzzy set multidimensional poverty measures (e.g. Betti et al. 2006; Molnar et al. 2006; Panek 2006).

[25] These categorisations are selected instead of the synthetic geographical domain (ZXU) in order to assess the specific effect of each factor independently.

(PubPriv)[26]. The demographic factor (Z_3) includes dummies for the gender of the main breadwinner (HHGen), type of household (HHType), presence of children under 5 (Child05) and presence of adults over 65 (Adlt65)[27]. Similarly, the model includes a series of continuous independent variables: household size (nummeb), age of the head of the household (Age)[28] and square of the age of the head of the household (Age2)[29].

The final models assess the importance of geographical location and social class in explaining the difference in the degree of achievement in each dimension, controlling for the level of income and the set of demographic variables. Naturally, upper classes would be expected to have better housing adequacy as a result of higher income. Similarly, middle-aged workers who are advanced in their careers would be expected to have better housing adequacy than younger workers in the same sector. However, the model measures the degree that is explained by each group, but not by income inequality or demographic factors.

Some initial and interesting results are presented in table 4. This table shows the adjusted R-square for different models, illustrating the degree to which variance is explained by introducing additional variables[30]. In the first model, each synthetic indicator is regressed by only income and the constant. The second model includes demographic factors in addition to the previous ones. The third model adds social class (Hsoc). The fourth model also includes the geographical groups (ZXR and ZXT). The final model incorporates the other occupational variables. The table thus allows us to compare how much more each new variable contributes to the explanation of the variance in each dimension of housing adequacy.

Some interesting findings can be highlighted. While income is relevant in all cases, it is significantly more so for housing structure than for either of the other two dimensions. Indeed, the first model explains 15% of the variance in structure, while it accounts for only 6.2% in space and density and 4.8% in services. The second model shows the importance of demographic factors, justifying their inclusion as control variables[31]. In particular, they explain a significant amount of the total variance for space and density and are a relatively partial explanation for the other two dimensions.

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[26] This allows the independent effect in each case to be measured.
[27] The presence of children under 5 proved to be the most appropriate distinctive age cut-off in the analysis, while other cohorts were less significant. Adults above 65 refer to the presence of elderly people in the household in order to control for inequality in an ageing population.
[28] The age of the head of the household indicates the stage in the life cycle of the household.
[29] The square of the age of the head of the household allows the determination of whether the relation between dependent and independent variables is non-linear.
[30] The full regression results are presented in the appendix in tables A10, A11, A12, and 13.
[31] Indeed, a future analysis might well focus on the particular inequalities that can be attributed to differences among demographic groups.

Social class (Hsoc) clearly explains the additional variance, particularly in housing structure; and is again a partial explanation in the other two dimensions. The geographical location (ZXR and ZXT) explains the other portions, very much so in services but also significantly in structure.

The other occupational variables (EcoAct, SectInf and SecPub) perhaps contribute more modestly, but they still explain an additional part of the total variance. These results show that a model that includes geography and class explains at least twice the variance of a model than only includes income. Consequently, an analysis based on income alone would be somewhat incomplete, missing other important factors associated with inequality in housing adequacy.

Table 4 Adj. R-Squared for different models

	Overall Adequacy (HAI)	**Services (HSI)**	**Structure (HTI)**	**Space and Density (HDI)**
Model 1: Income and constant only $Y = c + \lambda_1 X_1 + e$	15.1%	4.8%	15.1%	6.2%
Model 2: Income, demographic factors and constant $Y = c + \lambda_1 X_1 + \beta_3 Z_3 + e$	20.4%	8.5%	16.5%	19.9%
Model 3: Income, Hsoc, demographic factors and constant $Y = c + \lambda_1 X_1 + \beta_1 Z_1 + \beta_3 Z_3 + e$	25.0%	10.0%	21.7%	21.2%
Model 4: Income, Hsoc, ZXT, ZXR, demographic factors and constant $Y = c + \lambda_1 X_1 + \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_3 + e$	32.1%	28.8%	28.6%	21.8%
Model 5: Income, Hsoc, ZXT, ZXR, other occupational variables (EcoAct, SecInf, SecPub), demographic factors and constant $Y = c + \lambda_1 X_1 + \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_3 + e$	34.0%	33.6%	29.8%	22.2%

Note: the full regression results for HAI are in table A10; for HSI in table A11; for HTI in table A12; and for HDI in table A13.

Table 5 OLS regression on HAI, HTI, HSI and HDI

	Overall Housing Adequacy HAI	Housing Services HSI	Housing Structure HTI	Housing Space and Density HDI
Adj. R-Squared	34.0%	33.6%	29.8%	22.2%
Constant	0.478***	0.782***	0.090*	0.562***
	(18.17)	(37.72)	(1.86)	(18)
(YHTaLOG) Income per AES	0.078***	0.032***	0.147***	0.054***
	(19.55)	(10.02)	(19.7)	(11.41)
(HSoc) Social Class				
Higher-grade professionals	ref	ref	ref	ref
Low-grade professionals	-0.023***	0.003	-0.060***	-0.012***
	(-6.22)	(1.37)	(-7.22)	(-2.57)
Routine non-manual workers	-0.035***	-0.002	-0.082***	-0.021***
	(-8.78)	(-0.78)	(-9.63)	(-4.19)
Micro entrepeneurs&Own-acount	-0.054***	0.002	-0.129***	-0.034***
	(-12.89)	(0.54)	(-15.02)	(-6.58)
Skilled workers	-0.069***	-0.005*	-0.155***	-0.046***
	(-15.84)	(-1.76)	(-17.77)	(-8.54)
Non-skilled workers	-0.084***	-0.015	-0.178***	-0.057***
	(-21.85)	(-6.04)	(-22.6)	(-11.67)
(ZXR) Regions				
North Central	ref	ref	ref	ref
Andean	0.023***	0.035***	0.022***	0.013***
	(5.83)	(9.42)	(2.75)	(2.73)
Eastern	-0.018***	-0.015***	-0.048***	0.009**
	(-5.4)	(-6.52)	(-7.29)	(2.24)
North Western	-0.027***	-0.024***	-0.036***	-0.021***
	(-8.67)	(-10.21)	(-6.02)	(-5.26)
Llanos	-0.023***	-0.0001	-0.071***	0.003
	(-6.38)	(-0.04)	(-10.65)	(0.58)
(ZXT) Urban - Rural Domain				
Caracas Metropolitan Area	ref	ref	ref	ref
Large Cities	-0.030***	0.003	-0.111***	0.018***
	(-7.64)	(1.27)	(-13.23)	(3.3)
Medium Cities	-0.033***	-0.006***	-0.105***	0.013***
	(-8.22)	(-2.68)	(-12.69)	(2.57)
Small Cities	-0.056***	-0.025***	-0.161***	0.019***
	(-14.25)	(-10.3)	(-20.04)	(3.62)
Rural Towns	-0.102***	-0.132***	-0.191***	0.017***
	(-19.71)	(-28.66)	(-19.38)	(2.68)
(SecInf) Informal Sector	-0.008***	-0.013***	-0.009	-0.003
	(-2.73)	(-5.39)	(-1.52)	(-0.67)
(PubPriv) Public Sector	0.013***	0.005*	0.019*	0.016*
	(2.83)	(1.79)	(1.94)	(2.53)

…Continues over

Table 5 (Continued) OLS Regression on HAI, HTI, HSI, and HDI

	Overall Housing Adequacy HAI	Housing Services HSI	Housing Structure HTI	Housing Space and Density HDI
(EcoAct) Economic Activity				
Agriculture	-0.061***	-0.109***	-0.058***	-0.015**
	(-8.48)	(-16.4)	(-4.25)	(-1.86)
Mining and Quarrying	0.019*	-0.003	0.043**	0.017
	(1.69)	(-0.32)	(1.96)	(1.31)
Manufacturing	-0.003	-0.004	-0.006	0.001
	(-0.49)	(-0.85)	(-0.48)	(0.09)
Electricity, Gas and Water	0.011	0.007	0.026	-0.0004
	(0.93)	(0.97)	(1.16)	(-0.02)
Construction	-0.031***	-0.013***	-0.053***	-0.025***
	(-4.55)	(-2.82)	(-3.99)	(-2.95)
Wholesale and Retail Trade	0.017**	0.008*	0.034***	0.011
	(2.94)	(1.85)	(2.81)	(1.41)
Restaurant and Hotels	ref	ref	ref	ref
Transport, Storage and Comm.	0.003	-0.004	0.012	0.0004
	(0.44)	(-0.76)	(0.89)	(0.05)
Financing, Insurance, Real State	0.013**	-0.003	0.045***	-0.002
	(1.97)	(-0.63)	(3.24)	(-0.19)
Public Administration	-0.012	-0.007	-0.019	-0.01
	(-1.48)	(-1.25)	(-1.16)	(-0.93)
Education	-0.009	-0.007	-0.013	-0.006
	(-1.13)	(-1.37)	(-0.83)	(-0.58)
Heatlh and Welfare	-0.01	-0.004	-0.028*	0.003
	(-1.28)	(-0.86)	(-1.76)	(0.25)
Other	-0.009	-0.007	-0.01	-0.009
	(-1.39)	(-1.54)	(-0.78)	(-1.17)
(nummeb) Household size	-0.003***	0.004***	0,000	-0.012***
	(-4.91)	(8.82)	(-0.23)	(-16.51)
(TypeHH) Type of Household				
Dual earner couple	ref	ref	ref	ref
Single earner couple	-0.002***	-0.002	0.003	-0.006*
	(-0.63)	(-0.76)	(0.55)	(-1.83)
Non couple	0.002	-0.017***	-0.020***	0.043***
	(0.71)	(-7.8)	(-3.67)	(12.41)
(Child05) Children under 5	-0.034***	-0.008***	-0.030***	-0.064***
	(-13.69)	(-4.15)	(-6.6)	(-18.85)
(Adlt65) Adult above 65	0.017***	0.009***	0.014**	0.027***
	(5.85)	(3.81)	(2.41)	(7.86)
(Age) Age Head of Household	0.0026***	0.0017***	0.0031***	0.0030***
	(5.54)	(3.72)	(3.56)	(5.34)
(Age2) Square of Age of HH	-0.000019***	-0.000016***	-0.000021**	-0.000020***
	(-3.62)	(-3.11)	(-2.12)	(-3.24)
(HHGen) Gender of Head of Household				
Male	ref	ref	ref	ref
Female	0.013**	0.017***	0.022***	0.001
	(5.03)	(8.63)	(4.06)	(0.32)

Note: t-statistics are in parenthesis. *** refers to 1% significance, ** refers to 5% significance, * refers to 10% significance.

Table 5 offers a more detailed comparison of regression model 5 from table 4, while all the partial regressions are shown in detail in the appendix in tables A10, A11, A12 and A13. A preliminary glance indicates that the inequalities in housing adequacy among geographical groups and social classes that were observed in the previous sections remain significant in the multivariate setting. The different regression models also confirm that the relevance of different groups varies considerably depending on the dimension under study. Consequently, I shall briefly analyse the relevance of income and demographic factors in this multivariate setting and then interpret the geographical and social class inequalities in detail.

Income and demographic factors

It has already been observed that income (YHTaLOG) has significant explanatory power with regard to overall housing adequacy (HAI) but a very different significance in each dimension. Income is much more influential for housing structure (HTI), with a coefficient of 0.147, than housing space and density (HDI) or housing services (HIS), with 0.054 and 0.032 respectively. As would be expected, the structure of the house depends more on the household's economic resources, while adequacy of services is more closely related to other factors – probably public investment or environmental characteristics. The above results confirm these differences and allow for the assessment of the specific importance of geographical groups and social class independently of the household level of income[32].

The coefficients of the demographic variables are also interesting and worth some attention. The positive effects of the age of the head of the household and its square value indicate that there is a positive but non-linear relation between age and housing adequacy, indicating that people tend to improve their housing adequacy up to a certain age after which it starts to deteriorate. This effect has been controlled for both age and its square in the analysis. Another important variable to control is the household size (nummemb), which, as expected, has a negative relation with space and density (HDI). Interestingly, this variable also has a small but positive relation with housing services (HSI). The type of household also has a significant effect on some aspects of housing adequacy. I have controlled this effect by including few variables related to household composition to HHType, Child05 and Adlt65.

[32] Thus partly measuring the degree of inequality that depends on the conversion factors associated with each group, as in Kuklys (2005b).

Another very important variable is the gender of the head of the household (HHGen). The results indicate that a female head of the household has a positive effect on housing adequacy (HAI), with a coefficient of 0.013. This is consistent with other research that indicates how – in contrast to their male counterparts – female heads tend to invest larger amounts of the household income in the well-being of their families, particularly the children[33]. This is an interesting finding in itself, since gender has also proved to be an important driver of inequality in income and social class. However, if these variables are controlled, being a female head of the household has a positive effect on housing adequacy in terms of service and structure. Naturally, an analysis of gender inequality would require further and specific research. For the time being, gender has been included in the regression only as a control variable. I will next move on to analyse firstly geographical inequalities, followed by social class and other occupational groups.

Geographical inequalities

There are significant geographical inequalities that combine regional (ZXR) inequalities with urban–rural domain (ZXT) inequalities in a singular way. In terms of urban–rural domain (ZXT), there is clearly a gradient housing adequacy depending on the size of the city. Caracas Metropolitan Area enjoys the highest overall housing adequacy, (HAI) acting as benchmark for the regression. It is followed by large and medium cities, with coefficients in comparison with Caracas of -0.030 and -0.033 respectively. Small cities and rural towns trail far behind, with coefficients of -0.056 and -0.102 respectively. It is quite clear that the urban–rural distinction is a very important determinant of inequality in overall housing adequacy. This distinction is even more polarised in reference to services (HSI), showing that rural towns and, to a lesser degree, small cities experience considerable deprivation, with coefficients of -0.132 and -0.025 respectively. In terms of housing structure, Caracas has much better adequacy, significantly higher than even large and medium cities by more than -0.105[34]. Small and rural towns remain significantly behind, with coefficients of -0.161 and -0.191 respectively. Interestingly, in terms of space and density Caracas seems to be the

[33] This research finds that female members make better use of cash or food transfer programmes for the overall improvement of household well-being (Devereux et al. 2006). Females have also shown greater achievement in housing in other studies based on the capability approach in different contexts (Chiappero-Martinetti 2000; Lelli 2001; Robeyns 2006).

[34] There is a difference between medium and large cities that could be explained by regional variation, as will be seen in the following analysis.

domain with the worst adequacy. I shall explain the reasons behind this finding in relation to regional inequalities shortly.

The univariate analysis in previous sections suggests that the north central region has a better overall adequacy than any other region. However, it seems that when controlling for the urban–rural domain (ZXT) and other factors, the Andean region has a much better achievement rate in the overall dimension of housing adequacy, as well as in each individual dimension, even compared to the north central region[35]. This is a very interesting finding, meaning that, all the other factors being equal, the Andean region has a better achievement rate in every aspect of housing adequacy. Similarly, if we control for other factors, the north western region has the worst housing adequacy, particularly in services, with the lowest coefficient of -0.024[36].

The Llanos region is another interesting case. Despite being one of the poorest regions in the country (see: INE 2004), in a multivariate setting it has similar adequacy of services to the northern region and is only just behind the Andean region. Nonetheless, the Llanos region has the worst adequacy of structure, with a coefficient of -0.077.Therefore, it is evident that the regression analyses reveal more clearly the complexity of geographical inequalities in a multidimensional setting: the Llanos region is less developed as a result of the urbanisation factor, rather than necessarily because of regional inequality per se.

It seems that using different categorisations for regions (ZXR) and for urban–rural domains (ZXT), allows the observation of the complexity of geographical inequalities better than by using the synthetic geographical domain (ZXU) alone[37]. This becomes more pronounced when analysing the adequacy of space and density (HDI). Interestingly, both northern regions (north central and north western) and particularly Caracas have the lowest degree of achievement in space and density. This implies that despite having good services and a comparatively better housing structure, Caracas has a greater problem with house overcrowding. Furthermore, although it is one of the richest in the country, the north western region also suffers from overcrowded houses and additionally poor adequacy of services, all other factors being equal. These figures show how there seems to be a geographical structure of inequality in housing

[35] This might be affected by geographical conversion factors: weather conditions in the Andean region might motivate people in these localities to invest larger amounts of money and effort in the improvement of their housing structure. However, this region is also better endowed with services and space and density, which are not related in the same way to geographical location.
[36] This is quite striking, considering its geopolitical relevance: this region has the largest oil reserve in the country.
[37] Nonetheless, for synthetic purposes ZXU is a more parsimonious categorisation and this explains why Gruson (2008, 1993) and CISOR (2004) opt for this methodological strategy.

adequacy. However, this structure shows a degree of complexity in a multidimensional space: the multivariate analysis reveals the complexity of geographical inequalities.

Social class and other occupational groups

Occupational groups are a significant factor of differentiation in housing adequacy, but their relevance varies depending on the dimension under study. The social class categorisation (Hsoc) is associated with substantial inequalities in housing adequacy that go beyond income inequality. Interestingly, while social class is significant to overall adequacy (HAI), structure (HTI) and space and density (HDI), it shows no statistical significance in terms of inequalities in services (HSI). Indeed, social class has great explanatory power in overall housing adequacy (HAI), showing a gradient differentiation among classes.

A non-skilled worker has a coefficient of -0.084 in relation to a higher-grade professional in overall housing adequacy, all other factors being equal. These differences are more important in the housing structure (HTI) when a non-skilled worker has a coefficient of -0.178 in relation to higher-grade professionals. This gap is equivalent to the difference between Caracas and the rural towns. Adding both inequalities together implies that a non-skilled worker in a rural town would have a -0.369 degree of achievement in housing structure in relation to a higher-grade professional in Caracas, all other factors being constant. Similarly, inequalities among social classes are probably associated with the contrast between the shantytowns and well-established neighbourhoods of Caracas.

These dramatic differences in housing structure contrast with the insignificance of social class (Hsoc) for adequacy of housing services (HSI). The univariate analysis in previous sections showed statistical significance for inequality in adequacy of services among social classes[38]. However, contrary to these results, differences in services among social classes are not statistically significant when controlling for other factors. Consequently, the differences in the degree of achievement in services among social classes presented in previous sections must be attributed to other factors such as geographical inequalities or income inequalities. This example illustrates quite clearly how a multivariate analysis contributes to reveal the latent structure of geographical and social class inequalities in Venezuela.

[38] See in particular table A5 in the appendix to this paper.

Social class (Hsoc) also shows statistically significant coefficients for space and density (HDI). The groups are on a rising scale, where non-skilled workers have the lowest coefficient with -0.057 in relation to higher-grade professionals. If we combined these results with geographical inequalities, we would see that non-skilled workers in Caracas are among the most deprived in Venezuela in terms of space and density. Thus, the mapping of social positions is multidimensional: while intermediate classes in rural towns are deprived of services, they enjoy ample housing space. In contrast, non-skilled workers in Caracas might enjoy good services, but they live in very overcrowded houses.

The economic sector of employment and economic activity are other household characteristics related to inequalities in housing adequacy. It is interesting that the segmentation of formal/informal and public/private sectors is not associated to any great extent with these inequalities in a multivariate setting. This contrasts with some assumptions in the relevant literature on labour market segmentation in Latin America (e.g. Portes and Hoffman 2003). Inequality among formal and informal employees is significant only in housing services (HSI) with the relatively low coefficient of -0.013 for those in the informal sector. Indeed, differences between public and private employees are only relevant at 10% of significance. However, these factors only seem to have a slight influence on the increase in inequality associated with other groups.

In contrast, economic activity (EcoAct) is more influential and clearly an important factor in determining labour segmentation[39]. Being an agricultural worker seems to have a highly significant effect on housing adequacy (HAI) – particularly in terms of housing services (HSI) – adding even more differentiation to geographical and social class inequalities[40]. Similarly, working in finance or trade is positively related to housing adequacy (particularly housing structure), while working in construction has a significantly negative effect. If we add these factors to the previous results, a non-skilled worker in agriculture from a rural town in the Andean region will have a housing structure equivalent to a non-skilled worker in construction in a large city in the north western region. They will have a housing structure of -0.450 and -0.423 respectively, in relation to a higher-grade professional in finance living in Caracas. This is a pertinent example of the way in which multidimensional space combines with the mapping of

[39] The statistical significance of the variable as a whole was tested and proved to be significant.
[40] This might be related to unmeasured factors such as lack of social protection.

social positions in society[41]. Therefore, revealing the structure of geographical and class inequalities also implies identifying these subtleties.

8. Conclusion

This paper has systematically integrated multidimensional measures, used in the capability approach, with parsimonious categorizations from social stratification studies. I have demonstrated how these methodologies can be complemented in order to enhance the study of group inequalities. As a result, they reveal the mapping of social positions that is associated to packages of endowments and outcomes. I have shown some of the benefits of using parsimonious classifications and ways in which they can be tested and refined. I have also shown the importance of moving beyond the exclusive analysis of income inequality, and paying attention to the space of capabilities and functionings. Finally, I have demonstrated how the study of group inequalities needs to deal simultaneously with the complexity of multidimensional space and the multiple social determinants of inequality.

In particular, the paper focuses on revealing the latent structure of geographical and social class inequalities, in housing adequacy in Venezuela. I applied the categorization of geographical location and social class, to the analysis of group inequalities in housing adequacy. The final analysis assesses the effect of geography and social class on the degree of inequalities in housing adequacy, rather than only on income inequality. Throughout the paper I illustrated the complexity of social group inequalities at this multidimensional space. In the final section, I measured the independent effect of geography and social class in a multivariate setting, controlling for household income and other demographic factors. This analysis shows how these factors combine and how their significance and manifestation vary depending on the dimension under study.

Many issues remain unsolved. Although the focus in this paper is mainly on the shape and output of the stratification system, important attention would also need to be given to processes of group formation. The application does not cover issues related to group identities, preferences and mobilization that are also essential to fully acknowledge the role of groups in well-being. The study of social mobility also requires

[41] These results might also suggest potential paths of migration and social mobility that could be analysed with alternative data.

attention, since the paths that people follow, which are also social constructions, are fundamental aspects of the structure of social inequality. Finally, the interdependence of capabilities, and the way in which some of them are also instrumental for the enlargement of group and individual well-being, remains to be integrated into the analysis. Many of these question call for alternative methods and further interdisciplinary contributions to the capability approach.

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Appendix

Table A1 One-Way ANOVA by Urban-Rural Domains

	Percentage of Households	Overal Adequacy HAI	Services HSI	Structure HTI	Space and Density HDI
Urban-Rural Domains (6 Groups)					
TC Caracas	11	0.889	0.991	0.835	0.842
TL Large Cities	19	0.817	0.978	0.649	0.825
TM Medium Cities	31	0.814	0.967	0.650	0.826
TS Small Cities	28	0.778	0.938	0.573	0.823
TR Rural Towns	12	0.683	0.783	0.467	0.800
Group Total	100	0.797	0.942	0.627	0.824
ONE-WAY ANOVA					
Between groups Sum of Square	-	52.3	71.2	168.0	2.0
Within Groups Sum of Square	-	350.6	241.2	1176.0	551.8
Total Sum of Square	-	402.9	312.3	1344.0	553.8
% Between groups Sum of Square	-	13.0	22.8	12.5	0.4
F value	-	714.5	1414.2	684.6	17.5

The total sample correspond to 24,627 households for a total stimated population of 5,239,425 households.
The F critical value for a 0.05 level of significance is: 4.37

Table A2 One-Way ANOVA by Urban-Rural Domains

	Percentage of Households	Overal Adequacy HAI	Services HSI	Structure HTI	Space and Density HDI
Regions (5 Groups)					
NC North Central	34	0.841	0.979	0.712	0.834
AA Andrean	10	0.809	0.951	0.631	0.843
EE Eastern	18	0.783	0.930	0.586	0.832
NW North Western	26	0.768	0.915	0.587	0.801
LL Llanos	12	0.750	0.904	0.528	0.819
Group Total	100	0.797	0.942	0.627	0.824
ONE-WAY ANOVA					
Between groups Sum of Square	-	23.2	16.4	83.3	4.2
Within Groups Sum of Square	-	379.7	295.9	1260.6	549.6
Total Sum of Square	-	402.9	312.3	1344.0	553.8
% Between groups Sum of Square	-	5.7	5.3	6.2	0.8
F value	-	292.3	265.7	316.8	36.5

The total sample correspond to 24,627 households for a total stimated population of 5,239,425 households.
The F critical value for a 0.05 level of significance is: 4.37

Table A3 One-Way ANOVA by Synthetic Geographical Domains

	Percentage of Households	Overal Adequacy HAI	Services HSI	Structure HTI	Space and Density HDI
Synthetic Geographical Domains (6 Groups)					
CS Caracas	11	0.889	0.991	0.835	0.842
UC Major Cities from the Central Reç	18	0.831	0.981	0.680	0.833
UL Other Major Cities	8	0.803	0.966	0.632	0.810
UM Large and Medium Cities	24	0.808	0.965	0.633	0.826
US Small cities and rural localities from the Central Region	28	0.778	0.938	0.573	0.823
UR Other rural localities	12	0.683	0.783	0.467	0.800
Group Total	100	0.797	0.942	0.627	0.824
ONE-WAY ANOVA					
Between groups Sum of Square	-	53.6	71.4	173.0	2.6
Within Groups Sum of Square	-	349.3	240.9	1171.0	551.2
Total Sum of Square	-	402.9	312.3	1344.0	553.8
% Between groups Sum of Square	-	13.3	22.9	12.9	0.5
F value	-	588.8	1137.2	566.4	18.0

The total sample correspond to 24,627 households for a total stimated population of 5,239,425 households.
The F critical value for a 0.05 level of significance is: 4.37

Table A4 % households by Social Class (HSoc) and Economic Sector (EcoSec)

	HH Social Class						
	Large Employers /Higher-grade Professionals (HSoc1)	Lower-grade Professionals (HSoc2)	Routine non-manual workers (HSoc3)	Micro entrepreneurs & Own-account (HSoc4)	Skilled workers (HSoc5)	Non-skilled workers (HSoc6)	Group Total
Economic Sector:							
Public Sector	5.0%	3.7%	2.9%		3.2%	4.0%	18.9%
Private Sector							
Large firms	2.5%	1.3%	3.8%		4.4%	7.6%	19.7%
Medium firms	2.9%	.3%	2.3%		3.4%	4.3%	13.2%
Small firms							
Employer	.1%	.7%		5.2%			6.1%
Employee	.1%	.3%	1.7%		1.4%	6.5%	9.9%
Own-account	.6%	.7%		16.2%		14.7%	32.2%
Missing data			0.01%	0.01%		0.01%	0.03%
Total	11.3%	7.1%	10.7%	21.4%	12.5%	37.1%	100.0%

White section corresponds to the **Formal Sector** (57.85%)

The gray section corresponds to the **Informal Sector** (42.12%)

The diagonal hatched section corresponds to missing data in economic sector (0.03%)

Table A5 One-Way ANOVA by Social Class (HSoc)

	Percentage of Households	Overal Adequacy HAI	Services HSI	Structure HTI	Space and Density HDI
HH Social Class					
HSoc 1 Higher-grade professionals	11	0.903	0.982	0.834	0.894
HSoc 2 Low-grade professionals	7	0.864	0.981	0.735	0.875
HSoc 3 Routine non-manual workers	11	0.850	0.978	0.721	0.852
HSoc 4 Micro entrepeneurs&Own-acou	21	0.795	0.948	0.614	0.823
HSoc 5 Skilled workers	13	0.770	0.927	0.583	0.799
HSoc 6 Non-skilled workers	37	0.748	0.913	0.537	0.794
Group total	100	0.797	0.942	0.627	0.824
ONE-WAY ANOVA					
Between groups Sum of Square	-	55	15	189	24
Within Groups Sum of Square	-	348	298	1155	530
Total Sum of Square	-	403	312	1344	554
% Between groups Sum of Square	-	13.7	4.7	14.1	4.3
F value	-	607	188	627	173

The total sample correspond to 24,627 households for a total stimated population of 5,239,425 households.
The F critical value for a 0.05 level of significance is: 4.37
It only includes classified households.

Table A6 One-Way ANOVA by Economic Sector (EcoSec)

	Percentage of Households	Overal Adequacy HAI	Services HSI	Structure HTI	Space and Density HDI
EcoSec Economic Sector					
Public Sector	19	0.846	0.974	0.701	0.862
Priv. Sector: Large firms	20	0.815	0.966	0.662	0.818
Priv. Sector: Medium firms	13	0.779	0.926	0.609	0.802
Priv. Sector: Employer micro-enterpris	6	0.814	0.946	0.658	0.840
Priv. Sector: Employee micro-enterprise	10	0.745	0.903	0.538	0.794
Priv. Sector: Own-account micro-ente	32	0.779	0.925	0.590	0.820
Group Total	100	0.797	0.942	0.627	0.824
ONE-WAY ANOVA					
Between groups Sum of Square	-	18	11	50	9
Within Groups Sum of Square	-	385	301	1294	545
Total Sum of Square	-	403	312	1344	554
% Between groups Sum of Square	-	4.6	3.6	3.8	1.6
F value	-	152	118	125	51

The total sample correspond to 24,627 households for a total stimated population of 5,239,425 households.
The F critical value for a 0.05 level of significance is: 4.37
It only includes classified households.

Table A7 One-Way ANOVA by Economic Activity (EcoAct)

	Percentage of Households	Overal Adequacy HAI	Services HSI	Structure HTI	Space and Density HDI
EcoAct Economic Activity					
Agriculture	10	0.671	0.771	0.449	0.792
Mining and Quarrying	1	0.844	0.957	0.712	0.864
Manufacturing	13	0.802	0.960	0.626	0.820
Electricity, Gas and Water	1	0.842	0.981	0.703	0.843
Construction	9	0.756	0.941	0.552	0.774
Wholesale and Retail Trade	18	0.817	0.961	0.654	0.836
Restaurant and Hotels	4	0.796	0.957	0.611	0.819
Transport, Storage and Comm.	8	0.807	0.958	0.643	0.820
Financing, Insurance, Real State	5	0.865	0.979	0.774	0.844
Public Administration	7	0.827	0.969	0.671	0.841
Education	8	0.863	0.978	0.734	0.878
Heatlh and Welfare	4	0.845	0.979	0.688	0.868
Other	11	0.781	0.946	0.593	0.806
Group Total	100	0.797	0.942	0.627	0.824
ONE-WAY ANOVA					
Between groups Sum of Square	-	50	64	120	15
Within Groups Sum of Square	-	353	249	1223	539
Total Sum of Square	-	403	312	1344	554
% Between groups Sum of Square	-	12.4	20.4	9.0	2.7
F value	-	227	409	157	44

The total sample correspond to 24,627 households for a total stimated population of 5,239,425 households.
The F critical value for a 0.05 level of significance is: 4.37
It only includes classified households.

Table A8 Percentage of households by Social Class (HSoc) and Synthetic Geographic Domains (ZXU)

HH Social Class	Greographic Domains						Total
	CS	UC	UL	UM	US	UR	
Hsoc1	17.7	11.3	11.5	13.5	9.8	4.5	11.3
Hsoc2	8.9	6.9	7.9	7.5	7.3	3.9	7.1
HSoc3	20.4	12.2	11.4	10.8	8.5	3.7	10.7
HSoc4	16.1	21.8	21.2	23.0	23.0	18.7	21.4
HSoc5	13.9	11.1	14.6	10.5	12.2	16.6	12.5
HSoc6	23.0	36.7	33.4	34.8	39.1	52.6	37.1
Total	100	100	100	100	100	100	100
Hsoc1	1.9	2.0	1.0	3.2	2.7	0.5	11.3
Hsoc2	1.0	1.2	0.7	1.8	2.0	0.5	7.1
HSoc3	2.2	2.2	0.9	2.6	2.3	0.4	10.7
HSoc4	1.7	3.9	1.8	5.5	6.3	2.2	21.4
HSoc5	1.5	2.0	1.2	2.5	3.3	2.0	12.5
HSoc6	2.5	6.5	2.8	8.3	10.8	6.2	37.1
Total	10.8	17.8	8.3	23.8	27.5	11.9	100

Table A9 Housing Adequacy by Social Class (HSoc) and Synthetic Geographic Domains (ZXU)

	Greographic Domains						Group Total
	CS	**UC**	**UL**	**UM**	**US**	**UR**	
Housing Adequacy (HAI)							
Hsoc1	0.963	0.936	0.909	0.906	0.858	0.767	0.903
Hsoc2	0.936	0.892	0.858	0.860	0.832	0.794	0.864
HSoc3	0.906	0.876	0.836	0.834	0.816	0.750	0.850
HSoc4	0.870	0.821	0.793	0.802	0.782	0.715	0.795
HSoc5	0.865	0.819	0.794	0.773	0.749	0.662	0.770
HSoc6	0.828	0.783	0.751	0.765	0.746	0.658	0.748
Group Total	0.889	0.831	0.802	0.808	0.778	0.683	0.797
Services (HSI)							
Hsoc1	0.996	0.995	0.994	0.989	0.973	0.855	0.982
Hsoc2	0.997	0.993	0.985	0.990	0.969	0.920	0.981
HSoc3	0.994	0.991	0.980	0.975	0.967	0.896	0.977
HSoc4	0.985	0.983	0.962	0.961	0.942	0.831	0.948
HSoc5	0.995	0.981	0.969	0.959	0.932	0.749	0.927
HSoc6	0.983	0.971	0.948	0.952	0.917	0.752	0.913
Group Total	0.991	0.981	0.966	0.965	0.938	0.783	0.942
Structure (HTI)							
Hsoc1	0.982	0.904	0.851	0.832	0.720	0.595	0.834
Hsoc2	0.929	0.813	0.720	0.714	0.651	0.593	0.735
HSoc3	0.872	0.771	0.694	0.674	0.629	0.542	0.721
HSoc4	0.784	0.656	0.618	0.620	0.575	0.505	0.614
HSoc5	0.795	0.662	0.597	0.576	0.522	0.447	0.583
HSoc6	0.711	0.576	0.538	0.550	0.524	0.433	0.537
Group Total	0.834	0.680	0.632	0.633	0.573	0.466	0.627
Space and Density (HDI)							
Hsoc1	0.910	0.909	0.881	0.896	0.882	0.852	0.894
Hsoc2	0.882	0.872	0.868	0.875	0.878	0.868	0.875
HSoc3	0.851	0.866	0.832	0.854	0.853	0.812	0.852
HSoc4	0.842	0.824	0.798	0.824	0.828	0.809	0.823
HSoc5	0.805	0.814	0.817	0.785	0.795	0.790	0.799
HSoc6	0.790	0.801	0.768	0.794	0.798	0.790	0.794
Group Total	0.842	0.833	0.810	0.826	0.823	0.800	0.824

Note: For Social class (Hsoc1) Large Employers /Higher-grade Professionals, (Hsoc2) Low-grade Professionals, (Hsoc3) Routine non-manual workers (Intermediate occupations), (Hsoc4) Micro entrepreneurs & Own-account, (Hsoc5) Skilled workers, and (Hsoc6) Non-skilled workers. For Geographical Domains (CS) Caracas, (UC) Large and medium cities of the central region, (UL) Large cities (not from the central Region), (UM) Medium cities (excluding from the central region), (US) Small and rural cities from the central region, and (UR) Rural cities (not from the central region)

Table A10 OLS Regression on Housing Adequacy (HAI)

	Model 1	Model 2	Model 3	Model 4	Model 5
Adj. R-Squared	15.1%	20.4%	25.0%	32.1%	34.0%
Constant	-0.006	-0.006	0.262***	0.440***	0.478***
	(-0.3)	(-0.27)	(9.91)	(16.84)	(18.17)
(YHTaLOG) Income per AES	0.160***	0.142***	0.106***	0.084***	0.078***
	(42.68)	(36.63)	(25.56)	(20.81)	(19.55)
(HSoc) Social Class					
Higher-grade professionals			ref	ref	ref
Low-grade professionals			-0.022***	-0.021***	-0.023***
			(-5.68)	(-5.63)	(-6.22)
Routine non-manual workers			-0.017***	-0.027***	-0.035***
			(-4.31)	(-7.13)	(-8.78)
Micro entrepeneurs&Own-acount			-0.062***	-0.060***	-0.054***
			(-16.79)	(-17.12)	(-12.89)
Skilled workers			-0.075***	-0.071***	-0.069***
			(-16.9)	(-16.72)	(-15.84)
Non-skilled workers			-0.095***	-0.089***	-0.084***
			(-25.36)	(-24.96)	(-21.85)
(ZXR) Regions					
North Central				ref	ref
Andean				0.023***	0.023***
				(5.39)	(5.83)
Eastern				-0.018**	-0.018***
				(-5.44)	(-5.4)
North Western				-0.029***	-0.027***
				(-9.22)	(-8.67)
Llanos				-0.028	-0.023***
				(-7.82)	(-6.38)
(ZXT) Urban - Rural Domain					
Caracas Metropolitan Area				ref	ref
Large Cities				-0.031***	-0.030***
				(-7.67)	(-7.64)
Medium Cities				-0.033***	-0.033***
				(-8.38)	(-8.22)
Small Cities				-0.060***	-0.056***
				(-15.22)	(-14.25)
Rural Towns				-0.126***	-0.102***
				(-25.11)	(-19.71)
(SecInf) Informal Sector					-0.008***
					(-2.73)
(PubPriv) Public Sector					0.013***
					(2.83)

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Table A10 (Continuation) OLS Regression on Housing Adequacy (HAI)

	Model 1	Model 2	Model 3	Model 4	Model 5
(EcoAct) Economic Activity					
Agriculture					-0.061***
					(-8.48)
Mining and Quarrying					0.019*
					(1.69)
Manufacturing					-0.003
					(-0.49)
Electricity, Gas and Water					0.011
					(0.93)
Construction					-0.031***
					(-4.55)
Wholesale and Retail Trade					0.017**
					(2.94)
Restaurant and Hotels					ref
Transport, Storage and Comm.					0.003
					(0.44)
Financing, Insurance, Real State					0.013**
					(1.97)
Public Administration					-0.012
					(-1.48)
Education					-0.009
					(-1.13)
Heatlh and Welfare					-0.01
					(-1.28)
Other					-0.009
					(-1.39)
(nummeb) Household size		-0.003***	-0.003***	-0.003***	-0.003***
		(-4.75)	(-5.01)	(-4.89)	(-4.91)
(TypeHH) Type of Household					
Dual earner couple		ref	ref	ref	ref
Single earner couple		-0.002	-0.005*	-0.003	-0.002***
			(-1.64)	(-1.14)	(-0.63)
Non couple		-0.010*	-0.005**	-0.001	0.002
		(-3.3)	(-1.73)	(-0.29)	(0.71)
(Child05) Children under 5		-0.036***	-0.036***	-0.034***	-0.034***
		(-13.62)	(-13.81)	(-13.5)	(-13.69)
(Adlt65) Adult above 65		0.020***	0.016***	0.015***	0.017***
		(6.37)	(5.2)	(5.33)	(5.85)
(Age) Age Head of Household		0.005***	0.0035***	0.0029***	0.0026***
		(9.57)	(7.2)	(6.34)	(5.54)
(Age2) Square of Age of HH		-0.000047***	-0.000031***	-0.000024***	-0.000019***
		(-8.13)	(-5.57)	(-4.53)	(-3.62)
(HHGen) Gender of Head of Household					
Male		ref	ref	ref	ref
Female		0.041***	0.027***	0.001	0.013**
		(15.59)	(10.36)	(0.32)	(5.03)

Note: t-statistics are in parenthesis. *** refers to 1% significance, ** refers to 5% significance, * refers to 10% significance.

Table A11 OLS Regression on Housing Services (HSI)

	Model 1	Model 2	Model 3	Model 4	Model 5
Adj. R-Squared	4.8%	8.5%	10.0%	28.8%	33.6%
Constant	0.543***	0.441***	0.53***	0.721***	0.782***
	(32.97)	(20.05)	(22.04)	(33.5)	(37.72)
(YHTaLOG) Income per AES	0.080***	0.082***	0.069***	0.040***	0.032***
	(24.85)	(23.49)	(18.64)	(12.31)	(10.02)
(HSoc) Social Class					
Higher-grade professionals			ref	ref	ref
Low-grade professionals			0.007**	0.009***	0.003
			(2.93)	(3.77)	(1.37)
Routine non-manual workers			0.015***	0.005*	-0.002
			(5.79)	(2)	(-0.78)
Micro entrepeneurs&Own-acount			-0.002	-0.003	0.002
			(-0.82)	(-1.05)	(0.54)
Skilled workers			-0.02***	-0.012***	-0.005*
			(-5.59)	(-3.73)	(-1.76)
Non-skilled workers			-0.031***	-0.022***	-0.015
			(-11.23)	(-9.09)	(-6.04)
(ZXR) Regions					
North Central				ref	ref
Andean				0.033***	0.035***
				(8.1)	(9.42)
Eastern				-0.015***	-0.015***
				(-6.59)	(-6.52)
North Western				-0.027***	-0.024***
				(-11.23)	(-10.21)
Llanos				-0.0096**	-0.0001
				(-2.99)	(-0.04)
(ZXT) Urban - Rural Domain					
Caracas Metropolitan Area				ref	ref
Large Cities				0.004*	0.003
				(1.9)	(1.27)
Medium Cities				-0.006**	-0.006***
				(-2.61)	(-2.68)
Small Cities				-0.031***	-0.025***
				(-12.41)	(-10.3)
Rural Towns				-0.174***	-0.132***
				(-37.31)	(-28.66)
(SecInf) Informal Sector					-0.013***
					(-5.39)
(PubPriv) Public Sector					0.005*
					(1.79)

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Table A11 (Continuation) OLS Regression on Housing Services (HSI)

	Model 1	Model 2	Model 3	Model 4	Model 5
(EcoAct) Economic Activity					
Agriculture					-0.109***
					(-16.4)
Mining and Quarrying					-0.003
					(-0.32)
Manufacturing					-0.004
					(-0.85)
Electricity, Gas and Water					0.007
					(0.97)
Construction					-0.013***
					(-2.82)
Wholesale and Retail Trade					0.008*
					(1.85)
Restaurant and Hotels					ref
Transport, Storage and Comm.					-0.004
					(-0.76)
Financing, Insurance, Real State					-0.003
					(-0.63)
Public Administration					-0.007
					(-1.25)
Education					-0.007
					(-1.37)
Heatlh and Welfare					-0.004
					(-0.86)
Other					-0.007
					(-1.54)
(nummeb) Household size		0.005	0.005***	0.004***	0.004***
		(9.27)	(9.28)	(9.26)	(8.82)
(TypeHH) Type of Household					
Dual earner couple		ref	ref	ref	ref
Single earner couple		-0.005**	-0.006*	-0.004*	-0.002
			(-2.55)	(-1.79)	(-0.76)
Non couple		-0.028***	-0.026***	-0.021***	-0.017***
		(0)	(-10.42)	(-9.11)	(-7.8)
(Child05) Children under 5		-0.010***	-0.009***	-0.007***	-0.008***
		(0)	(-4.51)	(-3.63)	(-4.15)
(Adlt65) Adult above 65		0.009**	0.008**	0.007*	0.009***
		(0)	(2.75)	(2.81)	(3.81)
(Age) Age Head of Household		0.0035***	0.003***	0.0022***	0.0017***
		(0)	(5.96)	(5.01)	(3.72)
(Age2) Square of Age of HH		-0.000042***	-0.000036**	-0.000025***	-0.000016***
		(0)	(-6.03)	(-4.82)	(-3.11)
(HHGen) Gender of Head of Household					
Male		ref	ref	ref	ref
Female		0.041***	0.036***	0.028***	0.017***
		(18.8)	(16.25)	(13.68)	(8.63)

Note: t-statistics are in parenthesis. *** refers to 1% significance, ** refers to 5% significance, * refers to 10% significance.

Table A12 OLS Regression on Housing Structure (HTI)

	Model 1	Model 2	Model 3	Model 4	Model 5
Adj. R-Squared	15.1%	16.5%	21.7%	28.6%	29.8%
Constant	-0.782***	-0.848***	-0.304***	0.053	0.090*
	(-23.1)	(-20.28)	(-6.44)	(1.12)	(1.86)
(YHTaLOG) Income per AES	0.281***	0.266***	0.194***	0.155***	0.147***
	(41.66)	(37.33)	(25.46)	(20.79)	(19.7)
(HSoc) Social Class					
Higher-grade professionals			ref	ref	ref
Low-grade professionals			-0.065***	-0.060***	-0.060***
			(-7.33)	(-7.33)	(-7.22)
Routine non-manual workers			-0.048***	-0.068***	-0.082***
			(-5.59)	(-8.35)	(-9.63)
Micro entrepeneurs&Own-acount			-0.142***	-0.137***	-0.129***
			(-18.34)	(-18.43)	(-15.02)
Skilled workers			-0.159***	-0.154***	-0.155***
			(-17.9)	(-18.3)	(-17.77)
Non-skilled workers			-0.193***	-0.183***	-0.178***
			(-25.04)	(-24.89)	(-22.6)
(ZXR) Regions					
North Central				ref	ref
Andean				0.021*	0.022***
				(2.57)	(2.75)
Eastern				-0.048***	-0.048***
				(-7.37)	(-7.29)
North Western				-0.039***	-0.036***
				(-6.41)	(-6.02)
Llanos				-0.077***	-0.071***
				(-11.53)	(-10.65)
(ZXT) Urban - Rural Domain					
Caracas Metropolitan Area				ref	ref
Large Cities				-0.114***	-0.111***
				(-13.59)	(-13.23)
Medium Cities				-0.108***	-0.105***
				(-13.07)	(-12.69)
Small Cities				-0.167***	-0.161***
				(-20.91)	(-20.04)
Rural Towns				-0.217***	-0.191***
				(-22.98)	(-19.38)
(SecInf) Informal Sector					-0.009
					(-1.52)
(PubPriv) Public Sector					0.019*
					(1.94)

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Table A12 (Continuation) OLS Regression on Housing Structure (HTI)

	Model 1	Model 2	Model 3	Model 4	Model 5
(EcoAct) Economic Activity					
Agriculture					-0.058***
					(-4.25)
Mining and Quarrying					0.043**
					(1.96)
Manufacturing					-0.006
					(-0.48)
Electricity, Gas and Water					0.026
					(1.16)
Construction					-0.053***
					(-3.99)
Wholesale and Retail Trade					0.034***
					(2.81)
Restaurant and Hotels					ref
Transport, Storage and Comm.					0.012
					(0.89)
Financing, Insurance, Real State					0.045***
					(3.24)
Public Administration					-0.019
					(-1.16)
Education					-0.013
					(-0.83)
Heatlh and Welfare					-0.028*
					(-1.76)
Other					-0.01
					(-0.78)
(nummeb) Household size		-0.001	-0.001	-0.001	0,000
		(-1.26)	(-1.35)	(-0.6)	(-0.23)
(TypeHH) Type of Household					
Dual earner couple		ref	ref	ref	ref
Single earner couple		0.002	-0.002	0.001	0.003
			(-0.43)	(0.26)	(0.55)
Non couple		-0.040***	-0.031***	-0.023***	-0.020***
		(0)	(-5.4)	(-4.23)	(-3.67)
(Child05) Children under 5		-0.035***	-0.033***	-0.030***	-0.030***
		(0)	(-6.96)	(-6.58)	(-6.6)
(Adlt65) Adult above 65		0.020**	0.012*	0.012*	0.014**
		(0)	(2.13)	(2.21)	(2.41)
(Age) Age Head of Household		0.0067***	0.0042***	0.0034***	0.0031***
		(0)	(4.68)	(3.88)	(3.56)
(Age2) Square of Age of HH		-0.000065***	-0.000034**	-0.000024*	-0.000021**
		(0)	(-3.3)	(-2.43)	(-2.12)
(HHGen) Gender of Head of Household					
Male		ref	ref	ref	ref
Female		0.066***	0.038***	0.031***	0.022***
		(12.71)	(7.38)	(6.2)	(4.06)

Note: t-statistics are in parenthesis. *** refers to 1% significance, ** refers to 5% significance, * refers to 10% significance.

Table A13 OLS Regression on Housing Space and Density (HDI)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Adj. R-Squared	6.2%	19.9%	21.2%	21.8%	22.2%
Constant	0.222***	0.388***	0.561***	0.545***	0.562***
	(10.02)	(15.52)	(19.44)	(18)	(18)
(YHTaLOG) Income per AES	0.120***	0.078***	0.055***	0.056***	0.054***
	(27.77)	(18.79)	(12.1)	(11.97)	(11.41)
(HSoc) Social Class					
Higher-grade professionals			ref	ref	ref
Low-grade professionals			-0.009*	-0.011***	-0.012***
			(-1.91)	(-2.22)	(-2.57)
Routine non-manual workers			-0.018***	-0.018***	-0.021***
			(-3.87)	(-3.82)	(-4.19)
Micro entrepeneurs&Own-acount			-0.040***	-0.041***	-0.034***
			(-9.8)	(-9.98)	(-6.58)
Skilled workers			-0.047***	-0.047***	-0.046***
			(-9.11)	(-9.06)	(-8.54)
Non-skilled workers			-0.060***	-0.061***	-0.057***
			(-14.34)	(-14.38)	(-11.67)
(ZXR) Regions					
North Central				ref	ref
Andean				0.014**	0.013***
				(2.84)	(2.73)
Eastern				0.009*	0.009**
				(2.35)	(2.24)
North Western				-0.021***	-0.021***
				(-5.4)	(-5.26)
Llanos				0.0019	0.003
				(0.42)	(0.58)
(ZXT) Urban - Rural Domain					
Caracas Metropolitan Area				ref	ref
Large Cities				0.018**	0.018***
				(3.41)	(3.3)
Medium Cities				0.014**	0.013***
				(2.76)	(2.57)
Small Cities				0.02***	0.019***
				(3.8)	(3.62)
Rural Towns				0.013*	0.017***
				(2.05)	(2.68)
(SecInf) Informal Sector					-0.003
					(-0.67)
(PubPriv) Public Sector					0.016*
					(2.53)

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Table A13 (Continuation) OLS Regression on Housing Space and Density (HDI)

	Model 1	Model 2	Model 3	Model 4	Model 5
(EcoAct) Economic Activity					
Agriculture					-0.015**
					(-1.86)
Mining and Quarrying					0.017
					(1.31)
Manufacturing					0.001
					(0.09)
Electricity, Gas and Water					-0.0004
					(-0.02)
Construction					-0.025***
					(-2.95)
Wholesale and Retail Trade					0.011
					(1.41)
Restaurant and Hotels					ref
Transport, Storage and Comm.					0.0004
					(0.05)
Financing, Insurance, Real State					-0.002
					(-0.19)
Public Administration					-0.01
					(-0.93)
Education					-0.006
					(-0.58)
Heatlh and Welfare					0.003
					(0.25)
Other					-0.009
					(-1.17)
(nummeb) Household size		-0.012***	-0.012***	-0.012***	-0.012***
		(-16.35)	(-16.64)	(-16.6)	(-16.51)
(TypeHH) Type of Household					
Dual earner couple		ref	ref	ref	ref
Single earner couple		-0.005	-0.006	-0.007*	-0.006*
			(-1.63)	(-2)	(-1.83)
Non couple		0.038***	0.042***	0.041***	0.043***
		(0)	(12.09)	(11.96)	(12.41)
(Child05) Children under 5		-0.064***	-0.064***	-0.064***	-0.064***
		(0)	(-18.93)	(-18.91)	(-18.85)
(Adlt65) Adult above 65		0.029***	0.027**	0.026***	0.027***
		(0)	(7.75)	(7.72)	(7.86)
(Age) Age Head of Household		0.0041***	0.0033***	0.0032***	0.0030***
		(0)	(5.88)	(5.82)	(5.34)
(Age2) Square of Age of HH		-0.000033***	-0.000023**	-0.000023***	-0.000020***
		(0)	(-3.69)	(-3.63)	(-3.24)
(HHGen) Gender of Head of Household					
Male		ref	ref	ref	ref
Female		0.015***	0.006**	0.006*	0.001
		(4.83)	(2.02)	(1.95)	(0.32)

Note: t-statistics are in parenthesis. *** refers to 1% significance, ** refers to 5% significance, * refers to 10% significance.