

Affordable Housing Needs Assessment Methodology: the Adaptation of the Florida Model to Brazil

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Introduction

The World Bank asked the Shimberg Center to adapt the Florida Affordable Housing Needs Assessment Methodology (Noll et al., 1997) to Brazil. This report describes the adaptation process, presents the newly developed Brazilian model and analyzes output from the model. A brief description of the Florida model is important to understand the similarities and challenges that had to be dealt with during the adaptation process. An explanation of the Brazilian context is also necessary, particularly given the fact that tenure issues and practices in Brazil are different from conventional notions in the US. In addition, there are cultural differences that modify the way in which people consume housing. These nuances are crucial to an understanding of why certain decisions were made in the development of the Brazilian Affordable Housing Needs Assessment.

For the World Bank's 2005 Urban Research Symposium the report has been shortened to fall within the constraints of the Symposium format. The major difference between this "Symposium" version and the original report is a replacement of the sections on the metropolitan region of Recife, Pernambuco and the Federal District Integrated Development Region (RIDE) with summaries.

The Florida Model: a brief description

AHNA Methodology

The Affordable Housing Needs Assessment Methodology developed for the State of Florida, henceforth referred to as the Florida Model, is based on household estimates calculated from household formation rates and population-by-age projections. There are five basic dimensions of demand: tenure, age of head of household, size of household, income of household, and cost burden. Household estimates are constructed based on the assumption that household formation rates and the distribution of household characteristics remain constant across the projection horizon. The household formation rates are age specific and are derived from the most recent decennial Census.

For the Florida Model, three data sets are needed—number of householders by tenure and age, population by age from 1990 and 2000 Census for each jurisdiction, and population projections for each age group. A headship rate is calculated from the 2000 census data by dividing the number of householders in each tenure/age group by the total population of that age group. The projection of householder by age/tenure is then calculated by applying that ratio (headship rate) to the age group projections of population for each projection period. The methodology assumes a constant headship rate in each age category.

Finally, complex cross-tabulations from the Census are required to calculate other household characteristics. These cross-tabulations include income, size and cost burden projected by age group in each tenure category. The result is a projection of

various household characteristics that can be compared to the housing supply to determine the need for net new units, that is, construction need.

The Brazil Model: a complex adaptation

All researchers involved in this project knew, even before looking at the data, that a revision would be required to apply the Florida Model to Brazil. As expected, the adaptation required new assumptions and alternative approaches. The first adaptation came as a result of available data. An obvious example is the Brazilian decennial census. The information collected by the Brazilian Census Bureau, henceforth referred to as IBGE (Instituto Brasileiro de Geografia e Estatística), is different from that collected by the US Census Bureau and used by the Florida Model. During the adaptation process, researchers used a smaller and simpler data set, the PNAD (National Survey by Household Sample)¹ to test some of the assumptions and to aid in the development of a methodology reflecting the Brazilian situation.

As established by the contract, the Brazilian Model would be developed for four regions: the country of Brazil as a whole, the Integrated Development Region of the Federal District (RIDE),² and the Metropolitan Regions of Recife and Curitiba, capitals of the States of Pernambuco and Paraná, respectively. Thus, data for these four regions had to be collected in a consistent manner to allow for comparisons, and that in itself was the first challenge.



¹ The PNAD (Pesquisa Nacional por Amostra de Domicílios) is an annual survey done by IBGE, based on a smaller sample of households by Census tracts, and updated every year between the decennial census years.

² The Região Integrada de Desenvolvimento do Distrito Federal e Entorno (RIDE) is the designation for the metropolitan region of Brasília and includes municipalities in the States of Goiás and Minas Gerais in addition to the Federal District.

Population Projections

As mentioned above, jurisdiction-level, population-by-age projections are a fundamental building block of the AHNA methodology. Although population projections are available for all States in Brazil up to 2050, population-by-age projections were neither available at the jurisdiction level nor at the metropolitan level. Nor were we successful in finding regional authorities that had produced population-by-age projections for their metropolitan regions. The research team then decided to take a different approach: by constructing the population-by-age projections for all the jurisdictions in the State and controlling that to the projected total,³ we could then develop consistent population-by-age projections for the metropolitan areas in the study.

The jurisdiction-level population-by-age projections require two time periods, typically decennial Census. Brazil had, because of institutional and organizational issues, a 1991, rather than a 1990 Census. So we had to balance the use of consistent data sources with the practicality of significant reprogramming of the Florida model. Fortunately, a special tabulation for 1990 population existed, which we felt was a reasonable substitution for the 1991 Census data.⁴

A second alteration dealt with the way new cities were created in Brazil. For political and institutional reasons, a number of municipalities had been created between 1991 and 2003. In Brazil, states are divided into municipalities and there are no unincorporated areas. This meant that the new municipalities were actually areas that had been partially split from existing jurisdictions, sometimes twice, and although the population was the same, it was counted under different jurisdictions in each year. So the programmers involved in the research project had to create an artifice to include these split jurisdictions in the population projections. In addition, one of the study regions, the RIDE, comprises jurisdictions in the states of Goiás and Minas Gerais, besides the Federal District. Since there were only two small jurisdictions in the state of Minas Gerais, with a total population of 90,400 in the year 2000, which represented three percent of the total RIDE population, the team decided not to include those in the projection.⁵ Thus, the RIDE population used in the study comprises the populations of the Federal District plus 19 municipalities in the state of Goiás that are part of the Integrated Development Region of the Federal District (RIDE).

Finally, the last obstacle was the fact that, since the population data for 1990, 2000 and 2003 and the population-by-age total projection were all from different sources, programmers had to insert simple controls to assure consistency.

³ Population by age projections for each State up to 2020 were provided by CEDEPLAR.

⁴ This is an example of a very practical application of the Florida model to the Brazilian context. Utilizing a 9-year cohort would have required not only reprogramming of the existing model but also a series of additional interpolations to produce the appropriate projection years.

⁵ Today, there are actually three municipalities in the State of Minas Gerais that belong to the RIDE. Cabeceiras Grande split off Unaí in 2001. Unaí was included in our estimates of Minas Gerais population in the RIDE and would have been part of our projections as Unaí. The third jurisdiction simply incorporated about ten percent of the original jurisdiction's population.

Household Estimates and Projections: the Demand-Side of Housing

Household formation rates are used to determine what percentage of each population age group will form a new household in each projection interval. Household formation rates and the distribution of household characteristics are assumed to remain constant across the projection horizon. That is, the proportions of householders observed in the year 2000 in each age cohort are maintained in the calculation of subsequent years.

The five basic dimensions of demand used for the Florida Model were maintained in the development of the Brazil Model: tenure, age of head of household, size of household, income of household, and cost burden. What follows is an explanation of each dimension and the changes made to the categories within each, as well as the assumptions and adaptations that had to be made to create a Brazilian Model.

Tenure

The Florida Model has two tenure categories: owners and renters. The headship rates for renters tend to be higher for younger people and as the age of the householders increase, so increases the probability that they will own a house. In Brazil, researchers were faced with multiple tenure categories, although home-ownership is encouraged and most housing assistance programs focus on ownership rather than rent. Extensive discussions among IPEA staff and researchers from both Florida and Brazil, including staff from the Ministry of Cities, took place to determine the ideal tenure typology. The first conceptual question concerned land ownership. Informal settlements have provided housing for the poor in developing countries for years. These settlements, albeit substandard by any definition, sometimes represent the only opportunity that poor families have to acquire a house. The idea developed by Turner (1968, 1972, 1976) was that through self-help, such as that going on in informal settlements, the poor could gain ownership if infrastructure and security of tenure were provided. Abrams (1964) went as far as suggesting that what most people often regarded as a problem was in fact the solution to house the poor. Nonetheless, the Housing Needs Assessment Methodology projects the need for adequate housing. Since informal settlements usually present other structural deficiencies besides lack of title, researchers decided to develop special criteria to quantify these additional characteristics of substandard dwellings.

One set of criteria was possible because IBGE collects separate information on the housing unit and the land it sits on. The Census questionnaire includes six different types of housing unit ownership and three different types of land ownership. At the onset, there were three reasons to support an argument to leave the land ownership variable out of the equation. First, the Affordable Housing Needs Assessment methodology estimates the need for net new housing units (comprising the lot and the house), not for titling or regularization of existing units built on squatter settlements. Second, the percentage of units declared not to be on owned land was very small, 0.3 percent of the total number of households and 4.2 percent of the owned houses. Third, serious questions exist about the accuracy of the land ownership status since the information collected by IBGE is self-declared, which means that dwellers may perceive

(and thus declare) themselves as owners of the land their house sits on even though they have no legal title to it.⁶

In sum, the research team's rationale was that, if a housing unit were otherwise standard, lack of land title would not constitute a housing need. Moreover, given the ambiguity in the system of private property and the expectations that the Brazilian legal and political systems will move (and have moved) to eliminate this issue over time, it could be assumed that land title would eventually be issued to those families who have successfully secured a lot for a certain period of time.⁷ Despite this argument, researchers decided to keep the variable land ownership in the tabulations. Since most households declaring themselves as not owning the land were located in substandard areas and had incomes lower than three minimum monthly wages, the methodology would in the end categorize them as substandard.

The six types of housing unit tenure used by the Census include: owned – house paid for, owned – still paying, rented, lent by employer, lent by other, and other conditions. The three types of land ownership include: owned, lent, and other condition. Since both these items are self-declared, an overwhelming majority of the households declares themselves owners. As far as housing unit ownership, most households declare themselves in the first category, owned – house paid for (68 percent), and only 4.2 percent of those declare they do not own the land on which the house sits. Conversations with Brazilian researchers and technicians confirmed the perception that the Census numbers did not reflect the reality of the tenure situation in Brazil. The problem, as in the land tenure category, is the fact that information is self-declared.

The researchers' objective was to produce a methodology that would be useful to Brazilian institutions, reflecting programmatic uses as well as addressing quality of life issues. Since the informal / formal discussion seemed to be at the forefront of Brazilians concerns, the set of developed criteria honed concepts as precisely as the Census data would allow. However, the literature on informal settlements discusses tenure mainly from an institutional and political standpoint. Because of the applied nature of this methodology, researchers developed the criteria in terms of standard and substandard, taking into consideration certain physical characteristics that would indicate adequacy of shelter. Nonetheless, land tenure was included since it is a measure of security that, if not guaranteed, could represent a need for housing (Turner, 1968, 1972, 1976).

The first item utilized to redefine (aprimorar) tenure information was Sector Type. This is not a self-declared item; the Census surveyor analyzes the type of settlement as a

⁶ Furthermore, the majority of people who live in informal settlements have actually paid for the land, but since they purchased it through an illegal transaction, they do not have any legal proof of ownership and thus, do not have any guaranteed property rights, nor the obligations that follow from those, such as property taxes.

⁷ Provisions of the Estatuto da Cidade, Federal Law no. 10257, approved on July 10th, 2001, suggest that land ownership will be gained by families living in consolidated informal settlements. This legislation implements articles of the 1988 Constitution that established the social function of the land.

whole and classifies it as standard or substandard.⁸ Since most informal settlements are classified as substandard sectors, researchers decided to use this item as a filter, that is, by crossing the self-declared housing unit and land ownership numbers with the sector type it was possible to separate those households that, even though they had been declared owned and paid for were actually part of informal settlements. Another assumption was made in consonance with the objectives of the Affordable Housing Needs Assessment Model. Since this model estimates need for housing and that means adequate housing, the housing units located in these substandard sectors would, at minimum, require some kind of improvement or upgrade so they should be counted separately from the “formal” housing stock.

After this first “filtering,” the percentage of households that would be considered “informal” was still much lower than expected; only four percent of all households are shown by IBGE to be in substandard sectors. One caveat is that IBGE only collects information on Sector Type for settlements larger than 50 units. In an attempt to identify those households that were living in substandard conditions within areas that would not be considered substandard as a whole or that would be part of smaller settlements, researchers decided to use information on infrastructure to determine their adequacy. In Brazil, water and power are considered a right of every citizen and many informal settlements take advantage of this provision to acquire public services. So researchers decided to use sewerage disposal as a qualifier. One caveat regarding sewerage data is that the Census considers sewage going into storm drains as appropriately disposed, so households either connected to the sewerage network (including storm drains) or to a septic tank with draining field are included in the methodology as standard.

Most dwellings in rural areas have what is called a rustic tank, that is, a septic tank without draining field. Even though these dwellings would otherwise be considered standard according to other definitions of the typology established in the methodology, these rustic tanks present an environmental threat and should be considered, at minimum, in need of upgrading. The decision to not include rustic tanks as appropriate sewerage infrastructure would only present a potential problem in rural areas, and primarily in the Northeast region, where the percentages of substandard housing are higher for rural areas than for urban areas. Since this study focuses on three metropolitan regions and since the impact of considering rustic tanks appropriate for urban areas would be greater than not considering it appropriate in rural areas, we decided to follow the Census definition of appropriateness. By crossing tenure with type of sector with sewerage network information, a better picture was produced. The team went a little further and also included information collected by IBGE regarding the existence of indoor plumbing and toilet facilities; this was intended to account for those units within areas perceived as “formal” that do not have minimum basic sanitation conditions and therefore would require, at minimum, rehabilitation or upgrading.

⁸ Besides standard and substandard, the Census has six additional types of sector included in this item, mostly group quarters, such as military bases, camping grounds and tents, boats, Indian tribes, prisons, and orphanages, convents, hospitals and asylums.

Another assumption made to narrow down the number of tenure categories concerns renters and households living in housing lent by employers or other people, such as relatives. Families who declared they lived in lent-housing were included in the renters categories and considered to have a no-cash rent situation. Essentially, these households occupy dwellings free of rent and the only calculation affected by this would be cost burden. Since cost burden for Brazil can only be calculated for renters, the team decided to collapse the lent housing categories with the renters categories.⁹ Lastly, the households counted by the Census as “other tenure conditions” were all included as substandard units since, by definition, illegal occupations and inadequate dwellings, such as renters of rooms in non-residential properties or leasing rural properties, are included in that category.

Another group that certainly represents a housing need but, given the manner in which the Census questionnaire is structured, is not included in any of the above categories is called “improvised.” These would be akin to the homeless in the US, plus families living in temporary shelters or other inadequate conditions, such as rooms in commercial properties. Although this group did not represent a high percentage of the total number of households (0.3 percent), researchers agreed that it would add insight and provide additional information about the large percentage of population perceived to live in “informal” conditions. Thus, those households classified by the Census as “improvised” have been included as substandard in the tabulations to be used by the Brazil model. Through this gradual and cumulative exercise, the research team was able to identify specific characteristics of households and narrow the initial eleven tenure categories down to four: owners in standard areas, owners in substandard areas, renters in standard areas, and renters in substandard areas.

Age

The Brazilian Model comprises six age groups—15 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, and over 65. The household formation rates for the age group 15 to 24 are much lower than those experienced in Florida because, unlike the US, in Brazil most children live with their parents until they finish college, and often until they get married. This was found to be a cultural phenomenon known in Brazil as “late-stayers” (Carneiro et al., 2002). The groups with higher household formation rates are the 35 to 44 and 45 to 54 groups.

Even though researchers observed some difference in the sample household formation rates calculated with PNAD data for the groups 65 to 74 and over 75, it was not possible to use those age categories for the Brazil model because population-by-age projections were not available. The sample tabulations also confirmed the lower household formation rates for the age group 15 to 24; however, the team decided to keep it as a separate category because, if the “late-stayers” phenomenon changes in the near future, changes in house consumption patterns for young householders can be easily detected.

⁹ For a complete explanation of cost burden calculations, assumptions and exceptions, see item Cost Burden.

Size

This category also differs somewhat from that adopted by the Florida Model. Households in Brazil tend to be larger and often accommodate extended family members. The phenomenon of increasing one-person households that has been experienced in the US for some time now is not present in Brazil. The number of one-person households is negligible. However, sample tabulations revealed that more than half of all households comprise three or four persons. Therefore, the household size categories used in the Brazil Model are: 1 to 2, 3, 4, and 5 or more persons per household.

An observed phenomenon in Brazil is the presence of multiple families in one household. The argument that some families share a household by choice is very plausible, given the Brazilian culture and custom of having extended family members living together. Most people participating in the preliminary discussions of the model development phase agreed that additional families in a household would only represent a need for additional housing if they were not adequately accommodated, that is, they would definitely represent a potential demand for new housing if they were living in overcrowded conditions. Since IBGE collects information on families as well as households, it was possible to account for those families who share a household.¹⁰

To avoid overestimating the number of families in need of housing, the research team thought it would be necessary to identify and differentiate those families who share a household by choice from those who do it by necessity. One way of making that distinction is to cross the information about household sharing with overcrowding. In other words, if there were multiple families occupying the same household in overcrowded conditions, the sharing is occurring out of necessity and represents a demand for new housing. Likewise, if there were multiple families occupying the same household but not overcrowded, the model would assume that they were choosing to share the household and no additional demand exists. Thus, criteria were developed by researchers to “spin-off” multiple families sharing overcrowded households and count them as a demand for new housing.

Another assumption made in relation to overcrowded conditions has to do with multifamily units known as “cômodos.” These are essentially rooms or studio-style apartments that are part of a multifamily unit. They can be rooms in a previously single-family home that has been subdivided or they can be individual units, similar to tenements in the US, but without direct access to a street or other public areas. The Census collects information about these units in the dwelling typology item that includes single-family, detached house; multifamily, apartment or condo unit; and “cômodos.” The reason it was suggested to the research team that these units be treated separately was that most of them present inadequate living conditions. However, they could not simply be treated as substandard units since most of them are in areas with infrastructure and, judging by their physical characteristics would match the criteria used

¹⁰ The term used in Portuguese for this phenomenon is “cohabitaco” (literally translating, cohabitation). Because the word “cohabitation” in English has a different connotation, we adopted the term used by Coccato (1996), who refers to this phenomenon as household sharing.

in the model to qualify as standard. To resolve these methodological conflicts and the perception that “cômodos” offer inadequate living conditions, each additional family living in “cômodos” was treated as representing a need for a new housing unit.

For the purposes of this model, the “additional” families in overcrowded, shared households are called secondary families, differentiating them from the primary family represented by the householder or head of the entire household. All secondary families in multifamily overcrowded shared households/units and in “cômodos” are counted as additional demand for units. These additional families are incorporated into the count of households by tenure, age, size and income and thus influence the calculation of the overall household formation rate. In order to assign the four household characteristics to the additional, secondary families we use information in the Census for that secondary family or its householder (head) – age, size and income – and we assign the secondary family to the same tenure category as the primary family.

Income

The Florida Model uses income categories based on percentage of jurisdiction medians. In Brazil, the prevailing income unit is the monthly minimum wage, which is established by the Federal government. This has actually facilitated the development of the income category for the Brazilian model, since the same income levels are used for all study areas.

Most housing programs in Brazil are based on the monthly minimum wage (m.m.w.). The lower income housing programs are for families earning between 0 and 3 m.m.w. Other programs are for families earning between 3 and 5 m.m.w. Most recently, new housing programs are being developed and, although the 0 to 3 m.m.w. category has remained, new housing programs are designed for families with incomes up to 6 m.m.w. and above 6 m.m.w. There is also one program that facilitates financing for families with incomes above 12 m.m.w., and although the number of families in this income bracket is very small, it was considered as a separate category.

The largest percentage of the total country population (75 percent) earns less than three monthly minimum wages. Therefore, it was necessary to break down the lower income categories. The Brazil Model resulted in six income categories: less than 1 m.m.w., 1 to 1.99 m.m.w., 2 to 2.99 m.m.w., 3 to 6 m.m.w., 6 m.m.w. to 12 m.m.w., and over 12 m.m.w. These categories should reveal a clear picture of the housing situation concerning poverty levels and the connection between income and lack of adequate housing, which will prove useful for programmatic analysis and policy decisions.

Housing Inventory: the Supply-Side

The supply-side of the Florida model comprises the housing inventory adjusted for seasonal occupancy and vacancies. The same will occur for the Brazil model. IBGE collects information on occupied dwellings as well as seasonal and vacant units. Unfortunately, the level of detail provided by the Census information does not allow for a precise diagnosis of vacant units. That is, Census data do not indicate whether the

dwelling is vacant because it is on the market, or because it is rundown and not in condition to be occupied, or it has simply been abandoned.

As a general rule, group quarters would be excluded from all appropriate data. However, the population projections used for the Brazil model did not exclude the population living in group quarters. Thus, to exclude these households of estimates and projections would be incongruent. In addition, the population living in group quarters represent a rather small proportion of households. The total number for Brazil is 72,052 households, which represents 0.13 percent of the total number of households. Each one of the metropolitan regions included in the study had less than one thousand such households, representing between 0.09 and 0.11 percent of the total number of households in each region. Therefore, rather than exclude group quarters from supply while the population occupying them were included in the population projections, researchers decided to include them in the household formation rates and household projections.

Construction Need and Projected Total Demand for Housing

The 2005 - 2020 projection of construction need is based on occupied housing (households) and a percentage allowance for vacant units (a percentage allowance for units expected to be lost due to various causes is not estimated) compared to the supply of permanent units in 2000. To determine the total number of additional housing units that will be in needed in the metropolitan area over the projection horizon (construction need), we establish a relationship between households and housing units. The number of housing units that are needed at any point in time is equal to the number of households plus the number of units needed to provide an adequate vacant supply from which householders may choose.

The number or percentage of housing units representing an adequate vacant supply will vary by place. Only units that are in the permanent housing stock are considered in this estimate; this excludes seasonal units. The vacancy rate used for the projections is a constant and set at the rate in 2000 (from the 2000 Census). The vacancy rate is the permanent vacancy rate, that is, for units occupied or expected to be occupied by permanent (not seasonal) households.

To calculate total housing demand the permanent vacancy rate is applied to the 2005 - 2020 projections of total households [projected total households are multiplied by one over one minus the vacancy rate = total households X $1/(1-\text{vacancy rate})$]. Construction need is the difference between demand at any point in time and the available supply in 2000. So, for example, the supply available in 2000 (from the Census) is subtracted from the projected demand in 2005 to calculate a basic construction need for housing units in the year 2005.

Data Analysis

The population projections utilized for this research project were provided to the Florida research team by CEDEPLAR.¹¹ The household data were processed by IPEA staff from IBGE's 2000 Census microdata, based on the methodology developed by Shimberg Center researchers in collaboration with IPEA staff. Shimberg Center programmers then applied these two data sets to the Brazil model. The analysis that follows applies to the three metropolitan regions used in the production of the Brazil model, the Metropolitan Region of Curitiba, Paraná, and the Metropolitan Region of Recife, Pernambuco, and the metropolitan region of Brasília, which receives the designation of Federal District Integrated Development Region (Região Integrada de Desenvolvimento do Distrito Federal e Entorno - RIDE). Although there are significant regional differences in the country of Brazil, the same analysis is done for the country as a whole. The assumptions made are the same for all study areas.

Brazil

Introduction

According to the 2000 Census, Brazil had a total population of 169,799,170. Comprising 26 states and one Federal District, Brazil has well-developed agricultural, mining, manufacturing, and service sectors, outweighing the economies of all other South American countries. Nonetheless, an estimated 22 percent of its population lives below the poverty line. Brazil also has a rather uneven distribution of wealth; the Gini index published in 1998 was 60.7 percent (World Bank, 2003).

Housing Profile

According to the 2000 Census, there were 44,601,522 households in Brazil, 74 percent of which were owner occupied and 26 percent were renters. Of the 34,736,129 heads of household who declared themselves owners, 52 percent live in standard housing.¹² This proportion is about the same for renters, 55 percent of renters live in standard conditions. The majority of householders are between the ages of 35 and 44 (25 percent), followed closely by the 25 to 34 year old group (23 percent). Seven percent of householders are under 25 years old and 13 percent are older than 65. For the 45 to 54 and 55 to 64 age groups the proportions are 19 and 13 percent respectively.

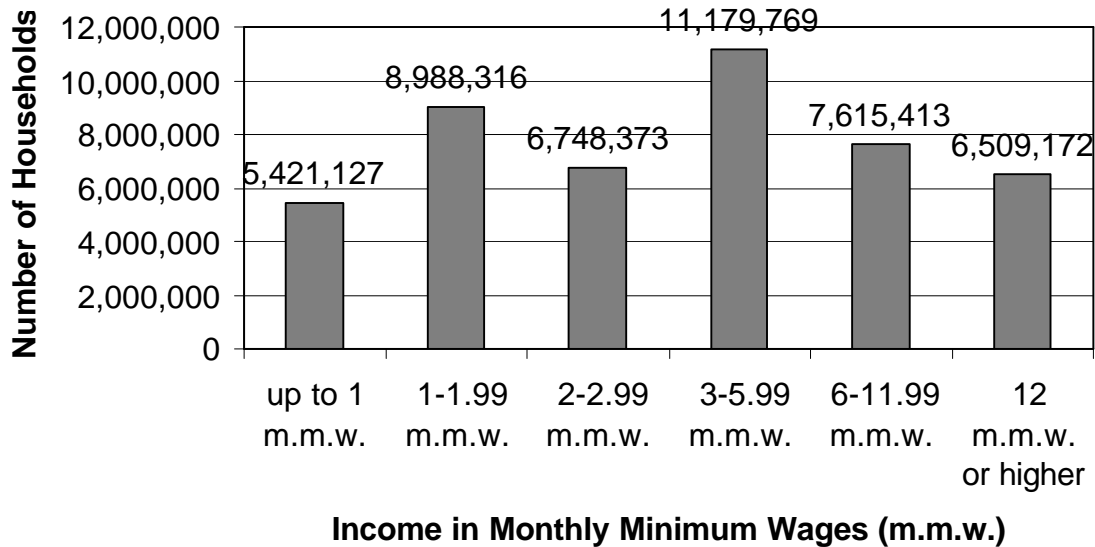
Households with one or two persons represented 23 percent of the total, while those with three and four represented 21 and 23 percent respectively. The largest percentage of households, 33 percent, had five or more persons. The majority of Brazil's population

¹¹ The population projections used for the Brazil model were supplied by CEDEPLAR (Centro de Desenvolvimento e Planejamento Regional da Faculdade de Ciências Econômicas) at the Minas Gerais Federal University (Universidade Federal de Minas Gerais). These projections were part of projects done in agreements with PRONEX and INEP from the Education Ministry.

¹² The definition of "standard" used here is the one developed by the methodology, which is explained in detail in the first section of the report.

is low-income. Forty-six percent of all households earn less than three monthly minimum wages. Less than a third (30 percent) of all households earn more than six monthly minimum wages (m.m.w.): 16 percent earn between 6 and 12 m.m.w. and 12 percent earn more than 12 m.m.w. Almost 12 percent earn less than one monthly minimum wage.

Number of Households by Income, Brazil, 2000



Although the ratio between owners and renters is constant across age categories, a higher percentage of standard owners (and lower of substandard owners) can be observed as householders age. While 60 percent of households whose head is between 15 and 24 years-old is standard, that percentage increases to 68 percent for households with heads 65 and older. For both owners and renters, the older the householder the lower the percentage of households occupying substandard housing.

Population Projections

The population projections for Brazil were provided to Florida researchers by CEDEPLAR. Additional projections were developed by Shimberg Center programmers. Brazil had 169,799,170 inhabitants in 2000 (IBGE, 2002). The projected population for 2010 is over 190 million and almost 211 million for 2020, which represents an increase of about 20 percent in the next 17 years.

Household Estimates and Projections: the Demand-Side of Housing

Based on 2000 Census data, Brazil had 44,601,522 households. The total number of housing units needed to accommodate additional families spinning-off due to

overcrowded conditions would add more than two million new households for a total of 46,689,818.

Most additional households came from the owner tenure category (over 1.5 million families), which indicates that 73 percent of families that would potentially form a new household live in households in the owner tenure category. Of the 2,088,296 potentially new households, 561,669 live in rented housing. In terms of housing condition, 54 percent of families share substandard, overcrowded households. Including both owners and renters, 956,596 families live in standard conditions, while over 1.1 million live in substandard conditions.

Tenure

Of the total estimated number of households needed in Brazil (46,689,818), 34,736,129 households would be owner occupied. According to the criteria developed for the Brazil model, 24,473,628 households would be standard, and 48 percent of the households, including owners and renters, would be substandard.

The projection of tenure status to 2020 reveal that owners will continue to represent about 74 percent of households while renters will account for the remainder 26 percent. In absolute numbers, it is estimated that in the next 17 years there will be 17,368,103 additional owner-occupied households and 5,135,632 renter-occupied households. As for condition, by 2020 there should be an additional 10,715,879 standard households and 9,358,183 substandard households.

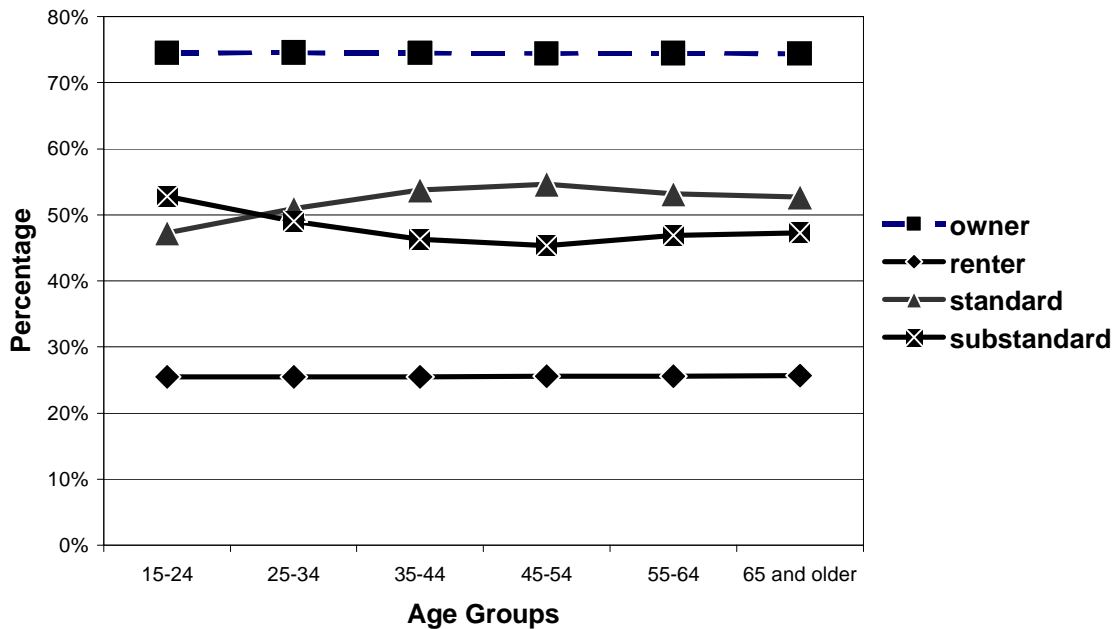
TENURE	YEAR				
	2003	2005	2010	2015	2020
owner standard	19,117,470	20,028,460	22,422,340	24,760,781	26,959,838
owner substandard	17,884,553	18,716,465	20,911,166	23,023,660	24,980,615
renter standard	7,002,447	7,335,948	8,213,024	9,069,908	9,875,958
renter substandard	5,722,921	5,988,794	6,689,502	7,362,695	7,985,042
Total	49,727,391	52,069,667	58,236,032	64,217,044	69,801,453

Age

The number of households with heads in the 15 to 24 age group is relatively low when compared to the other age groups, which confirms a cultural trend. In Brazil most children live with their parents until they finish college, and often until they get married. Younger households represent about seven percent of all households. The age groups with higher household formation rates are the 25 to 34 and 35 to 44 groups.

Most households whose head is between the ages of 15 and 24 are owners (74 percent). In this age category, more households live in substandard areas (54 percent) than in standard areas. The overall owner-renter proportions are similar across all age categories, increasing slightly with age. The number of standard housing units increases for each age group up to 44 years old, then decreases for older groups.

**Proportion of Owners to Renters and Standard to Substandard Units
by Age Group, Brazil, 2000**



In the 20-year projections, the tendency is for the percentage of young heads of household to decrease. By 2020, less than five percent of all households will have a head younger than 24 years-old. Percentages will decrease four percentage points for heads of household between 25 and 34 and increase somewhat (about three percentage points) for those between 55 and 64 and 65 and older. Proportions of householders between 35 and 54 will vary slightly, but not significantly.

AGE	YEAR				
	2003	2005	2010	2015	2020
15 - 24 years old	6.86%	6.60%	5.87%	5.29%	4.81%
25 - 34 years old	22.32%	22.19%	22.37%	20.91%	18.47%
35 - 44 years old	24.43%	24.17%	22.73%	22.84%	23.74%
45 - 54 years old	19.92%	20.37%	21.16%	21.04%	20.44%
55 - 64 years old	13.51%	13.75%	14.93%	16.16%	17.39%
65 and older	12.96%	12.92%	12.93%	13.76%	15.15%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Size

More than 20 percent of all households in Brazil have one or two persons and 44 percent have three or four persons. Households with five or more persons represent over 30 percent of the total number of households. Households with three persons make up the smallest group, 21 percent of the total. Among households with one and two persons, the majority (26 percent) is in the higher income category, 12 monthly minimum wages (m.m.w.) or higher. The same happens, albeit in slightly different proportions, for households with three and four persons; however, a significant

proportion of larger households (40 percent) makes less than one m.m.w. Larger households also have the highest proportion (36 percent) of those making between one and two m.m.w. In addition, most households making up to three m.m.w., 37 percent, have five or more persons.

As far as tenure and condition of the household, the proportion of owners to renters is practically constant for all household sizes, around 72 to 28. Large households make up the majority of owners in substandard housing. Only 4.7 percent of the total number of households are overcrowded.

Future trends reveal a slight increase in the percentage of households with one or two persons, less than one percent increase by 2020. Household with three and four persons will decrease slightly, but there will be a slight decrease in the number of households with five or more persons. The total number of households in the country will increase by over 20 million in the next 17 years, from an estimated 49,727,391 in 2003 to a projected 69,801,453 in 2020. The more significant increase will be of households with one or two persons. The number of households with one and two persons will increase by 44 percent in the next 17 years.

HOUSEHOLD SIZE	YEAR				
	2003	2005	2010	2015	2020
1 or 2 persons	11,336,349	11,875,763	13,365,675	14,853,829	16,292,388
3 persons	10,520,071	11,000,920	12,290,917	13,475,534	14,522,627
4 persons	11,419,445	11,956,019	13,327,732	14,640,174	15,841,149
5 or more persons	16,451,526	17,236,965	19,251,708	21,247,507	23,145,289
Total	49,727,391	52,069,667	58,236,032	64,217,044	69,801,453

Income

The largest number of households in Brazil (70 percent) earns less than six monthly minimum wages. Most low-income housing programs are for families earning less than 3 monthly minimum wages. In Brazil, 46 percent of households fall into this income category. The new housing programs that are designed for families with incomes up to 6 monthly minimum wages could benefit 70 percent of the total number of households. Programs that facilitate financing for families with incomes above 12 monthly minimum wages would benefit 14 percent of the total number of households.

TENURE	INCOME IN MONTHLY MINIMUM WAGES				
	up to 3	3 to 6	6 to 12	over 12	Total
owners standard	4,947,457	4,613,064	4,085,413	4,261,567	17,847,490
owners substandard	10,435,369	3,672,430	1,743,812	977,018	16,724,860
renters standard	2,304,689	1,810,800	1,353,384	1,097,255	6,537,562
renters substandard	3,649,750	1,091,447	437,066	209,298	5,352,258
Total	21,337,265	11,187,741	7,619,675	6,545,138	46,689,819

There is a correlation between income and dwelling condition. While 66 percent of the households with incomes below three monthly minimum wages (m.m.w.) live in

substandard conditions, 82 percent with incomes over 12 m.m.w. live in standard conditions. These differences are significant for both owners and renters. While 80 percent of owners and 20 percent of renters have incomes over 12 m.m.w., those households with incomes below three m.m.w. show a predominance of substandard owners (49 percent). Therefore, it is evident that households with higher incomes have more access to ownership and are more likely to occupy standard housing.

Projections for the year 2020 indicate that there will be 2.3 million additional households with incomes below one monthly minimum wage. An additional nine million households will earn less than three monthly minimum wages. Almost five million earning between three and six monthly minimum wages will be added in the next 17 years.

INCOME IN MONTHLY MINIMUM WAGES (m.m.w.)	YEAR				
	2003	2005	2010	2015	2020
up to 1 m.m.w.	5,797,904	6,068,241	6,783,628	7,476,251	8,122,003
1-1.99 m.m.w.	9,614,213	10,063,218	11,247,552	12,391,692	13,455,617
2-2.99 m.m.w.	7,220,018	7,558,349	8,449,569	9,312,030	10,115,345
3-5.99 m.m.w.	11,965,299	12,528,738	14,009,575	15,442,909	16,778,032
6-11.99 m.m.w.	8,154,335	8,540,887	9,555,717	10,541,271	11,462,507
more than 12 m.m.w.	6,975,622	7,310,234	8,189,991	9,052,891	9,867,949
Total	49,727,391	52,069,667	58,236,032	64,217,044	69,801,453

Housing Supply

There is a total of 54,337,670 housing units in Brazil according to the 2000 Census. Of all non-occupied units, 65 percent are vacant, 29 percent are seasonal and six percent were closed at the time the Census conducted the interview. The vacancy rate for the country is 12.7 percent. Group quarters are included in this total for the reasons outlined in the methodology. They represent 0.13 percent of the total number of households in Brazil.

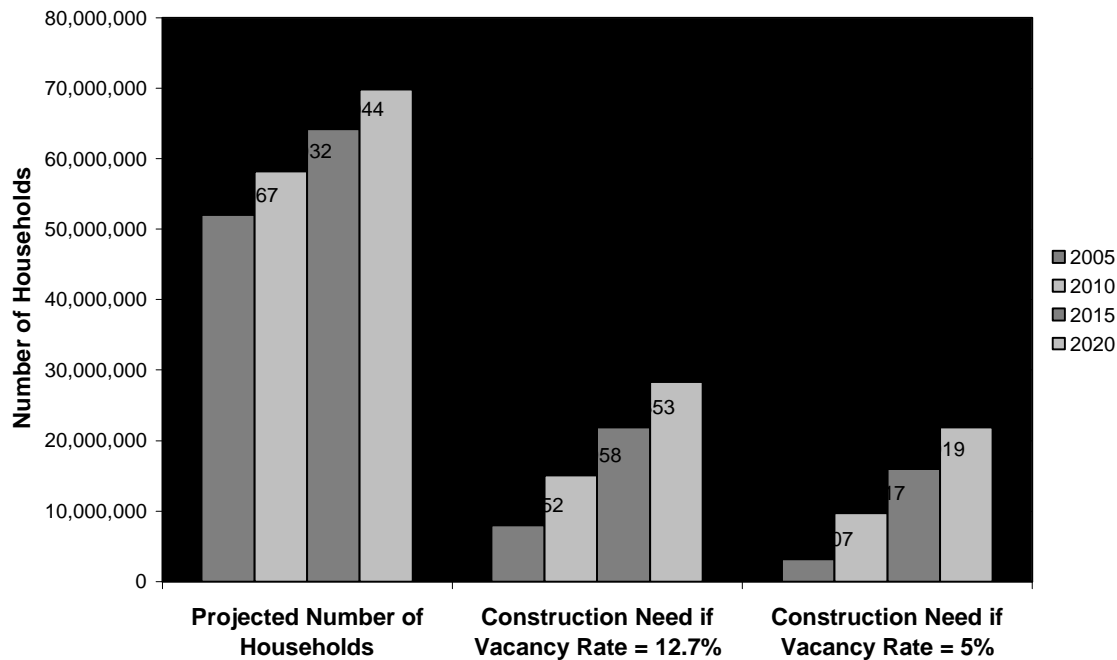
Brazil has a high vacancy rate if compared to Florida and the US as a whole. In the Florida model, the vacancy rate considered as average and used in the construction need calculations is five percent.

Construction Need

Based on the 2000 housing supply and subtracting seasonal housing units, Brazil's housing stock amounts to 51,651,969 units. The estimated number of households for 2005 is 52,069,667. As explained in the methodology section, construction need is a function of demand and vacancy rates. If the current vacancy rate were maintained (12.7 percent), the total number of additional housing units needed to accommodate the projected 2005 demand would be 59,642,721, that is, an additional 7,990,752.

Since this vacancy rate is rather high and because the Census Bureau (IBGE) does not qualify vacant units, as explained in the introduction of this project, we decided to also apply a rate of five percent to the Brazil model to obtain an additional estimate for construction need. If the vacancy rate in Brazil were lowered to five percent, an additional 3,158,207 housing units would be needed by 2005.

Projected Households and Construction Need, Brazil



Projections for the year 2010 show that Brazil will need to add 15,053,958 housing units to its stock if the 12.7 percent vacancy rate is maintained. If it is lowered to five percent, an additional 9,649,117 housing units will be needed. By the year 2020, projections show a total of 69,801,453 households, which would mean an additional 28 million with a vacancy rate of 12.7 or an additional 21 million for a vacancy rate of five percent.

Metropolitan Region of Curitiba, Paraná

Introduction

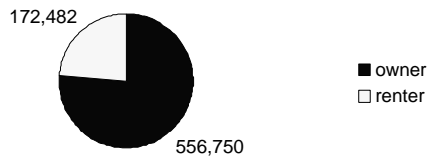
Curitiba is the state capital of Paraná, the sixth largest state in Brazil. The Metropolitan Region of Curitiba (RMC), the eighth largest among metropolitan regions, had the highest growth rate of all regions between 1991 and 1996, even though the state of Paraná had one of the lowest growth rates in the same period. While other metropolitan regions had an average growth rate of 1.8 percent, RMC's reached 3.3 percent. Growth rates for all metropolitan regions, including Curitiba, averaged 3.6 percent between 1996 and 2000. Paraná, with 9.5 million inhabitants, has 80 percent of its population

living in urban areas. Seventeen percent of the state's total population is concentrated in Curitiba, and its metropolitan region contains 32 percent of the state's urban population. The Metropolitan Region of Curitiba is highly urbanized, with 92 percent of its total population living in urban areas (IBGE, 2002).

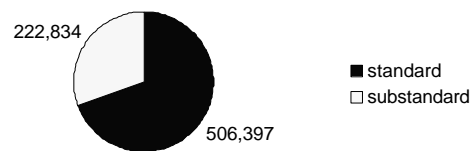
Housing Profile

According to the 2000 Census, there were 729,232 households in the metropolitan region of Curitiba, 76 percent of which were owner occupied and 24 percent were renters. Of the 556,750 heads of household who declared themselves owners, 69 percent live in standard housing.¹³ This proportion is the same for renters.

Number of Households by Tenure, Metropolitan Region of Curitiba, 2000

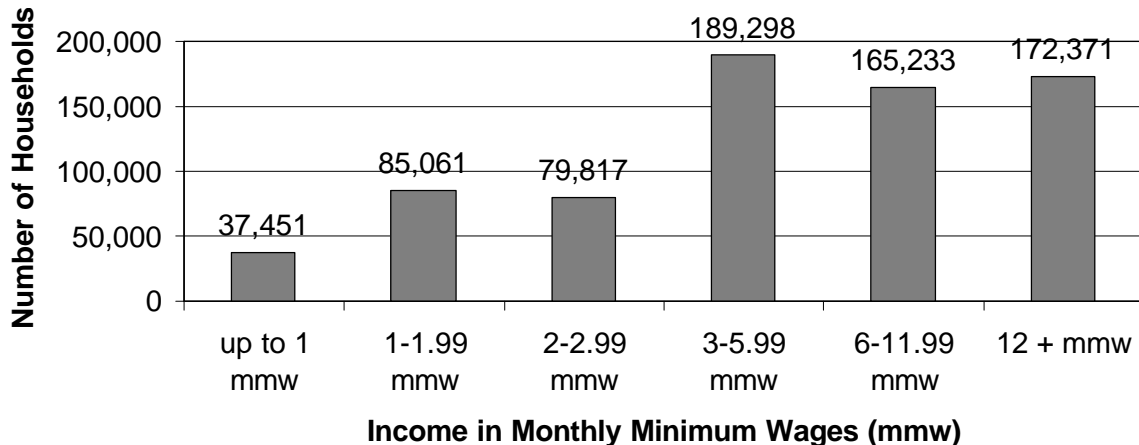


Number of Households by Condition, Metropolitan Region of Curitiba, 2000



Households with one or two persons represented 28 percent of the total, while those with three, four or five or more persons averaged 24 percent each. More than half of the households, 54 percent, earn less than six monthly minimum wages and 28 percent of the total number of households earns less than three monthly minimum wages. However, only five percent earn less than one monthly minimum wage.

Number of Households by Income, Metropolitan Region of Curitiba, 2000



¹³ The definition of "standard" used here is the one developed by the methodology, which is explained in detail in the first section of the report.

Although the ratio between owners and renters is constant across age categories, a higher percentage of standard owners (and lower of substandard owners) can be observed as householders age. While 63 percent of households whose head is between 15 and 24 years-old is standard, that percentage increases to 74 percent for households with heads 65 and older. For both owners and renters, the older the householder the lower the percentage of households occupying substandard housing.

Population Projections

The population projections for the Metropolitan Region of Curitiba, henceforth referred to as RMC, were developed by programmers working with the research team from state population projections to 2020 and population counts for 1990, 2000, and 2003.¹⁴

Curitiba's metropolitan region had 2,768,394 inhabitants in 2000 (IBGE, 2002). The projected population for 2010 is 3.5 million and over 4 million for 2020, which represents an increase of 50 percent in the next 17 years.

Household Estimates and Projections: the Demand-Side of Housing

The criteria developed to incorporate the need of families that were sharing a house revealed interesting facts. Based on 2000 Census data, the total number of housing units needed to accommodate the additional families spinning-off due to overcrowded conditions went from 729,232 to 749,938, adding over 20 thousand new households to the total.

Most additional households came from the owner tenure category (15 thousand families), which indicates that 73 percent of families that would potentially form a new household live in households in the owner tenure category.

Tenure

Of the total estimated number of households needed in the metropolitan area of Curitiba (749,938), 571,836 households would be owner occupied. According to the criteria developed for the Brazil model, 518,665 households are standard, and 41 percent of the households, including owners and renters, are substandard.

The projection of tenure status to 2020 does not reveal a major change, nor should it, given the model assumptions. Unless there were substantive changes to the underlying age composition of the population, we would expect these relative proportions to hold true across the entire projection horizon.

¹⁴ The state population projections were provided by CEDEPLAR. The population count for 1990, 2000 and 2003 were provided by IPEA through special tabulations from Census and DATASUS data.

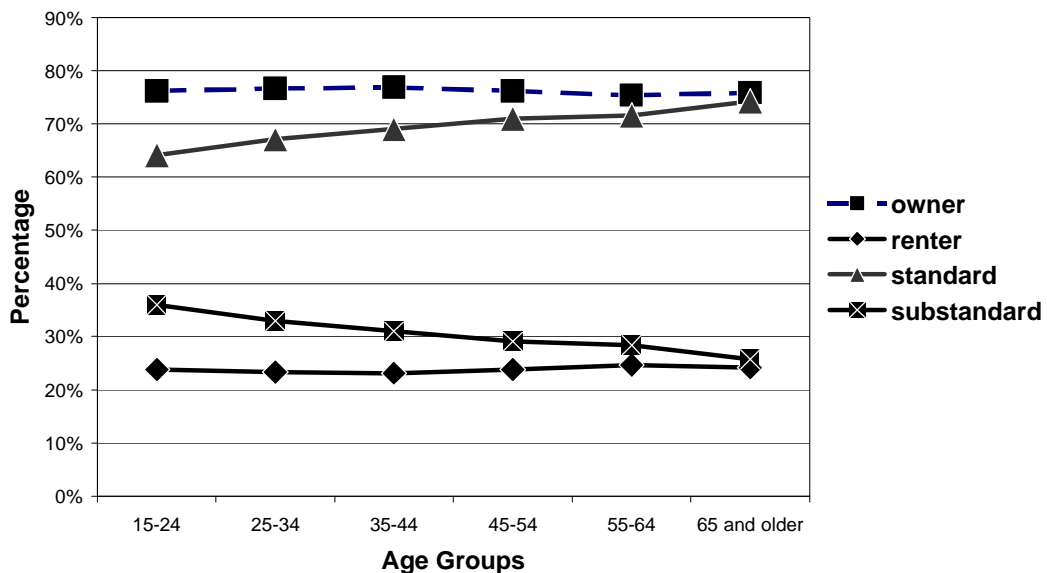
TENURE	YEAR				
	2003	2005	2010	2015	2020
owner standard	431,755	462,191	539,137	616,011	689,551
owner substandard	193,937	207,263	240,736	273,772	304,995
renter standard	135,739	145,334	169,758	194,318	218,004
renter substandard	59,598	63,690	74,031	84,179	93,666
Total	821,029	878,478	1,023,662	1,168,280	1,306,216

Age

The number of households with heads in the 15 to 24 age group is very low when compared to the other age groups, representing about seven percent of all households. The household formation rates for the age group 15 to 24 are also lower than for any other age group, which confirms the perception that young people tend to stay in their parents homes longer than would be expected. Nonetheless, the proportion of owners to renters is similar to all other age categories, about three-quarters owners and one-quarter renters. The groups with higher household formation rates are the 35 to 44 and 45 to 54 groups. The age group with the highest percentage of owners is the 35 to 44 group.

In the 15 to 24 age category, more households live in standard areas (63 percent) than in substandard areas (37 percent). The overall owner-renter proportions are similar across all age categories; however, the older the head of the household, the higher the percentage living in standard housing and the lower the percentage living in substandard housing. In the 25 to 34 age category, for example, more than half of households own a standard house. The percentage of renters decreases slightly for the 35 to 44 age category: 23 percent are renters. Also, the number of standard households increases for this age category while the number of substandard decreases.

Proportion of Owners to Renters and Standard to Substandard Units by Age Group, RMC, 2000



This trend continues into the 45 to 54, 55 to 64 and 65 and older categories. It is interesting to note that as heads of households get older their numbers increase in the standard tenure categories, which would indicate a correlation between age and opportunity to occupy adequate housing.

In the 20-year projections, the tendency is for the percentage of young heads of household to decrease. By 2020, only 4.7 percent of all households will have a head younger than 24 years old. Percentages will decrease somewhat for heads of household between 25 and 44 and increase significantly for those between 55 and 64. There is a noticeable increase for the age group 65 and older as well.

AGE	YEAR				
	2003	2005	2010	2015	2020
15 - 24 years old	6.44%	6.21%	5.53%	5.17%	4.73%
25 - 34 years old	23.96%	23.57%	23.53%	22.00%	19.93%
35 - 44 years old	26.26%	26.18%	24.50%	24.05%	24.70%
45 - 54 years old	20.49%	20.89%	21.82%	22.18%	21.43%
55 - 64 years old	12.40%	12.75%	14.13%	15.29%	16.57%
65 and older	10.45%	10.41%	10.48%	11.32%	12.63%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Size

Almost 29 percent of all households in the metropolitan area of Curitiba have one or two persons and 48 percent have three or four persons. Households with five or more persons represent 23 percent of the total number of households. These proportions do not change significantly within tenure or income categories.

Concerning the overcrowding of shared households, some interesting differences can be pointed out. Only five percent of households in the metropolitan area of Curitiba have more than one family, although 11 percent of the total number of households are overcrowded. Among standard households, nine percent of the total is overcrowded, while 19 percent of the substandard households are overcrowded. Renters present more overcrowding than owners; 17 percent of renter households are overcrowded, compared to ten percent of owners.

HOUSEHOLD SIZE	YEAR				
	2003	2005	2010	2015	2020
1 or 2 persons	237,181	253,900	296,234	338,689	379,450
3 persons	200,782	214,817	250,234	285,555	319,319
4 persons	195,663	209,335	243,876	278,219	310,920
5 or more persons	187,403	200,426	233,318	265,817	296,527
Total	821,029	878,478	1,023,662	1,168,280	1,306,216

Future trends reveal a slight increase in the percentage of households with one or two persons, less than one percent increase by 2020. Household with three and four persons will remain constant and there will be a slight decrease in the number of households with five or more persons. The total number of households will increase by almost 500 thousand in the next 17 years, from an estimated 821,029 in 2003 to a projected 1,306,216 in 2020. The more significant increase will be of households with one or two persons, which indicates that programs should target this cohort. The number of households with one and two persons will increase by 60 percent in the next 17 years.

Income

The largest number of households in the metropolitan region of Curitiba (54 percent) earns less than six monthly minimum wages. Most low-income housing programs are for families earning less than 3 monthly minimum wages. In the metropolitan area of Curitiba, 28 percent of households fall into this income category. The new housing programs that are designed for families with incomes up to 6 monthly minimum wages could benefit 54 percent of the total number of households. Programs that facilitate financing for families with incomes above 12 monthly minimum wages would benefit 24 percent of the total number of households.

TENURE	INCOME IN MONTHLY MINIMUM WAGES				
	up to 3	3 to 6	6 to 12	over 12	Total
owners standard	72,885	93,581	100,340	128,150	394,956
owners substandard	75,928	51,500	31,411	18,040	176,879
renters standard	31,127	35,479	30,926	26,176	123,708
renters substandard	30,145	14,530	6,764	2,954	54,393
Total	210,085	195,090	169,441	175,320	749,936

As it would be expected, there are more owners living in substandard conditions in the lower income categories. The higher the income, the higher the percentage of households living in standard conditions. Also, the higher the income, the higher the percentage of owner-occupied households as compared to renters.

INCOME IN MONTHLY MINIMUM WAGES (m.m.w.)	YEAR				
	2003	2005	2010	2015	2020
less than 1 m.m.w.	42,742	45,697	53,180	60,579	67,603
1-1.99 m.m.w.	95,694	102,297	118,936	135,267	150,552
2-2.99 m.m.w.	90,091	96,304	111,903	127,302	141,838
3-5.99 m.m.w.	215,965	231,026	269,102	307,034	343,370
6-11.99 m.m.w.	186,689	199,760	232,728	265,563	296,880
more than 12 m.m.w.	189,848	203,394	237,813	272,535	305,973
Total	821,029	878,478	1,023,662	1,168,280	1,306,216

Projections for the year 2020 indicate that there will be almost 25 thousand additional households with incomes below one monthly minimum wage. More than 130 thousand

additional households will earn less than three monthly minimum wages. Another 130 thousand earning between three and six monthly minimum wages will be added in the next 17 years. By the year 2020, almost 360,000 households will be earning less than three monthly minimum wages so, low-income housing programs targeting this income level will be needed to provide housing to 28 percent of households.

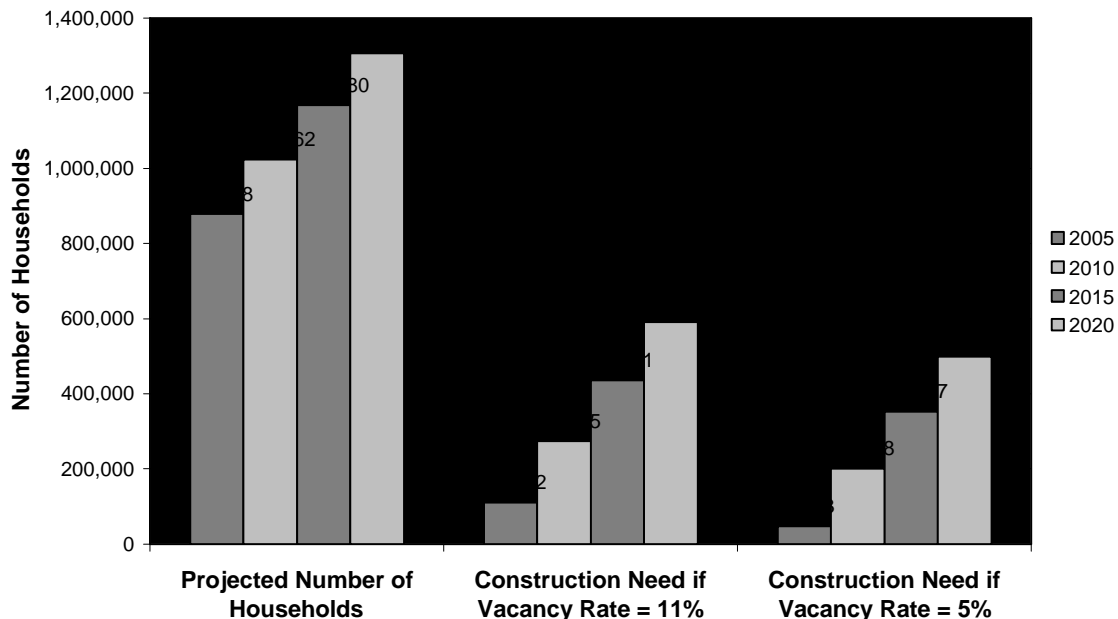
Housing Supply

The Metropolitan Region of Curitiba (RMC) has a total of 897,380 housing units according to the 2000 Census. The vacancy rate for Curitiba is 11 percent. Of all non-occupied units, 79 percent are vacant, 17 percent are seasonal and three percent were closed at the time the Census conducted the interview. Group quarters are included in this total for the reasons outlined in the methodology. They represent 0.11 percent of the total number of households in the RMC.

Construction Need

Based on the 2000 housing supply and subtracting seasonal housing units, Curitiba’s (RMC) housing stock amounts to 876,961 units. The estimated number of households for 2005 is 878,478. As explained in the methodology section, construction need is a function of demand and vacancy rates. If the current vacancy rate were maintained (11 percent), the total number of additional housing units needed to accommodate the projected 2005 demand would be 987,143, that is, an additional 110,182.

**Projected Households and Construction Need,
Metropolitan Region of Curitiba**



Since this vacancy rate is rather high and because the Census Bureau (IBGE) does not qualify vacant units, as explained in the introduction of this project, we decided to also apply a rate of five percent to the Brazil model to obtain an additional estimate for construction need. If the vacancy rate in the RMC were lowered to five percent, an additional 47,753 housing units would be needed by 2005.

Projections for the year 2010 show that the Metropolitan Region of Curitiba will need to add 273,325 housing units to its stock if the 11 percent vacancy rate is maintained. If it is lowered to five percent, an additional 200,578 housing units will be needed. By the year 2020, projections show a total of 1,306,216 households, which means an additional 590,830 units with the current vacancy rate of 11 percent or an additional 498,003 units for a vacancy rate of five percent.

Metropolitan Region of Recife, Pernambuco (summarized)

Introduction

Recife, the eighth-largest city in Brazil, is the state capital of Pernambuco. Its metropolitan region is the fifth largest in the country. Recife's population in 2000 was 1,422,905 (IBGE, 2002). The metropolitan region of Recife had the third lowest growth rate of all metropolitan regions between 1991 and 2000, only behind Rio de Janeiro and São Paulo, the two largest cities in Brazil (IBGE, 2002). The RMR, comprises 14 jurisdictions. The population of 3,3 million is 97 percent urban and represents almost half of the State's population. The city has one of the highest densities in all of Brazil: 1,217 persons per square kilometer (Moreira, 2001).

Population Projections

Recife's metropolitan region had 3,291,349 inhabitants in 2000 (IBGE, 2002). The projected population for 2010 is 3,7 million and four million for 2020, which represents an increase of almost 20 percent in the next 17 years.

Household Estimates and Projections: the Demand-Side of Housing

The criteria developed to incorporate the need of families that were sharing a house revealed interesting facts. Based on 2000 Census data, the total number of housing units needed to accommodate the additional families spinning-off due to overcrowded conditions increased by 62,059 new households. There were 838,682 households in the metropolitan area of Recife in 2000, however, considering that the shared households that presented overcrowded conditions represented a need for a new unit, the estimated demand is 900,741 households.

Tenure

The projection of tenure status to 2020 does not reveal a major change. Owners will continue to represent about 79 percent of households while renters will account for the remainder 21 percent.

Age

In the 20-year projections, the tendency is for the percentage of young heads of household to decrease. By 2020, only 4.3 percent of all households will have a head younger than 24 years-old. Percentages will also decrease for heads of household between 25 and 44 and increase by four percent for those between 55 and 64. There is also an increase for the age group 65 and older as well.

Size

Concerning the overcrowding of shared households, some interesting differences can be pointed out. Seven percent of households in the metropolitan area of Recife are shared and overcrowded. Of the more than 62 thousand households in this condition, 47,376 are in the owner tenure category, only 24 percent are renters. Among standard households, 36 percent of the total number of shared households is overcrowded; the remaining 64 percent of overcrowded households are substandard. Renters present a slightly higher rate of overcrowding than owners; 16 percent of renter households are overcrowded, compared to 14 percent of owners.

The total number of households will increase by more than 400 thousand in the next 17 years, from an estimated 971,964 in 2003 to a projected 1,400,111 in 2020. The more significant increase will be of households with five or more persons, an additional 155 thousand households.

Income

The largest number of households in the metropolitan region of Recife (73 percent) earns less than six monthly minimum wages. Most low-income housing programs are for families earning less than three monthly minimum wages. In the metropolitan area of Recife, 51 percent of households fall into this income category. By the year 2020, more than 700,000 households will be earning less than three monthly minimum wages so, low-income housing programs targeting this income level will be needed to provide housing to half of all households.

Housing Supply

The Metropolitan Region of Recife (RMR) has a total of 1,004,198 housing units according to the 2000 Census. The vacancy rate for Recife is 11.1 percent. Of all non-occupied units, 70 percent are vacant, 22 percent are seasonal and eight percent were closed at the time the Census conducted the interview. Group quarters are included in this total for the reasons outlined in the methodology. They represent 0.09 percent of the total number of households in the RMR.

Construction Need

By the year 2020, projections show a total of 1,400,111 households, requiring an additional 602,794 units using the current vacancy rate of 11.1 percent. Since this vacancy rate is rather high and because the Census Bureau (IBGE) does not qualify vacant units, as explained earlier, we decided to produce a second estimate of construction need using a five percent vacancy rate. If the vacancy rate in the RMR were lowered to five percent, an additional 500,924 units would be needed by 2020.

Federal District Integrated Development Region (RIDE) (summarized)

Introduction

The Federal District comprises the city of Brasília plus 18 satellite cities called Administrative Regions (RAs). The Integrated Development Region of the Federal District (Região Integrada de Desenvolvimento do Distrito Federal e Entorno - RIDE) comprises the Federal District, 20 municipalities in the state of Goiás and two municipalities in the state of Minas Gerais.

Brasília and RIDE offer different characteristics from the other two metropolitan areas in this study. Because Brasília was built in the late 1950s, the evolution of its urban development followed the pattern of New Cities as opposed to Curitiba and Recife, which developed over a period of about 400 years. The RIDE was created in 1998. Between 1970 and 2000, while growth rates decreased in the Federal Districts, they increased in the jurisdictions around the Pilot Plan. The 22 jurisdictions that comprise the RIDE had a total population of 907 thousand people in 2000. Together with the Federal District's two million, it is estimated that the RIDE has a population of more than three million today. Most households in the 22 municipalities surrounding the Federal District live in precarious conditions; only 13 percent of them are connected to the sewerage network and 40 percent do not have a potable water supply.

Population Projections

The population projections for the metropolitan area of Brasília required the research team to make an exception. The three municipalities in the state of Minas Gerais were not included in the housing needs assessment for the RIDE to avoid extensive calculations that were not justified given the percentage of population they represent. The number of households in those three areas represents only 3.2 percent of the total number of households in the RIDE. The RIDE had 1,980,520 inhabitants in 2000 (IBGE, 2002). The projected population for 2010 is 3.7 million and 4.5 million for 2020, which represents an increase of almost 50 percent in the next 17 years.¹⁵

¹⁵ The state population projections were provided by CEDEPLAR. The population count for 1990, 2000 and 2003 were provided by IPEA through special tabulations from Census and DATASUS data.

Household Estimates and Projections: the Demand-Side of Housing

The criteria developed to incorporate the need of families that were sharing a house revealed interesting facts. Based on 2000 Census data, the total number of housing units needed to accommodate the additional families spinning-off due to overcrowded conditions went from 730,134 to 762,843, adding over 30 thousand new households to the total.

Tenure

Of the total estimated number of households needed in the RIDE (762,843), 472,913 households would be owner occupied. According to the criteria developed for the Brazil model, 501,360 households would be standard, and 34 percent of the households, including owners and renters, would be substandard.

The projection of tenure status to 2020 does not reveal a major change. Owners will continue to represent about 62 percent of households while renters will account for the remainder 38 percent. In absolute numbers, it is estimated that in the next 17 years there will be 405,467 additional owner-occupied households and 196,213 renter-occupied households. As for condition, by 2020 there should be an additional 373,637 standard households and 228,043 substandard households.

Age

The number of households with heads in the 15 to 24 and in the 65 and older age groups is relatively low when compared to the other age groups. The household formation rates for the age group 15 to 24 are also lower than for any other age group, which confirms the perception that young people tend to stay in their parents homes longer than would be expected. The age groups with higher household formation rates are the 25 to 34 and 35 to 44 groups.

The overall owner-renter proportions are similar across all age categories, increasing slightly with age. The number of standard housing units increases for each age group up to 54 years-old, then decreases slightly for older groups.

In the 20-year projections, the tendency is for the percentage of young heads of household to decrease.

Size

More than 25 percent of all households in the RIDE have one or two persons and 45 percent have three or four persons. Households with five or more persons represent 30 percent of the total number of households. The total number of households will increase by over 600 thousand in the next 17 years, from an estimated 862,731 in 2003 to a projected 1,464,411 in 2020. The more significant increase will be of households with one or two persons.

Only 4.5 percent of all households are overcrowded. Among standard households, 4.3 percent of the total is overcrowded, while 4.9 percent of the substandard households

are overcrowded. Renters are slightly less overcrowded than owners; only 2.1 percent of renter households are overcrowded, compared to 2.4 percent of owners.

Income

The largest number of households in the RIDE (55 percent) earns less than six monthly minimum wages. Most low-income housing programs are for families earning less than 3 monthly minimum wages. In the RIDE, 33 percent of households fall into this income category. By the year 2020, almost 500,000 households will be earning less than three monthly minimum wages.

As income levels rise, the number of households in living in standard conditions increases and the number of households living in rental units decreases. There is also a correlation between income and dwelling condition. While 55.5 percent of the households with incomes below three monthly minimum wages (m.m.w.) live in substandard conditions, 88.8 percent with incomes over 12 m.m.w. live in standard conditions. These differences are significant for both owners and renters. While 73 percent of owners and 27 percent of renters have incomes over 12 m.m.w., those households with incomes below three m.m.w. are more evenly divided, 53 percent owners to 57 percent renters. Still, it is evident that households with higher incomes have more access to ownership.

Housing Supply

The RIDE has a total of 889,849 housing units according to the 2000 Census. The vacancy rate for the Federal District's Metropolitan Region is 12.9 percent. Of all non-occupied units, 70 percent are vacant, 15 percent are seasonal and 15 percent were closed at the time the Census conducted the interview. Group quarters are included in this total for the reasons outlined in the methodology. They represent 0.1 percent of the total number of households in the RIDE.

Construction Need

As explained in the methodology section, construction need is a function of demand and vacancy rates. RIDE vacancy rates are higher than the national average. Since this vacancy rate is rather high and because the Census Bureau (IBGE) does not qualify vacant units we decided we decided to produce a second estimate of construction need using a five percent vacancy rate. By the year 2020, projections show a total of 1,464,411 households, which would mean an additional 811,370 units with the current vacancy rate of 12.9 percent or an additional 671,199 units for a vacancy rate of five percent.

Comparative Analysis

This housing needs assessment confirms some of the stark regional differences that exist in Brazil. The metropolitan regions of Curitiba (RMC), Recife (RMR) and Brasília (RIDE) represent three very different contexts for enlightening comparisons. Although the differences among the three regions reveal interesting facts, some similarities are also revealing.

A fact that holds true for all regions is the constant proportion of owners to renters across all age categories. In the United States, the expected results would be that young households would rent and as they age and their incomes increase and household size increases, they become homeowners. However, in Brazil, the percentage of young households who own is almost the same as the percentage of older households who own. Some explanations could be considered in light of cultural aspects. First, most young people remain in their parents' homes until they have the means to acquire a house of their own. This custom is rooted in the country's Portuguese tradition of the relationship among social ascension, security and home ownership. Whereas in some countries home ownership is related to a gradual process of affluence related to increasing professional stability, in Brazil the importance of home ownership is related to cultural values. Most people in Brazil associate paying rent with "throwing money down the drain," so the effort put into acquiring a home is intense from an early age. Second, young people have difficulty renting rooms or apartments because of legal and contractual requirements exercised by landlords. In the 1980s, some housing authorities heeded the need for affordable single-person housing units and built studios to be sold to low-income singles and childless couples, but that practice has not continued. Still, single persons under 30 years old are a majority of the households on waiting lists for low-income housing.

Another constant for all regions is income. It is noticeable that income levels do not vary significantly for the different age groups. As with home ownership, in Florida, generally, the more mature the householder, the higher the income. In Brazil, one possible explanation is that income is more related to access to education and professional opportunities than to seniority. The uniformity of incomes across age categories could be related to the lack of professional opportunities for more mature individuals and the fact that younger people with more education will have higher incomes than older people without college degrees. In addition, there are complexities related to the enormous informal economy in Brazil, which may skew official data.

One noticeable difference among the three metropolitan regions is the number of households projected to be earning less than three monthly minimum wages (m.m.w.) by 2020. This income level is significant because most low-income housing programs tie eligibility to earnings up to three m.m.w. We project that the metropolitan region of Curitiba (RMC) will have 28 percent of its households earning under three m.m.w., and therefore qualifying for low-income housing programs, by 2020. The metropolitan region of Recife (RMR) will have half of its households in that condition and the metropolitan region of Brasília (RIDE) will have one-third. This is a clear indication that

housing programs targeting low-income populations will need to expand to serve households that need assistance.

Another noticeable contrast is related to the proportion of owners to renters and standard to substandard conditions. In the metropolitan region of Curitiba (RMC), the proportion of owners to renters is constant across all age categories, while as householders get old, they tend to occupy standard housing. The proportion of families living in standard housing in the RMC increases by almost 10 percentage points when comparing the youngest householders with the oldest (see graph on page 22). In the metropolitan region of Recife (RMR), ownership peaks between 25 and 34 and decreases slightly for older householders (see graph on page 31). The RMR has the highest proportion of substandard housing of all three regions. The number of households living in standard housing increases five percentage points between the youngest and the oldest age groups. However, more than half of the population lives in substandard conditions regardless of age. The metropolitan region of Brasília (RIDE) is somewhat similar to the RMC, except for the youngest households (see graph on page 39). The number of households living in standard conditions peaks for the 45 to 54 age group, however, the proportion decreases for both the youngest and the oldest households.

The projected total demand for housing in Brazil is not simply a function of increasing demand resulting from population growth and the need to address the problem of overcrowded, shared households. High vacancy rates in Brazil as a whole and in each of the metropolitan regions included in this study also presents a challenge to policy makers. Construction need is a function of demand and vacancy rates. If vacancy rates in Brazil were lowered, construction need could be diminished. Another important factor is the substandard condition of some households, particularly in the Metropolitan Region of Recife. Construction need numbers could be reduced by addressing adequacy of housing units, including basic sanitation needs and overcrowding, without necessarily having to build a new unit. In addition, the way in which land tenure issues are addressed might modify the way in which construction need is estimated, including the manner in which the methodology for this project was developed.

Further research addressing these questions could provide policy makers with an even better picture of the need for affordable housing in Brazil. Improvements to Census questionnaires and data collection on housing condition, such as the reason why units are vacant and land tenure status, for instance, would greatly contribute to research efforts and aid in the development of new methodologies. As existing methodologies are adapted to developing countries or as new methodologies are created to address the peculiarities of each system, better input can be given to governments, policy makers, housing authorities and citizens interested in improving housing and making more housing available to everyone.

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