

Access to Decent Housing in Congolese Urban Areas: Evolution of Associated Factors between 2005 and 2016

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Abstract

The proportion of decent housing found from the data of the 1-2-3/2012 DR Congo survey in urban areas is 7.8%. This situation prompted us to conduct a study on the evolution of factors associated with access to decent housing in urban areas of the DR Congo, based on data from the 1-2-3/2005, 1-2-3/2012 and E-QUIBB/2016 surveys, in order to identify the factors that are determining over time over these three periods. Our specific objectives are to indicate the proportion of decent housing in urban areas of the DR Congo from 2005 to 2016, to find the factors associated with access to decent housing in urban areas of the DR Congo over the three periods, and to study the evolution of these associated factors. In 2005, 2012 and 2016, the proportions of decent housing in urban areas of the country were respectively 4.1%, 9% and 12.3% respectively. The associated factors (in relation to the head of the household) acting over the three periods are: province of residence, socio-professional category, age, housing occupation status, education and gender. These six determinants all evolved over time, resulting in an overall



increase in decent housing of about 8%. These results showed that in DR Congo there is not enough investment in housing. Thus, investment by the State and other partners in the construction of low-cost housing, and the facilitation of land and property loans and investment loans, will enable vulnerable social groups, such as young people of both sexes throughout the country, to have easier access to decent housing.

Keywords

Decent Housing, Real Estate, Head of Household, Land Credit, Housing Tenure Status

1. Introduction

Housing is a major determinant of public health. There are scientifically proven links between the health of individuals and the quality of their housing and where they live. Housing can affect physical health in a variety of ways by generating or aggravating various diseases. Poor housing also has a major impact on physical health by promoting the spread of infectious diseases. The presence of mould is a health risk, particularly for people at risk of irritation and respiratory symptoms (Vandentorren et al., 2021).

According to WHO Europe, there are nearly 130,000 deaths in Europe each year associated with inadequate housing conditions. In the UK, it has been established that excess winter mortality is strongly linked to the housing characteristics of the population. Indeed, non-decent housing is also a source of mortality during heatwaves. Also, living in degraded housing leads to a process of stigmatization, social degradation and loss of self-esteem. The effects of poor housing quality and over-occupation on mental health, anxiety, depression and aggression have been scientifically demonstrated (Santé Publique France, 2021).

Since the dawn of time until today, human beings have been constantly seeking to improve their living conditions on earth and especially the decency of their housing. Decent housing depends on several factors, including the socio-demographic and socio-economic characteristics of the head of household.

The African continent has experienced a serious economic crisis, the accompanying measures of which (structural adjustment programs) have been accompanied by rapid demographic and urban growth. In sub-Saharan Africa, the urban population increased from 19,679,000 in 1950 to 85,429,000 in 1980 and 224,014,000 in 2000 (United Nations, 2009). Africa is indeed characterized by a relatively low urbanization rate (41%) and high urban growth (50%) (Veron, 2007). Initially caused by the combined effects of the rural exodus and strong natural growth, this urban growth is now only due to natural growth (Bocquier, 2003). In Africa, urban growth remained above 4% between 1950 and 2000, and will remain so (around 3%) until 2030, by which time the urbanization rate will be estimated at 53% (Dubresson and Raison, 1998). As a result, city dwellers

have great difficulty in finding good housing in African cities, hence the development on their outskirts of informal settlements not very different from those in villages.

The DRC, an African country, fits both feet into this general pattern. The DR Congo has great natural resources and its population is estimated at more than 80 million inhabitants. With its 80 million hectares of arable land and more than 1100 minerals and precious metals listed, DR Congo can become one of the richest countries in Africa and one of its engines of growth if it can overcome its bottlenecks such as political instability, etc. (Kibala, 2020).

According to the World Development Report (World Bank, n.d.), the economic growth observed between 2005 and 2012 is associated with a moderate decrease in poverty in the DRC. Between these two years, the poverty rate decreased by 5.3%, from 69.3% in 2005 to about 64% in 2012, although the number of poor people increased by about 7 million (from 38 million to 45 million), as did income poverty in the DRC.

Apart from monetary poverty in the DRC, there is also non-monetary poverty. The well-being of households is negatively affected by numerous non-monetary factors, including demography, the health and nutritional situation, HIV/AIDS, the education sector, the living environment and access to decent housing, etc. (Ministère du Plan, 2011).

With regard to the demography of the DRC, it is recognized as a major cause of monetary poverty. According to the Growth and Poverty Reduction Strategy Paper issued in 2011, on average, a Congolese household had 6 members, and in the absence of recent census operations, the population of the DRC was estimated to be around 67.8 million in 2010, with the Congolese population growing at an annual rate of 1.9 million, with a demographic growth rate estimated at 3.1%. This rate was worrying and detrimental to the country's economic development, as it led to high social demand, particularly in the education, employment, health, transport and housing sectors, which social policies had to address.

The second generation Growth and Poverty Reduction Strategy Paper (DSCR 2), issued by the Ministry of Planning in 2011, paints a bleak picture of the decency of housing in the DRC. The Congolese population is still facing serious housing problems with an annual deficit estimated at 240,000 dwellings in 2008. While the average household size is 5.4 persons, two thirds of households live in housing with less than 3 rooms. Cities are characterized by self-construction on often risky land, without any form of planning and without the necessary supporting infrastructure.

The results of research by demographer Mantempa (2019) on the factors associated with access to decent housing in Congolese urban areas using data from the 1-2-3/2012 survey, shows that there is only 7.8% decent housing in the DRC. From the same author, from 2002 to 2013 less than one in ten Congolese had access to decent housing, and those who did have access were characterized as follows: they had high levels of education and employment and were housed by their employers.

Using data from the national surveys 1-2-3/2005, 1-2-3/2012 and E-QUIBB 2016, we proposed to study the evolution of factors associated with access to decent housing in urban areas of the DRC from 2005 to 2016. Our general objective was to improve the level of knowledge on the factors associated with access to decent housing in urban areas of the DRC over three observation periods: 2005, 2012 and 2016. More specifically, we aimed to: indicate the proportion of decent housing in urban areas of DR Congo, find the factors associated with access to decent housing in urban areas of DR Congo, as well as study the evolution of these associated factors.

2. Summary of the Literature

2.1. Institutional View of Decent Housing and Its Corollaries

Ensuring that the population has access to housing that does not pose a safety risk to its occupants, that is not likely to harm the physical integrity or health of the inhabitants, and that incorporates minimum comfort elements, is a commitment of all states in the world (ONU-HABITAT, 2015). Moreover, access to decent housing is a right that still enjoys a fable involvement of the policies of several countries of the South. Yet housing is of immediate use to all people, regardless of where they currently live. Indeed, decent housing improves the health of the occupants and allows children to do their homework. It frees up women's time and allows them to participate in the labor market (Société d'Habitation du Québec, 2012). Living in decent housing contributes to facilitating family life, the conditions for raising children and more generally the well-being of the family (Agence Départementale d'Information sur le Logement, n.d.).

Housing also influences economic development through its effect on the labor market (Andrews et al., 2011). In Africa, the process of formal investment in housing by ordinary urban households has not yet begun (ONU-HABITAT, 2015). The typical household lives in a modest, mostly self-built shack. It does not comply with official building standards. The household's right of occupancy, although probably well-founded, is informal and the construction has been self-financed. The shack is located in a slum, which is also informal: the local government has not provided roads, electricity, street lighting or sanitation (Mantempa, 2019).

However, appropriate public policies can address each of these vulnerabilities, but it pays little to eliminate one or two if the others remain unaddressed. Moreover, housing vulnerabilities are the responsibility of different public administrations, which do not naturally work together. Removing the multiple barriers to housing therefore requires coordination that can only come from the top of the state: The Ministries of Urbanism and Habitat and of Land Management in DR Congo have neither the political clout nor the analytical capacity to play this role effectively. In the meantime, Congolese cities are faced with a glaring housing deficit, the needs of which are estimated at 3 million dwellings per year for the whole country between 2001 and 2015 (ONU-HABITAT, 2015).

Several parameters are therefore highlighted to facilitate access to decent housing for the urban population of the DR Congo.

2.2. Factors Associated with Access to Decent Housing Linked to the Head of Household

2.2.1. The Level of Education of the Head of Household

According to Mantempa (2019), the small proportion of decent housing in urban areas of the DRC is occupied by heads of household characterised by a high level of education, around 22.2. In a study on household configuration and quality of life conducted by the Institut National de la Statistique du Mali (2016), whose objective was to examine the advantages and disadvantages of different household configurations, it was found that the quality of household housing improved significantly when the level of education attained by the head of household increased. Among households headed by uneducated household heads, almost two out of ten (19.7%) lived in non-decent housing, and this proportion was only 3.5% among household heads with secondary education and above.

Following on from what has just been said, we are led to believe that the head of household who has attained a higher level of education has more access to decent housing than the head of household who has not attended school.

2.2.2. Housing Tenure Status

According to the geographer Bopda (1997), there is a strong correlation between housing quality and tenure status. Thus, owners of titled dwellings generally have good quality dwellings and, conversely, owners who do not have land titles live in non-decent dwellings.

From the above, we can see that the quality of housing also depends on the occupancy status of the head of household. In Kinshasa, we have often heard this saying: “He who builds in someone else’s house, builds for someone else”, these words are enough to dissuade a head of household who had the intention of spending his money on works and/or constructions, to improve the quality of the dwelling of which he is a tenant and which he found in a bad state and/or unfinished, knowing that he will leave it one day without being thanked for his efforts by the owner. As a result, heads of rented households often live in poorer quality housing. Similarly, householders who own their own homes, if they have the opportunity, are more motivated to improve the quality of the housing they themselves occupy.

From the findings on tenure status and housing quality, we can say that the head of a household who is a homeowner has more access to decent housing than those who are housed free of charge by a third party.

2.2.3. Age of the Head of Household and Life Cycle Theory

Before discussing the age of the head of household and the quality of housing, we will first discuss the life-cycle theory or the life-cycle hypothesis. In micro-economics, the life-cycle theory is a theory developed by Franco Modigliani

(1986), explaining how an economic agent chooses his or her level of consumption and level of savings over the course of a lifetime.

Age determines both the individual's income and wealth. The child is an important prescriber who buys through parents. Adolescents have specific needs and are influenced by fashions and brands. In early adulthood, the individual has a low income, lower than his consumption function, which implies that he has to dissave. During his working life, the individual can pay off his debts and build up savings that will be used to finance consumption in old age (Fauvel, 1985).

For a long time, it was thought that the elderly was a clientele that was not very accessible to novelty and not very solvent in the market. We now see that they are consumers with a high purchasing power and whose great availability means that they have a wide variety of specific needs to satisfy. Now that the concept of life cycle is understood, what is its relevance to our study?

The life cycle is of particular interest for the study of the evolution of factors associated with access to decent housing insofar as it focuses on the evolution of age and wealth across generations. The three main periods through which people theoretically pass in their lives, i.e. youth (0 - 24 years), working age (25 - 65 years) and retirement or old age (65+ years), have an impact on housing quality.

Moreover, the curve of the evolution of a man's wealth according to his age (Dherbécourt et al., 2010), allows us to develop relationships between housing quality and the evolution of wealth by taking into account age, but while remaining under the hypothesis of the life cycle theory; this exercise is not part of the objectives of our work, it is just to clarify our hypothesis concerning age and housing quality.

Youth (0 - 24 years) being a period of socialization, schooling, initiation, in short, a time of learning, corresponds to a time when the individual's assets are low and consequently the quality of the housing he or she occupies is linked to that of the parents. In the active age (25 - 65 years), there is an increase in wealth proportionally with age, hence we believe that the active period is a time of wealth accumulation during which a person can improve the quality of their housing over time. Certainly, getting a job can lead the head of household to improve the quality of his or her housing or even to build his or her own housing. Finally, the period of retirement or old age (over 65 years) is related to the development of the assets accumulated in working age. Hence this period is often characterized by good quality housing.

According to the geographer Bopda (1997), the older generations, i.e. the older people compared to the younger ones in his study on the city of Yaoundé, are those who have the most important assets, and therefore have the means to afford more decent housing than the young. From the above theory, we can say that the older the heads of household get, the more they improve the quality of their housing.

2.2.4. Province of Residence of the Head of Household

A report by the *Economic, Social and Environmental Council (2017)*, on how to better meet housing needs in the territories, highlights the diversity of housing needs in the French territories in both quantitative and qualitative terms. Indeed, from a national point of view, the number of households and therefore their housing needs are increasing under the combined effect of population growth, changes in family structures and a decrease in household size. However, this demand is unevenly distributed across the country, with some territories experiencing a real housing crisis while others are in decline.

The previous paragraph shows that there is a differentiation of geographical attractiveness between territories. Similarly, here in the DRC we observe a strong attraction of the population of the interior of the country towards the province of Kinshasa, probably in search of better living conditions. This creates all kinds of needs, especially the need to find shelter. An increase in population in one area can only lead to an increase in housing in the same area. Thus, Kinshasa would be the province with the greatest demand for housing of all kinds and therefore the greatest access to decent housing.

2.2.5. Gender of the Head of Household

A report by the *Société d'Habitation du Québec (2012)* on women and housing notes that several factors have led Quebec women to become increasingly independent and to acquire more autonomy in terms of housing, including: the gradual improvement of women's rights since the Quiet Revolution, better control of their maternity, health conditions that continue to improve to the point where they can expect to live an enviable life expectancy throughout the world, and a remarkable rise in their level of education, allowing for increased and sustained access to employment.

In the DRC, too, urban women are increasingly independent, free to make their own choices and financially self-sufficient. Like men, they have access to education, public and health services, employment and housing. Of course, equality may not yet be achieved in all sectors of society, for example, women's representation in places of power and decision-making remains low. Given that women have multiple supports; this leads us to believe that female heads of household may have more access to decent housing than their male counterparts.

2.2.6. Nationality of the Head of Household

In his article on access to decent housing, the demographer *Mantempa (2019)* found that nearly 2 out of 10 foreigners living in the DRC live in decent housing while barely 8 out of 100 urban Congolese have access to it.

It is a fact often observed that foreigners who come to settle in the DRC, settle there to do business, so as a prelude they already have a certain financial ease compared to the majority of Congolese, and can by this fact live in decent housing because they have the means. Thus foreigners would have more access to

decent housing than nationals in the DRC.

2.2.7. Socio-Economic Characteristics of the Head of Household

In the survey on the urban crisis and insertion in Yaoundé conducted by Kouamé and his team (1999), they found that employment is one of the determinants of access to decent housing. A man is likely to improve the quality of his housing when he moves from being a student to being employed in the formal sector. Furthermore, according to Antoine (1996), the first residential emancipation is said to be a factor of the professional career.

Socio-economic factors do not only improve the quality of housing, they can also cause its deterioration; in this way, the authors said (Kouamé et al., 1999; Antoine, 1996) show that the situation of an active person as well as the period in an activity have a significant effect. Moreover, these same authors have also shown that the effect of the economic crisis manifested at the level of each individual by the change of status from student to unemployed or by the loss of employment leads to a loss of housing quality.

Also, with regard to job accumulation, Mantempa (2019) finds that the head of household who accumulates jobs is less likely to have access to decent housing than one who has only one job. He explains this situation by the fact that the multiplication of income resources proves, in most cases, a dissatisfaction with the precarious situation of the head of household related to the first job.

From the above, our concern in this article will be limited to factors related to households and their heads in order to identify the characteristics that predispose access to decent housing with a view to contributing to the resolution of this great problem of the century. Because when a right is not guaranteed, no country's direction is justified.

3. Methodology

3.1. Data Sources

The data used in this study are those from the DRC's 1-2-3/2005, 1-2-3/2012 and E-QUIBB/2016 household surveys throughout the country.

The 1-2-3 Survey is a national survey conducted in 2005 and 2012 in the DRC. It covers three aspects of economic and social life, namely employment, the informal sector and household consumption. In other hand, the Unified Questionnaire with Basic Indicators of Well-being in the Democratic Republic of Congo in 2016 (E-QUIBB/RDC1-2016) was the rapid production of basic socio-economic indicators on the living conditions of the population (literacy, education, health, employment, housing, food security, governance, possession of durable goods, etc.).

Sampling frame. The E-QUIBB/2016 sampling frame is derived from the first General Census of Population and Housing conducted in the DRC in 1984 (RGPH 1). It has been partially updated on several occasions by administrative and electoral censuses. It should be noted that this sampling frame was also used

to draw the samples for the 1-2-3 surveys of 2005 and 2012. Thus, the indicators obtained with the data from these different surveys are comparable and make it possible to follow the evolution of the phenomena studied over time.

Sample sizes: For the whole country, the sample sizes of the 1-2-3/2005, 1-2-3/2012 and E-QUIBB/2016 surveys were 13,688; 21,454 and 18,363 households respectively. After filtering by residence to retain only households in urban areas, we had the following sample sizes in urban areas for the 1-2-3/2012 and E-QUIBB/2016 surveys respectively: 9873 and 6439 households.

The dependent variable: The dependent variable of our study, “Housing quality”, has two modalities (1 = decent housing and 0 = non-decent housing) and, it is of nominal qualitative nature. This variable is constructed as it was not captured in the 1-2-3/2005, 1-2-3/2012 and E-QUIBB/2016 surveys (see **Table 1**).

The independent variables are as follows:

- Level of education of the head of the household: These modalities are: Not enrolled in school; Primary; Secondary; Higher.
- Housing status: This variable entered in the databases has been recoded into 5 categories: Housed free of charge by a third party; Rented; Housed by the employer; Owner; Other.
- Age of head of household: The age of the head of household was grouped into 6 decennial age groups as follows: <25; 25 - 34; 35 - 44; 45 - 54; 55 - 64; 65+.
- Socio-professional category of the head of household (CSP): This was recoded into 6 modalities: Family helper, apprentice, other; Employee, Skilled worker, Semi-skilled worker, Unskilled worker, Supervisor; Laborer; Boss; Self-employed; Executive.
- Sex of head of household: taken as such in the databases, modalities: Male; Female.
- Province of residence of the head of household: We chose to work with the 11 former provinces because the 1-2-3 surveys do not include the 26 current provinces of the DRC. Modalities: Kinshasa; Bas-Congo; Bandundu; Equateur; Province Orientale; North Kivu; South Kivu; Maniema; Katanga; Kasai-Oriental; Kasai-Occidental.
- Nationality of the head of household: recoded in 2 modalities: Congolese; Other nationality.
- Branch of activity of the head of household: recoded in 3 modes: Primary sector (exploitation of natural resources); Secondary sector (manufacture and transformation of materials); Tertiary sector (service activities).
- Multiple job holding by the head of household: not recoded: Yes; No.

3.2. Data Analysis

In order to achieve the objectives, we set ourselves, we carried out two types of analysis: 1) Descriptive analysis consisted in our study of cross-tabulations and chi-square tests to measure the degree of association between the independent

Table 1. Presentation of the variables used to construct the “Quality of housing” variable.

Variables	Old categories	New categories
Nature of the floor	-E1-2-3/2005 et E1-2-3/2012: Wood, Tile, Board/Cement -E-QUIBB2016: Wooden boards, Parquet or waxed wood, Vinyl/asphalt strip, Tile, Cement, Carpet	1. Covered
	-E1-2-3/2005 et E1-2-3/2012: rammed earth/straw, other -E-QUIBB2016: Soil/sand, Dung, Palms/bamboo, other	0. uncovered
Wall materials	-E1-2-3/2005: Reinforced concrete, Cement block, Baked brick -E1-2-3/2012: Reinforced concrete, Cement block, Baked brick/stabilised block -E-QUIBB2016: Cement, Stone with lime/cement, Brick, Cement block	1. Durable
	-E1-2-3/2005 et E1-2-3/2012: adobe bricks, adobe wall, wood planks, plants, mats, other -E-QUIBB2016: No wall, Bamboo/Canel/Palm/Trunks, Earth, Bamboo with mud, Stones with mud, Uncoated Adobe, Plywood, Cardboard, Reclaimed wood, Coated Adobe, Wooden boards/shingles, Other	0. Not durable
Nature of the roof	-E1-2-3/2005 et E1-2-3/2012: Concrete slab, Slate, Eternit, Tile, Galvanised sheet -E-QUIBB2016: Sheet metal, Zinc/cement fibre, Tiles, Cement, Shingles	1. Decent
	-E1-2-3/2005 et E1-2-3/2012: Recycled sheet metal, Straw, Other -E-QUIBB2016: No roof, Chalm/Palm/Foliage, Clumps of earth, Mats, Palms/Bamboo, Wooden boards, Cardboard, Wood, Other	0. Not decent
Number of people per bedroom	-E1-2-3/2005, E1-2-3/2012 et E-QUIBB2016: Less than or equal to 2 persons	1. Not overcrowded
	-E1-2-3/2005, E1-2-3/2012 et E-QUIBB2016: More than 2 people	0. Overcrowded
Method of waste disposal	-E1-2-3/2005, E1-2-3/2012 et E-QUIBB2016: Public or private service, Incineration, Landfill, Compost or manure	1. Decent
	-E1-2-3/2005, E1-2-3/2012 et E-QUIBB2016: Public road, Watercourse, Dump site, Other	0. Not decent
Water supply	-E1-2-3/2005 et E1-2-3/2012: Indoor tap, Outdoor tap, Borehole, Fountain stand, Other household tap, Protected well, Managed spring -E-QUIBB2016: Tap in dwelling, Tap in yard/plot, Public tap/fountain, Tap in neighbour’s house, Pumped well or borehole, Protected well, Protected spring, Tanker truck, Bottled water	1. Decent
	-E1-2-3/2005 et E1-2-3/2012: Unprotected well, Undeveloped spring, Watercourse, Other -E-QUIBB2016: Unprotected well, Unprotected spring, Rainwater, Surface water, Other	0. Not decent
Toilet facilities	-E1-2-3/2005 et E1-2-3/2012: Indoor private flush, Outdoor private flush, Private fitted latrines, Public fitted latrines -E-QUIBB2016: To a sewage system, To a septic tank, To a cesspit, Self-ventilating improved cesspit, Cesspool with slab, Composting toilet	1. Decent
	-E1-2-3/2005 et E1-2-3/2012: Hole in the parcel, No toilet, Other -E-QUIBB2016: What else, Don’t know where, Cesspool without slab/open hole, bucket/canister, Hanging toilet/latrine, No toilet/nature, Other	0. Not decent

variables and the dependent variable. This association is highly significant if the chi-square is at most significant at the 5% threshold. For the dependent variable “Quality of housing”, we did a flat sort to determine the proportion of decent

and non-decent housing. 2) The explanatory analysis aimed to highlight the socio-demographic and socio-economic determinants of housing quality. Using a multivariate analysis model, the net effects of the independent variables on housing quality were determined. As the dependent variable is a nominal qualitative variable with two terms, the most appropriate statistical model is binary logistic regression. This model was implemented by the statistical analysis tool, SPSS 21.0 software.

3.3. Conceptual Diagram

The following diagram can corroborate the expected results of this study after this literature review (Figure 1). In fact, decent housing is influenced by the socio-demographic and socio-economic characteristics of the head of household. These characteristics can act individually or collectively. Also, one characteristic depends on the other before acting on access to decent housing. For example, a high level of education facilitates access to a good job in the private or state sector. A regular and decent salary will allow the head of household to decide on the quality of household that is needed with regard to his current socio-professional status.

4. Results

4.1. Results of the Descriptive Analyses

Figure 2 below shows that the proportion of decent housing increased from 2005 to 2016 in urban areas of the DRC. Indeed, the proportion of decent housing was 4.1% in 2005, it rose to 9% in 2012, then to 12.3% in 2016. But the same graph shows us that the proportion of decent housing remains very low compared to that of non-decent housing.

Table 2 gives us the results of the bivariate analysis used to test the association between housing quality and the various socio-demographic characteristics of the head of household over the three periods of our study. This analysis showed that factors concerning the head of household, such as age, level of education, province of residence and tenure status, are strongly related to housing quality (significant at 1%).

According to the results of this table, we note that in relation to the age of the

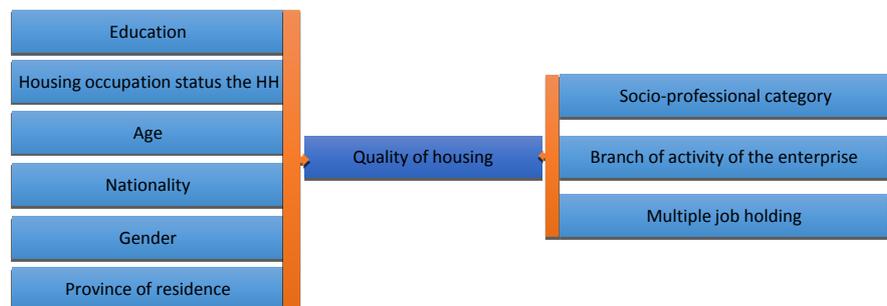


Figure 1. Conceptual diagram.

Table 2. Socio-demographic characteristics of the head of household and decent housing from 2005 to 2016.

Socio-demographic characteristics of the head of household from 2005 to 2016		Decent housing from 2005 to 2016					
		2005		2012		2016	
		%	Chi-square	%	Chi-square	%	Chi-square
Gender	Male	4.1		8		11.7	
	Female	4	1.5 ns	12.6	18.8***	13.9	6.1**
	Total	4.1		9		12.3	
Age	<25	3.1		8.7		6.4	
	25 - 34	3.8		8.7		11.8	
	35 - 44	2.7		7.8		11.3	
	45 - 54	4.5	71.6***	6.9	35.6***	11.4	34.2***
	55 - 64	5.7		10.8		14.2	
	65+	8.5		16.5		17.7	
	Total	4.1		9		12.3	
	Nationality	Congolese	4		8.8		12.3
Other nationality		11.6	20.5***	45.4	10.1***	10.4	0.3 ns
Total		4.1		9		12.3	
education	No education	4		6.3		10.3	
	Primary	1.8		5.1		7	
	Secondary	3.2	411.2***	6.2	514.5***	11	325.2***
	Superior	16.3		20.6		27	
	Total	4.1		9		12.3	
Province	Kinshasa	9.4		18.7		23.7	
	Bas-Congo	3.2		8.9		5.6	
	Bandundu	1.2		3.8		0.5	
	Equateur	2.9		0.9		4.5	
	Province Orientale	0.9		5.9		1.5	
	Nord-Kivu	1.6	423.1***	7.9	640.1***	9.4	728.3***
	Sud-Kivu	1.8		0.5		2	
	Maniema	0		2.5		0.7	
	Katanga	7.9		10		13.5	
	Kasai-Oriental	1.1		0.3		3.8	
	Kasai-Occidental	1.2		0.4		1.4	
	Ensemble	4.1		9		12.3	
Occupancy status	Owner	4.3		9.5		11.5	
	Tenant	3.2		8.8		13.5	
	Housed by employer	9.4		23.1		24.1	
	Housed free of charge by a third party	6.6	40.2***	7.6	38.8***	10.6	71.5***
	other	3.7		5.3		4.3	
	Total	4.1		9		12.3	

*** = Significant at 1%; ** = Significant at 5%; * = Significant at 10%; ns: Not Significant.

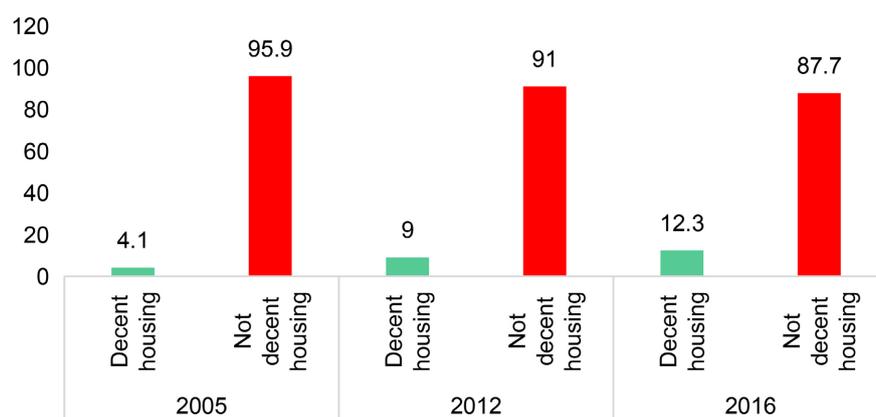


Figure 2. Proportion of decent housing in urban areas of the DRC.

head of household, there is an increase in the proportion of decent housing from one period to the next, and this is true for each age group: 8.5% in 2005; 16.5% in 2012 and 17.7% in 2016) have more access to decent housing than the youngest (<25 years: 3.1% in 2005; 8.7% in 2012 and 6.4% in 2016). In 2005 and 2012, foreigners had more access to decent housing than nationals; in 2012 and 2016, women had more access than men. By following the evolution of the proportions of decent housing according to the level of education of the head of household, we note that over the three observation periods, the higher the level of education of the head of household (Higher education: 16.3% in 2005; 20.6% in 2012 and 27% in 2016), the more he/she aspires to live in decent housing than those with less education (No education: 4% in 2005; 6.3% in 2012 and 10.3% in 2016). From 2005 to 2016, heads of household residing in the provinces of Kinshasa (9.4%; 18.7% and 23.7%), Katanga (7.9%; 10% and 13.5%) and Bas-Congo (3.2%; 8.9% and 5.6%) had the most access to decent housing. With regard to tenure status, over the three periods of our study, heads of household housed by their employer (9.4%; 23.1% and 24.1%) are those who have the highest percentages of decent housing.

Table 3 gives us the results of the bivariate analysis used to test the association between housing quality and the various socio-economic characteristics of the head of household over the three periods of our study. This analysis showed that factors concerning the head of household such as branch of activity and socio-professional category are strongly linked to housing quality (significant at 1%).

According to the results of this table, we note that in relation to branch of activity, heads of households in the tertiary sector (4.7%; 10.6% and 16.7%) have more access to decent housing than those in the primary (3.2%; 1.2% and 9.9%) and secondary sectors over the three study periods. As for the socio-professional category of the head of the household, it can be seen that the higher the social status, the more people have the means to afford decent housing, which can be observed over the three periods of the study, where company executives (15.4%; 19.4% and 30.1%) come in first place and family assistants (1%; 3.7% and 10.1%) in last place.

Table 3. Socio-economic characteristics of the head of household and decent housing from 2005 to 2016.

Socio-economic characteristics of the head of household (HH)		Decent housing					
		2005		2012		2016	
		%	Chi-square	%	Chi-square	%	Chi-square
Branch of activity	Primary sector (exploitation of natural resources)	3.2		1.2		9.9	
	Secondary sector (manufacture and processing of materials)	2.6	51.2***	10.1	145.2***	6.1	116.9***
	Tertiary sector (service activities)	4.7		10.6		16.7	
	Total	4.1		9.0		12.3	
Cumulative employment	Yes	3.7		5.5		10.8	
	No	4.1	0.213 ns	9.6	45.2***	12.4	2.8*
	Total	4.1		9.0		12.3	
Socio-professional category	Manager	15.4		19.4		30.1	
	Employee. Skilled worker. Semi-skilled worker. Unskilled worker. Supervisor	5.7		12.4		15.9	
	Laborer	4.2	317.3***	4.4	400.7***	9.3	184.1***
	Owner	8.0		10.0		14.1	
	Self-employed worker	2.2		4.3		10.2	
	Family helper. Apprentice. Other	1.0		3.7		10.1	
Total	4.1		9.0		12.3		

*** = Significant at 1%; ** = Significant at 5%; * = Significant at 10%; ns: Non Significant.

4.2. Results of the Explanatory Analyses

Table 4 below has enabled us to target the factors associated with access to decent housing that are present in the regression models adjusted over the three periods of our study. It is the evolution of these factors that interested us and that allowed us to give recommendations for the improvement of access to decent housing in urban areas of the DRC. Thus, over the three periods of our study, the factors associated with access to decent housing are: province of residence, socio-professional category, age, housing occupation status, level of education and gender of the head of household.

Indeed, we note an evolution in the proportion of decent housing in the most favored provinces such as Kinshasa and Katanga, in the latter heads of household are (in 2005, 2012 and 2016), respectively 0.67 times, 0.66 times and 0.36 times less likely to have access to decent housing than those living in Kinshasa; in the socio-professional category, heads of household who hold managerial positions in companies are (in 2005, 2012 and 2016), respectively 3 times, 3.4 times and 2.7 times more likely to have access to decent housing than heads of household who work as family helpers; There is also an increase in decent housing according to the age of the head of household, with heads of household aged 65

Table 4. Adjusted regression models of access to decent housing in urban areas of the DRC from 2005 to 2016.

Explanatory variables	categories	OR (p)		
		2005	2012	2016
Province	Kinshasa	RC	RC	RC
	Bas-Congo	0.408***	0.480***	0.221***
	Bandundu	0.199***	0.154***	0.016***
	Equateur	0.338***	0.056***	0.088***
	Province Orientale	0.185***	0.182***	0.070***
	Nord-Kivu	0.137***	0.765*	0.222***
	Sud-Kivu	0.205***	0.066***	0.057***
	Maniema	0.000NS	0.048***	0.023***
	Katanga	0.672***	0.665***	0.361***
	Kasaï-Oriental	0.105***	0.042***	0.114***
Kasaï-Occidental	0.130***	0.052***	0.177***	
Socio-professional category	Family helper. Apprentice. Other	MR	MR	MR
	Employee. Skilled worker. Semi-skilled worker. Unskilled worker. Supervisor	1.881***	1.986*	1.298 ns
	Labourer	2.169***	1.340 ns	1.532 ns
	Boss	1.902***	1.813 ns	1.265 ns
	Self-employed worker	1.015 ns	1.169 ns	1.770 ns
	Manager	3.024***	3.362***	2.742**
Age	<25	RC	RC	RC
	25 - 34	1.297***	0.775 ns	1.021 ns
	35 - 44	0.862 ns	0.564**	1.049 ns
	45 - 54	1.196 ns	0.460***	0.813 ns
	55 - 64	1.691***	0.750 ns	1.243 ns
	65+	3.443***	2.382***	2.238***
Occupancy status	Housed free of charge by a third party	RC	RC	RC
	Tenant	0.535***	0.966 ns	0.892 ns
	Housed by employer	1.310 ns	3.136***	2.810**
	Owner	0.943 ns	1.361 ns	0.833 ns
	Other	0.759 ns	0.720 ns	0.849 ns
Education	No education	RC	RC	RC
	Primary	1.025 ns	1.321 ns	0.406***
	Secondary	1.966***	2.034***	0.580*
	Superior	5.606***	6.241***	2.112**
Branch of activity	Primary sector	RC	RC	RC
	Secondary sector	1.219 ns	2.279***	0.838 ns
	Tertiary sector	1.562***	2.190***	1.131 ns

Continued

Cumulative employment	Yes	RC	RC	RC
	No	1.016NS	1.451***	1.354 ns
Nationality	Congolese	RC	RC	RC
	Other nationality	2.320***	2.215*	0.454 ns
Gender	Male	RC	RC	RC
	Female	1.213***	2.203***	1.516***
Constant		0.017	0.013	0.177

*** = Significant at 1%; ** = Significant at 5%; * = Significant at 10%; ns: Not Significant.

and over having (in 2005, 2012 and 2016), respectively, 3.4 times, 2.3 times and 2.2 times more chance of accessing decent housing than those aged under 25; as regards tenure status, heads of household housed by their employers are (in 2012 and 2016), respectively 3.1 and 2.8 times more likely to have access to decent housing than those housed free of charge by a third party; as regards the level of education, heads of household with higher education are (in 2005, 2012 and 2016), respectively 5.6 times, 6.2 times and 2.1 times more likely to have access to decent housing than those without education; also, there is a change in the proportions of decent housing according to the gender of the head of household and it is women who have (in 2005, 2012 and 2016), respectively 1.2 times, 2.2 times and 1.5 times more access to decent housing than men.

5. Discussion

The results of our study confirm those found in the literature on access to decent housing. Indeed, we found low proportions of decent housing (4.1% in 2005, 9% in 2012, 12.3% in 2016) in urban areas of the DRC. Other authors (ONU-HABITAT, 2015; Mantempa, 2019) point out in their writings that millions of people around the world live in non-decent housing that puts their lives or health at risk.

5.1. Decent Housing and Education

The evolution of the proportions of decent housing according to the level of education of the head of household shows us that the higher the level of education of the head of household (Higher: 16.3% in 2005; 20.6% in 2012 and 27% in 2016), the more decent housing he or she has access to compared to the less educated (Uneducated: 4% in 2005; 6.3% in 2012 and 10.3% in 2016) Similar results were found by the demographer Mantempa (2019) who reports that the low proportion of decent housing in urban areas of the DRC is occupied by heads of household with a high level of education, around 22.2%. Also in a study on household configuration and quality of life conducted by the Institut National de la Statistique du Mali (2016), whose objective was to examine the advantages and disadvantages of different household configurations, it was found that the quali-

ty of household housing improved significantly when the level of education attained by the head of household increased. Among households headed by uneducated household heads, nearly two out of ten (19.7%) lived in non-decent housing, and this proportion was only 3.5% among household heads with secondary education and above.

5.2. Decent Housing and Age

We noted a strong relationship between the age of the head of household and the quality of housing, in fact there is an increase in the proportion of decent housing from one period to the next and this is true for each age group as well as in each period taken separately, we see in general that the older one gets the more the proportion of decent housing increases, thus the elderly have more access to decent housing than the younger ones. This finding is similar to the results of the work of the geographer [Bopda \(1977\)](#), according to which the older generations, i.e. the older people compared to the younger ones in his study of the city of Yaoundé, are those who possess the most important assets, and therefore have the means to afford more decent housing than the young.

5.3. Decent Housing and Gender

The association between the gender of the head of household and the quality of housing reveals that women have more access to decent housing than men. Indeed, a report by the [Société d'Habitation du Québec \(2012\)](#) on women and housing points out that several factors have led Quebec women to be increasingly independent and to acquire more autonomy in terms of housing, including: the gradual improvement in women's rights since the Quiet Revolution, better control of their maternity, health conditions that continue to improve to the point of having a life expectancy that is enviable throughout the world, and a remarkable increase in their level of education, allowing for increased and sustained access to employment. In the DRC, too, urban women are increasingly independent, free to make their own choices and financially self-sufficient. Like men, they have access to education, public and health services, employment and housing. Of course, equality may not yet be achieved in all sectors of society, for example, women's representation in places of power and decision-making remains low. Given that women have multiple supports; this leads us to confirm that female heads of household may have more access to decent housing than their male counterparts.

5.4. Decent Housing and Housing Tenure Status

As for housing tenure status and quality of housing, the results of our analyses show us that over the three periods of our study, heads of household housed by their employer (9.4%; 23.1% and 24.1%) are those who have the highest percentages of decent housing tenure. This is due to the fact that large companies, whether state or private, often have enough means to provide decent housing for

their own employees.

5.5. Decent Housing and Province of Residence

With regard to the provinces, the development of decent housing has been inequitable, with some provinces being more favored than others, such as Kinshasa, Katanga, North Kivu and Maniema. The advantages enjoyed by these four provinces are essentially political in origin: Kinshasa is the political capital of the country (the seat of the institutions), Katanga is the economic capital of the country, North Kivu and Maniema have seen many of their sons rise to key positions in the country and these worthy sons have thought of investing in real estate in their provinces of origin. Bas-Congo was politically advantaged in the distant past when the city of Boma was the political capital of the country, which is no longer the case today. However, the regime of the fourth president was also characterized by projects that led to a real estate boom in the country, but not equally in all provinces. This regime opened the doors to foreign investors in the fields of construction, mining, banking, food and others leading to more employment. Moreover, the [World Bank \(n.d.\)](#) reports a moderate decrease in poverty in the DRC between 2005 and 2012, which is why there was an overall increase in decent housing in the country between 2005 and 2016.

5.6. Decent Housing and Socio-Professional Category

Regarding the socio-professional category of the head of household, there is an increase in decent housing for each category, which is consecutive to the arrival of more investors and more jobs. Certainly the heads of households, company executives, have more access to decent housing because they benefit from more social advantages (a good salary, even housing in a company house...). Then come the bosses, apart from the arrival of investors in the country, there has also been a wind of entrepreneurship that has blown into the country, leading more and more people to create their small craft or commercial businesses to be financially self-sufficient, thus allowing them to have access to decent housing. Moreover, in the survey on the crisis and urban integration in Yaoundé conducted by Kouamé and his team ([Kouamé et al., 1999](#)), they found that employment is one of the determinants of access to decent housing. A man is likely to improve the quality of his housing when he moves from being a student to being employed in the formal sector. Moreover, according to [Antoine \(1996\)](#), the first residential emancipation is said to be a factor of the professional career.

6. Conclusion

The analysis of socio-demographic and socio-economic factors of housing quality in urban areas in the DRC revealed that decent housing is the least widespread over the three periods of our study (4.1% in 2005; 9.0% in 2012; 12.3% in 2016) compared to non-decent housing.

The descriptive analysis methods made it possible to find the proportion of

decent and non-decent housing, to bring out the existing relations between the quality of housing and the socio-demographic and socio-economic characteristics of the head of household, and to show the distribution of decent housing according to these characteristics.

Furthermore, the binary logistic regression made it possible to highlight, among the variables used, those that best explain the quality of housing in urban areas of the DRC; these are the following six variables in relation to the head of household: level of education, occupation status, age, province of residence, sex and socio-professional category.

This study revealed that decent housing in DR Congo is less widespread than non-decent housing, so we addressed recommendations to two groups of people. Firstly, the public authorities, the actors involved in the real estate and banking sectors should invest in housing by building low-cost social housing, taking into account the needs of all social strata, and extend access to land and property loans to the vast majority of the Congolese population and not only to the population living in the province of Kinshasa, in order to reduce or put an end to this great exodus of people from other provinces to the capital; that they facilitate access to credit for investment to young entrepreneurs and that they accompany them until the success of their investments in order to increase the number of young people with a reliable source of income and to lower the age of access to decent housing. The second group consists of the Congolese population, which should: respect the regulations on housing construction, because the safety, health and fulfilment of the inhabitants depend on this respect; and encourage families to send all their children to school and/or to vocational training, because this gives them a better chance of having access to decent housing by giving them access to a good job.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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