Socio-Economic Background of Households and the implication for Housing Choices in Urban Ghana

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Abstract

This study examines the linkages between the socio-economic background of households and their housing choices in the urban enclaves of Ghana. Multi-stage sampling technique was used to select 900 participants from the study areas. Questionnaire was used to glean data from the participants. Pearson correlation and multinomial logistic regression were used to estimate the level of association between socio-economic characteristics of households and their housing choices. The study found that the choice of housing type was significantly associated with sex (χ^2=56.004, p<0.001), education level (χ^2=238.895, p<0.001), marital status (χ^2=28.871, p<0.001), occupation (χ^2=202.110, p<0.001), monthly income (χ^2=275.682, p<0.001), location of household (χ^2=46.112, p<0.001) but not household size (χ^2=18.642, p=0.42), age (χ^2=10.229, p=0.113) and religion (χ^2=10.361, p=0.110) of the household head. The multinomial logistic regression estimates that household heads with no formal education compared to household heads with master degree are .055 (p<.001) times less likely to live in a detached/semi-detached house compared to compound house. The study reiterates the importance of having an informed policy on neighbourhood design and development, particularly when designing houses for people of particular socio-economic and cultural backgrounds.

Keywords: housing choices; socio-economic background; compound house; flat/apartment; semi-detached house

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Introduction

Housing plays a critical role in the lives of households. For its importance, Abraham Maslow's hierarchy of needs places housing under the provision of the basic needs that are necessary for human survival (Kamasa, 2017). Kumar (2014) indicates that employees and by extension households often perform more efficiently provided their housing needs are satisfied. It is therefore, imperative to note that "success" in realising one's actual housing preferences depends on many factors. For example, according to Yirenkyi (2014), several factors such as family size, location, educational level, income levels, marital status, sex, age among others play a critical role in the selection of housing types by households. Again, factors such as income level, family structure, life-course events, and family and social ties have been found to significantly affect one's housing choices (Kamyar et al., 2019; Flage, 2018; Filandri & Olagnero, 2014). They further posit that people prefer to live near places with positive features (e.g., parks, scenery) and more distant from places with negative features (e.g., noise, pollution). This implies that socio-economic background and other conducive factors play a role in selecting a housing type by households.

In furtherance, other urban housing studies have placed overwhelming emphasis on socio-economic factors such as occupation, income, and education as causative agents (Hester & Willem, 2019; Keene et al., 2018; Fenelon et al., 2018). The National Centre for Homeless Education (2011), for instance, posits that the number of Americans who lost or otherwise changed their place of residence for financial reasons increased dramatically, and the increase appeared to be concentrated among those facing serious hardships like families with large children. Again, Ikenna & Sebnem (2019) and Eerola & Saarimaa (2018) assert that households' social class plays an important role in enabling owners to combine homeownership and well-being. Thus, to them,

social stratification must be considered when looking at housing circumstances (Holmes et al., 2019). Per these perspectives, housing type selection can be said to be a function of socio-economic characteristics of households. There has been a strong convergence between socio-economic inequalities and housing inequalities.

In a similar assertion, Zhou (2018) and Adjei & Kyei (2013) posit that households with inadequate incomes are more likely to live in substandard housing units. However, other factors such as level of education and the employment status of heads of household also play a significant role in determining households' housing type (Zhou, 2018). Hinds et al. (2016), in a study in Canada found that public housing is mostly appealing to low-income households due to the proximity of services and additional supports. They premised their findings on affordability as a major predictor of households' choice for housing type. In this instance, income remains an outstanding predictor of households' housing choices. Baqutaya et al. (2016) and Elli et al. (2015) further postulate that education, income and marital status influence a household's decision to choose a housing type.

In addition, World Health Organisation (2009) studied nine European countries and indicated that households from the lower social or economic background are affected by poor housing circumstances through increased exposure to inadequate housing; and more severe health outcomes. In addition, it further accentuated that virtually, half of the households (46.0%) that report having difficulties in paying their housing expenses live in dwellings with an increased level of deprivation (compared to 18.0% for well-off residents) (Hasanzadeh et al., 2019; da Nóbrega et al., 2018; WHO, 2009). Again, interesting findings and indications of strong associations between social-economic determinants and distribution of housing types have been found (Kotulla et al., 2019; Bolte & Kohlhuber, 2008; Lang & Stoeger, 2018; Boamah, 2010; Boamah, 2009). The implication of their findings is that less affluent residents and households are more exposed to and

affected by inadequate housing conditions and associated risk factors (Soon & Tan, 2019; Lang & Stoeger, 2018). For example, crowding, which is defined as less than one inhabitable room per person is common in households that have difficulties to pay their housing expenditure (World Health Organisation, 2009; Nwuba & Chukwuma-Nwuba, 2018; Baqutaya et al., 2016).

Moreover, crowding has been found almost two and a half times more often in households reporting financial difficulties than in those where housing costs are not perceived as a burden (Ikenna & Sebnem, 2019; Just et al., 2019). It is imperative to recognize that housing crowding is highly associated with other measures of socio-economic deprivation such as low income, unemployment, low education level and fewer material resources (Al-Masum & Lee, 2019; Litman, 2019).

Ghana is no exception to this problem of housing. Access to housing in Ghana today represents one of the most difficult aspects of the transition to adult life (Yirenkyi, 2014). The high cost of accessing housing contributes not only to lowering the living standards of households, but also to delaying life projects and dampening expectations for the future (Zhou, 2018; Baker et al., 2016; Yirenkyi, 2014). In addition, Liu et al. (2017) indicate that social status and especially low income are strongly related to residential location. This shows that less affluent residents and households in Ghana are more exposed to, and affected by insufficient housing conditions and associated risk factors because of socio-economic determinants (Boamah, 2010). Clearly, some inequalities related to several social determinants are shown in these reports. Despite the influence of socio-economic characteristics of households on their housing choices in other jurisdictions such as Europe (Baker et al., 2016; Braubach & Fairburn, 2010; WHO, 2009), America (Kotulla et al., 2019) and Asia (Jing, 2018; Holmes et al., 2017), research that explores this problem on a wider scope is largely lacking in Ghana. Therefore, this study seeks to examine the linkages between

socio-economic variables (gender, age, educational attainment, marital status, household size, religion, income, occupation etc.) and households housing choices in urban Ghana.

Materials and Methods

Location and size of the study areas

Ghana is found on latitude 7.9465^{o} N and longitude 1.0232^{o}W. Kumasi Metropolis and Asokore-Mampong Municipality are found at the central part of Ghana whereas Accra Metropolis and the Ga South Municipality are at the southern portions of Ghana. Ashanti New Town and Ahodwo were chosen for the Kumasi Metropolis whilst Asokore Mampong and Aboabo were chosen for the Asokore Mampong municipality. Similarly, Dansoman and Nima were from the Accra Metropolis whereas Ngleshie Amanfro and Botianor were chosen from the Ga South municipality. The study areas are shown in figure 1. The Accra Metropolis is found on latitude 5.54645^{o}N and longitude 0.21389oW. It is bounded to the North by Ga West Municipal, the West by Ga South Municipal, the South by the Gulf of Guinea, and the East by La Dadekotopon Municipal. It covers a total land area of 139.674 Km2. The Accra Metropolitan Area (AMA) is the national capital of Ghana as well as the capital for the Greater Accra Region. The Ga South Municipal is found on latitude 5.58114^{o}N and longitude 0.31140^{o}W. It lies at the South Western part of Accra and shares boundaries with the Accra Metropolitan Area to the South-East, Ga Central to South-East, Akwapim South to the North-East, Ga West to the East, West Akim to the North, Awutu-Senya to the West, Awutu-Senya East to the South-East, Gomoa to the South-West and the Gulf of Guinea to the South.

Kumasi Metropolis is one of the forty three (43) districts in Ashanti Region. It is located between Latitude 6.35^{o}N and 6.40^{o}S and Longitude 1.30^{o}W and 1.35^{o}E and elevated 250 to 300 meters above sea level. The Metropolis shares boundaries with Kwabre East and Afigya Kwabre Districts to the north, Atwima Kwanwoma, Atwima Nwabiagya North and Kwadaso Municipal to the west, Asokore Mampong and Ejisu Municipalities to the east and Bosomtwe District to the south. It is approximately 270km north of the national capital, Accra. The Asokore Mampong municipality is found on latitude 6.71043^{o}N and longitude 1.57083^{o}W. The Municipality covers a total land area of 23.91 km2 and it is located in the North-Eastern part of the Kumasi Metropolis. It shares boundaries with Kumasi Metropolitan Assembly (KMA) to the East, South and West, Kwabre East District to the North-West and Ejisu Municipal Assembly to the North-East. These are illustrated in figure 1.

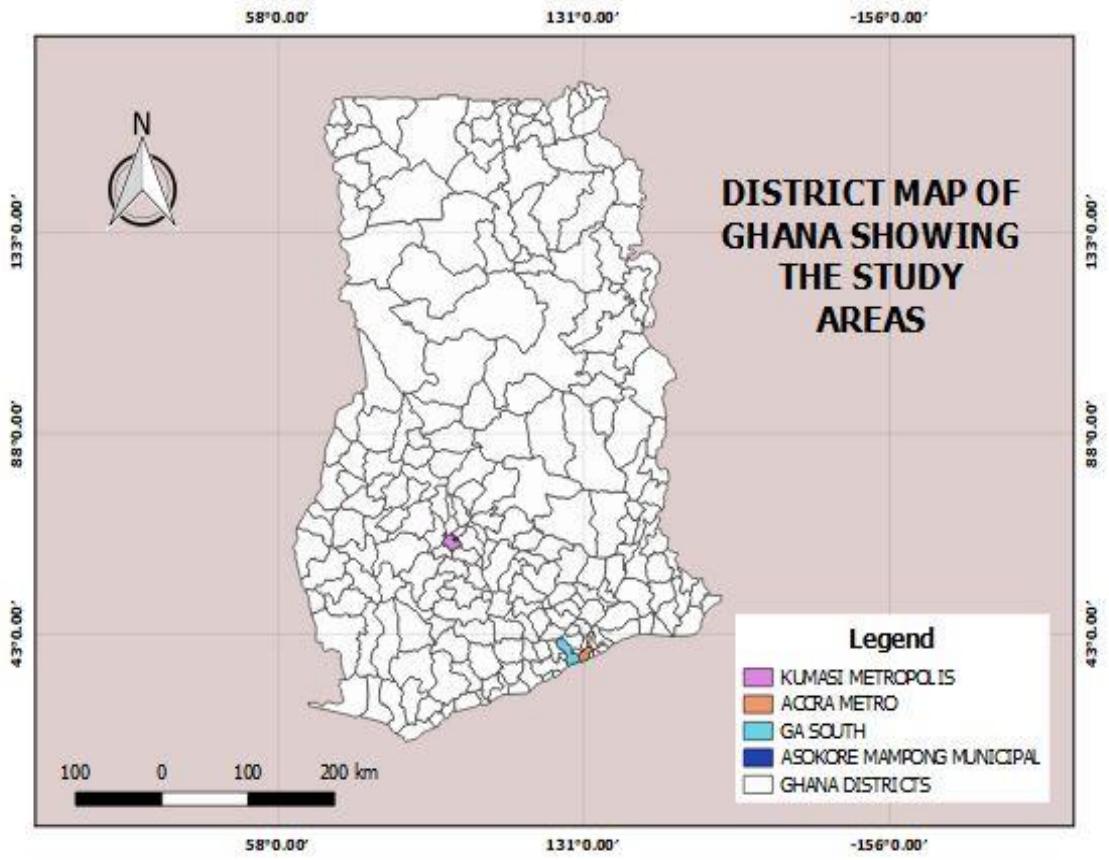

Figure 1: Location of the Study Areas in Ghana

Source: Cartography Office, Department of Geography and Rural and Rural Development, KNUST, 2020

Research design

According to Adams & Lawrence (2018), research design refers to a logical plan of information needed to offer the appropriate answers to the research questions in any study as well as showing how the information needed is collected and analysed. The purpose of this study is to examine the linkages between the socio-economic background of households and their housing choices in the

urban enclaves of Ghana. Therefore, the nature of the data required motivated the researcher to adopt the cross-sectional approach premised on the positivists strand in analysing the data.

Sample Size and Sampling procedures

According to Adams and Lawrence (2018) and Clarke (2018), sample size significantly affects model fit in testing. As a result, the Cochran's formulae for estimating sample size was employed in this study as in equation 1 to select 384 respondents as a minimum sample size for the size.

$$n = \left(\frac{\pi}{1 + \frac{\pi}{N}} \right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots equ\ 1$$

Total number of households in Accra Metropolis = 450,748 (GSS, 2014)

Total number of households in Kumasi Metropolis = 440,283 (GSS, 2014)

Total number of households in Ga South Municipality = 100,701 (GSS, 2014)

Total number of households in Asokore Mampong Municipality = 72,478 (GSS, 2014)

So the total number of households in the study areas = 1,064,210

Therefore, N= total number of households in the study areas = 1,064,210

$$\pi = \left(\frac{\left(\frac{z\alpha}{2}\right)^2 \rho(1-\rho)}{\alpha^2} \right)$$

Where:

ρ is the proportion of households selected to study

π is the sample size estimate with 95% confidence interval

$\frac{z\alpha}{2}$ is the confidence level

α is the error term

With 95% confidence interval and 5% margin of error.

$$\frac{z\alpha}{2} = 1.96$$

$$\alpha = 0.05$$

$$\rho = 0.50$$

$$\pi = \left(\frac{(1.96)^2\ 0.50(1-0.50)}{0.05^2}\right) = 384.16$$

Substitution of π into the Cochran's formulae

$$n = \left(\frac{384.16}{1 + \frac{384.16}{1{,}064{,}210}}\right)$$

$$n = 384$$

However, for a robust quantitative analysis, the researcher increased the sample size to 900 respondents to ensure robust analysis. The researcher used the stratified proportionate sampling technique to distribute the respondents of the study areas accordingly as seen in Table 1.

Table 1 Sample Size Determination for the Study Areas

Study Area	Households	Percentage	Sample Size
Accra Metropolis	450748	42.4	382
Kumasi Metropolis	440283	41.3	372
Ga South Municipal	100701	9.5	85
Asokore Mampong Municipal	72478	6.8	61
Total	1064210	100	900

Source: Author's Own Construct (2020)

The multi-stage sampling technique (stratified, systematic random, simple random, purposive and stratified proportionate sampling) was employed in the study. The stratified sampling technique was used to select the locations (first, second and third class residential areas) for the study. The

stratification of the study areas into first, second and third class residential areas was based on the 2010 population census (GSS, 2014). The systematic random sampling technique was then used to select the houses in which the households were selected for the study. The researcher and the five trained enumerators randomly selected the first house in each location and skipped the next two houses afterwards to the third one until the total number of houses expected in a location was exhausted. The researcher and the enumerators used Android phones to pick the coordinates of each house selected. Simple random sampling technique was further used to select the household respondents in each house for the survey. The simple random sampling technique was employed because it was assumed that the population of the study in each of the locations was homogeneous regarding demographic characteristics (Nestor & Schutt, 2018; Abutabenjeh & Jaradat, 2018). Again, it further ensured equal chance for each respondent in the study area to be selected.

Data Analysis

Primary data were used and the unit of analysis were households. Questionnaire was used to collect the data. Following from the checking and screening for the completeness of the questionnaire that were received, the data was entered into SPSS version 21. The researcher used Pearson correlation and multinomial logistic regression model for this study. The multinomial logistic regression was used because housing choice (dependent variable) has three responses (compound house, flat/apartment and semi-detached) and also categoritical in nature. Compound house was used as the reference category in the model. Compound house in this study refers to multiple dwelling units that are located on the same yard/plot (GSS, 2014). These dwelling units usually have shared toilet(s), bath(s) and cooking takes place either outside, on the porch or in an enclosed area. The

compound may or may not be surrounded by a fence wall or hedge. Flat/apart, is a private dwelling/living quarters located in a building, which contains several sets of housing units. The flat/apartment building usually consists of several floors. Semi-detached house refers to a single housing unit that is attached to another single housing unit horizontally (GSS, 2012). A household on the other hand, is defined as a person or a group of persons, who lived together in the same house or compound and share the same housekeeping arrangements (GSS, 2012). These variables were used in the model.

In stating the model for the study, for M unordered categories, the model has M-1 equations; one for each category relative to the reference category (Compound House). The general model is therefore, written as;

$$ln\frac{\rho(Yi=m)}{\rho(Yi=1)} = \alpha_m + \sum_{k=1}^{k} \beta_{mk} X_{ik} \ldots\ldots\ldots\ldots\ldots\ldots Model\ 6$$

For each case, there is M-1 predicted odds, one for each category relative to the reference category.

$p(Yi=m) = \frac{\exp(Z_{mi})}{1+\sum_{h=2}^{m}\exp(Z_{mi})}$ and $p(Y=1) = \frac{1}{1+\sum_{h=2}^{m}\exp(Z_{mi})}$

Therefore, this study specified the model as:

X_{ik} for $HouseY_i = \beta_0 + \beta_1 AH_i + \beta_2 SH_i + \beta_3 IH_i + \beta_4 EAH_i + \beta_5 RH_i + \beta_6 MSH_i + \beta_7 HS_i + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots Model\ 7$

Where:

HouseY=housing choice (categorized into semi-detached, flats/ apartment and compound house; where compound house is a referenced category)

AH= age of household (categorized into 20-30 yrs, 31-40 yrs, 41-50 yrs and 51-60 yrs; where 51-60 yrs is a reference category)

SH= sex of household (male code 1 and female coded as 0)

IH= income level of household (categorized into below 1000, 1000-2000, 2001-3000. 3001-4000, 4001-5000, 5001-6000, 6001-7000 and above 7000 where above 7000 is a reference category)

EAH= educational level of household (categorized into no formal education, MSLCE (Middle School Leaving Certificate Examination)/BECE (Basic Education Certificate Examination), SSSCE (Senior Secondary School Certificate Examination)/WASSCE (West Africa Senior School Certificate Examination), HND (Higher National Diploma)/Diploma, first degree and master degree; where mater degree is a reference category)

RH= religion of household (categorized into Christianity, Islam, Tradition and others where others is a reference category)

MSH= marital status of household (categorized into single, married, widow, widower, divorced, separation, divorced where divorced is reference category)

HS= household size (categorized into 1-3, 4-6, 7-9, 10-12, 13-15 and above 15 where above15 is a reference category)

ε= error term.

Ethical approval

The study was approved by the Committee on Human Research, Publication and Ethics of the School of Medical Sciences, Kwame Nkrumah University of Science and Technology/Komfo Anokye Teaching Hospital with reference number CHRPE/AP/317/20. Again, all participants gave verbal consent for their participation in the study.

Study Results

Demographic characteristics of Respondents

This section uses descriptive statistics to analyse the demographic characteristics of the respondents. These demographic characteristics include age, gender, highest educational attainment, marital status and household size. The others are religion, occupation and monthly income. Other variables such as residence location, housing type, comfortability and preferred housing type of households were also analysed. These have been illustrated in table 2a and b.

Table 2a: Demographic Characteristics of Respondents

Variable	Category	F	%
Gender	Male	397	44.1
	Female	503	55.9
Age	20-30	94	10.4
	31-40	455	50.6
	41-50	227	25.2
	Above 52	124	13.8
Highest Level of Education	No Formal Education	260	28.9
	MLSCE/BECE	270	30.0
	SSSCE/WASCE	75	8.3
	HND/Diploma	57	6.3
	First Degree	183	20.3
	Masters Degree	55	6.1
Marital Status	Married	696	77.3
	Widowed/Widower	58	6.4
	Separation	26	2.9
	Single	105	11.7
	Divorced	15	1.7

Field Survey, 2020

Table 2b: Demographic Characteristics of Respondents

Variable	Category	F	%
Household Size	1-3	213	23.7
	4-6	509	56.6
	7-9	145	16.1
	10-12	26	2.9
	13-15	2	0.2
	16 and above	5	0.6
Religion	Christianity	806	89.6
	Islam	82	9.1
	Traditional	7	0.8
	Other	5	0.6
Occupation of Respondents	Unemployed	33	3.7
	Trading	321	35.7
	Teaching	115	12.8
	Health Worker	73	8.1
	Banking and Insurance	82	9.1
	Security Work	45	5.0
	Vocational/Artistry	231	25.7
Monthly Household Income	Below 1000	197	21.9
	1000-2000	289	32.1
	2001-3000	129	14.3
	3001-4000	90	10.0
	4001-5000	26	2.9
	5001-6000	72	8.0
	6001-7000	36	4.0
	Above 7000	61	6.8
Residence Location	High Income Community	187	20.8
	Middle Income Community	351	39.0
	Low Income Community	362	40.2
Housing Type	Semi Detached Houses	18.9	18.9
	Flats/Apartment	27.4	27.4
	Compound Houses (Rooms)	53.7	53.7
Comfortability	No	98	10.9
	Yes	790	87.8
	Indifferent	12	1.3
Preferred Housing type	Semi Detached Houses	402	44.7
	Flats/Apartment	426	47.3
	Compound Houses (Rooms)	72	8.0

Source: Field Survey, 2020

From Table 2a and b, out of 900 respondents 397 (44.1%) were males and 503 (55.9%) were females in the study area. These figures are a little wider from the national figures of 51% (females) and 49% males (GSS, 2014). The contributing factor for this sex distribution may be the timing of the data collection. The data were collected during the day, and as characteristic in a typical Ghanaian urban setting, men are usually not in the house during the daytime because of their jobs. Eventually, women were used as proxemics in the absence of their husbands. In furtherance, table 2 shows that 94 (10.4%) were between 20-30 years, 455 (50.6%) were between 31-40 years, 227 (25.2%) were within 41-50 years and 124 (13.8%) were above 52 years. The study shows that majority of the respondents were between the ages of 31-40 years. Once again, the urban nature of the study areas may contribute to this. This is because the urban areas in Ghana mostly host the economically active population because of the presence of relatively available jobs in these areas. The result in table 2 further shows that 260 (28.9%) had no formal education, 270 (30.0%) had MLSCE/BECE, 75 (8.3%) had SSSCE/BECE, 57 (6.3%) had HND/Diploma, 183 (20.3%) had first degree and 55 (6.1%) had master's degree. Even though those who had no formal education were many, the study found that at least, majority of the respondents had some form of education. Again, from Table 3.1, out of 900 respondents, 696 (77.3%) were married, 58 (6.4%) were widowed, 26 (2.9%) separation, 105 (11.7%) single and 15 (1.7%) divorced. The high marital status among the study participants could be underpinned by the cultural setting of the Ghanaian people where marriage is cherished with high esteem. This shows that majority of the respondents in the study areas have their household size between 4-6 people. This household size is in conformity with the national average of 4.5 (GSS, 2019).

In furtherance, the analysis in table 2 shows that majority 806 (89.6%) of the respondents were Christians, 82 (9.1%) were Muslims, 7 (0.8%) were traditionalist and 5 (0.6%) were into other forms of religion. This religious distribution is not surprising as it conforms to the national statistics on religious affiliations.

In terms of occupation of the respondents, Table 2 reveals that 33 (3.7%), 321 (35.7%), 115 (12.8%), 73 (8.1%), 82 (9.1%), 45 (5.0%) and 231 (25.7%) of the respondents were unemployed, trading, teaching, health worker, banking and insurance, security work and vocational/artistry respectively. The study shows that majority of the household heads were traders. The urban nature of the study areas may account for this as these centres remain the commercial hub of Ghana, particularly the Accra and Kumasi Metropolises. Furthermore, Table 2 further shows that 197 (21.9%) households received monthly incomes below GH₵1000 while 6.8% of the respondents received above GH₵ 7000. The study found that majority of household have between GH₵ 1000 and GH₵ 2000 Ghana Cedis as monthly income in the study area.

Moreover, Table 3.1b reveals that 187 (20.8%) of the respondents live in high-income community, 351 (39%) lived-in middle-income community and 362 (40.2%) live in low-income community. In addition, Table 2 shows that 170 (18.9) of the respondents live in semi-detached houses, 247 (27.4%) live in flats/apartment and 483 (53.7) live in compound houses. Table 2 shows that out of 900 respondents, 98 (10.9%) noted no, 790 (87.8%) indicated yes and 12 (1.3%) expressed indifferent about being comfortable of where they are living. The result shows that the respondents are comfortable with their current accommodation and place of residence. In furtherance, from Table 2, 402 (44.7%), 426 (47.3%) and 72 (8.0%) of the respondents noted respectively that their preferred housing types to be semi-detached houses, flats/apartment and compound houses

(rooms) respectively. The analysis shows that most of the respondents like to live in semi-detached and flats/apartment houses in the study areas compared to compound houses.

Demographic characteristics and housing choices of respondents

This section investigates how the socio-economic background of households influences their housing choices. Linkages between socio-economic variables (gender, age, educational attainment, marital status, household size, religion, income, occupation etc.) and households housing choices were analysed. These have been illustrated in table 3.2a, b and c.

Table 3a: Demographic Characteristics and housing choices of Respondents

Variable	Category	F	%	χ^2	p-value
Gender	Male	397	44.1	56.004	0.000
	Female	503	55.9		
Age	20-30	94	10.4	10.299	0.113
	31-40	455	50.6		
	41-50	227	25.2		
	Above 50	124	13.8		
Highest Level of Education	No Formal Education	260	28.9	238.895	0.000
	MLSCE/BECE	270	30.0		
	SSSCE/WASCE	75	8.3		
	HND/Diploma	57	6.3		
	First Degree	183	20.3		
	Masters Degree	55	6.1		
Marital Status	Married	696	77.3	28.871	0.001
	Widow/Widower	58	6.4		
	Separation	26	2.9		
	Single	105	11.7		
	Divorced	15	1.7		
Household Size	1-3	213	23.7	18.642	0.045
	4-6	509	56.6		
	7-9	145	16.1		
	10-12	26	2.9		
	13-15	2	0.2		
	16 and above	5	0.6		

Source: Field Survey, 2020

Table 3b: Demographic Characteristics and housing choices of Respondents

Variable	Category	F	%	χ^2	p-value
Religion	Christianity	806	89.6	10.361	0.110
	Islam	82	9.1		
	Traditional	7	0.8		
	Other	5	0.6		
Occupation of Respondents	Unemployed	33	3.7		
	Trading	321	35.7	202.110	0.000
	Teaching	115	12.8		
	Health Worker	73	8.1		
	Banking and Insurance	82	9.1		
	Security Work	45	5.0		
	Vocational/Artistry	231	25.7		
Monthly Household Income	Below 1000	197	21.9	388.828	0.000
	1000-2000	289	32.1		
	2001-3000	129	14.3		
	3001-4000	90	10.0		
	4001-5000	26	2.9		
	5001-6000	72	8.0		
	6001-7000	36	4.0		
	Above 7000	61	6.8		

Source: Field survey, 2020

Table 3c: Demographic Characteristics and housing choices of Respondents

Variable	Category	F	%	χ^2	p-value
Residence	High Income Community	187	20.8	46.112	0.000
Location	Middle Income Community	351	39.0		
	Low Income Community	362	40.2		
Housing type	Semi Detached Houses	170	18.9		
	Flats/Apartment	274	27.4	-	-
	Compound Houses (Rooms)	483	53.7		
Comfortability	No	98	10.9		
	Yes	790	87.8	67.464	0.000
	Indifferent	12	1.3		
Preferred	Semi Detached Houses	402	44.7		
Housing type	Flats/Apartment	426	47.3	323.843	0.000
	Compound Houses (Rooms)	72	8.0		

Source: Field survey, 2020

The study further sought to examine the association between the demographic characteristics and housing choices of respondents. The findings in Table 3a show that choice of housing type is significantly associated with sex of the household head (χ^2 =56.004; p<0.001). This leads the researcher to reject the null hypothesis that there is no significant relationship between sex and the choice of housing type of households' heads. Further, the study found that the choice of housing type is not significantly associated with the age of household head (χ^2 = 10.229; p=0.113). Again, the study examined the association between educational level and housing choice of respondents. Table 3 further shows that the choice of housing type is significantly associated with educational

level of the household head (χ^2 = 238.895; p<0.001). Furthermore, the study found that the choice of housing type is significantly associated with marital status (χ^2 =28.871; p<0.001).

In addition, the study sought the relationship between housing choice and household size among the respondents. The study found that the choice of housing type is not significantly associated with the household size (χ^2 = 18.642; p=0.042). Again, the analysis in Table 3 reveals that the choice of housing type of household is not significantly associated with the religion of the household head (χ^2 =10.361; p=0.110).

In terms of occupation of the respondents, Table 3 reveals that the choice of housing type is significantly associated with occupation of the household head (χ^2 = 202.110; p<0.001). In furtherance, Table 3 shows that the choice of housing type of household is significantly associated with monthly income of the households (χ^2 =275.682; p<0.001). The study again, sought the relation between the residence location of households and their housing choices. From Table 3, the choice of housing type of household is significantly associated with location of the household (χ^2 =46.112; p<0.001).

Multinomial Logistic Regression for Housing Choices and Household Characteristics

To find the direction of association between the socio-economic characteristics of households and their housing choices, multinomial logistic regression was ran. The results are shown in Tables 4.a, b, c and d.

Table 4a: Multinomial Logistic Regression for Housing Choices and Household Characteristics

Which of the following best describe your housing?		p-value	Exp(B)	95% Confidence Interval for Exp (B)	
				Min.	**Max.**
Semi-detached houses	Intercept	.997			
	Male	.894	1.035	.625	1.713
	Female	.	.	.	.
	20-30 years	.037	.249	.068	.920
	31-40 years	.183	.588	.270	1.284
	41-50 years	.900	.953	.450	2.018
	51-60 years	.	.	.	.
	No formal education	.000	.055	.013	.231
	SSSCE/WASCE	.001	.085	.021	.343
	Diploma	.019	.159	.034	.734
	HND	.005	.097	.019	.501
	First Degree	.030	.208	.050	.859
	Master Degree	.	.	.	.
	Married	.422	1.950	.382	9.959
	Widowed	.670	.639	.082	4.996
	Widower	.234	.157	.007	3.310
	Separation	.634	.582	.063	5.399
	Single	.835	.816	.120	5.539
	Divorced	.	.	.	.

Source: Field Data (2020); Dependent Variable= Residential Type; Reference Category= Compound House; significance level= 5%

Table 4b: Multinomial Logistic Regression for Housing Choices and Household Characteristics

Which of the following best describe your housing?		p-value	Exp(B)	95% Confidence Interval for Exp (B)	
	Intercept			Min.	Max.
Semi-detached	1-3	.997	1.805E8	.000	.[c]
	4-6	.997	1.345E8	.000	.[c]
	7-9	.997	1.871E8	.000	.[c]
	10-12	.997	2.833E8	.000	.[c]
	13-15	.	1.850	1.850	1.850
	Above	.	.	.	.
	Christianity	.998	1.941E7	.000	.[c]
	Islam	.998	1.406E7	.000	.[c]
	Traditional	.997	2.305E8	.000	.[c]
	Others	.	.	.	.
	Below 1000	.000	.004	.000	.058
	1000-2000	.000	.008	.001	.077
	2001-3000	.000	.004	.000	.040
	3001-4000	.000	.007	.001	.062
	4001-5000	.000	.010	.001	.090
	5001-6000	.009	.046	.005	.472
	6001-7000	.033	.062	.005	.804
	Above 7000	.	.	.	.

Source: Field Data (2020); Dependent Variable= Residential Type; Reference Category= Compound House; significance level= 5%

Table 4c: Multinomial Logistic Regression for Housing Choices and Household Characteristics

Which of the following best describe your housing?		p-value	Exp(B)	95% Confidence Interval for Exp (B)	
	Intercept			Min.	Max.
flats/apartments	Male	.997			
	Female	.036	1.579	1.029	2.422
		.	.	.	.
	20-30 years	.260	.552	.197	1.550
	31-40 years	.144	.588	.288	1.200
	41-50 years	.783	.908	.458	1.801
	Above 50	.	.	.	.
	No formal education	.005	.133	.032	.548
	MLSCE/BECE	.004	.132	.033	.532
	SSSCE/WASCE	.237	.414	.096	1.787
	HND/Diploma	.198	.378	.086	1.664
	First Degree	.431	.570	.141	2.307
	Master Degree	.	.	.	.
	Married	.104	4.980	.717	34.579
	Widowed	.258	3.437	.404	29.234
	Widower	.667	1.731	.142	21.137
	Separation	.658	1.663	.174	15.858
	Single	.051	7.612	.989	58.612
	Divorced	.	.	.	.

Source: Field Data (2020); Dependent Variable= Residential Type; Reference Category= Compound House; significance level= 5%

Table 4d: Multinomial Logistic Regression for Housing Choices and Household Characteristics

Which of the following best describe your housing?		p-value	Exp(B)	95% Confidence Interval for Exp (B)	
Flat/apartment	Intercept			Min.	Max.
	1-3	.996	1.183E8	.000	.[c]
	4-6	.996	1.089E8	.000	.[c]
	7-9	.996	1.120E8	.000	.[c]
	10-12	.997	5.894E7	.000	.[c]
	13-15	1.000	.480	.000	.[c]
	Above 15	.	.	.	.
	Christianity	.744	1.626	.088	30.074
	Islam	.624	.472	.023	9.521
	Traditional	.157	13.413	.369	487.871
	Others	.	.	.	.
	Below 1000	.000	.003	.000	.057
	1000-2000	.000	.008	.001	.081
	2001-3000	.000	.006	.001	.060
	3001-4000	.000	.019	.002	.170
	4001-5000	.033	.093	.010	.829
	5001-6000	.265	.274	.028	2.671
	6001-7000	.495	.422	.035	5.037
	Above 7000	.	.	.	.

No of Observation= 900
Cox and Snell R-square= 0.448
Nagelkerke R- square= 0.520
McFadden R-square= 0.300
Goodness of Fit: Pearson Chi square= 985.214; p=0.004
Deviance Chi-square= 700.768; p-value =1.000
Model Fitting Information: Chi-square =534.411; p-value=0.000

Source: Field Data (2020); Dependent Variable= Residential Type; Reference Category= Compound House; significance level= 5%

From the multinomial logistic regression results in Tables 4a, b, c and d, the choice of housing types between semi-detached houses and compound houses was not influenced significantly by

sex, religion and marital status of the household head. However, educational level and income of the household head significantly influenced the choice between semi-detached and compound houses. For example, household heads with no formal education as opposed to household heads with master degree are .055 ($p<.001$) times less likely to live in a semi-detached house compared to compound house. Similarly, household heads with MLSCE/BECE qualification compared to those with master degree are .085 ($p=.001$) times less likely to live in a semi-detached house compared to compound houses. With respect to income, household head with income below GHS1000, GHS1000-GHS2000, GHS2001-GHS3000, GHS3001-GHS4000, GHS4001-GHS5000, GHS5001-GHS6000 compared to those above GHS7000 are .004 ($p<.001$), .008 ($p<.001$), .004 ($p<.001$), .007 ($p<.001$), .010 ($p<.001$) and .046 ($p<.001$) times respectively less likely to live in a semi-detached house compared to a compound house.

In furtherance, from the multinomial logistic regression results, the choice of housing type between flat/ apartment and compound houses was not influenced significantly by age, religion and marital status of the household head and household size. However, educational level and income of the household head significantly influenced the choice of housing type between flat/apartment and compound houses. Household heads with no formal education compared to those with master degree were .133 ($p=.005$) times less likely to live in an apartment/flat compared to compound house. Again, those with MLSCE/BECE compared to those with master degree are .132 ($p=.004$) times less likely to live in an apartment/flat compared to compound house. Moreover, household heads with monthly income below GHS1000, GHS1000-GHS2000, GHS2001-GHS3000, GHS3001-GHS4000, GHS4001-GHS5000, GHS5001-GHS6000 compared to those above GHS7000 are .003 ($p<.001$), .008 ($p<.001$), .006 ($p<.001$), .019 ($p<.001$), .093 times respectively less likely to live in an apartment/flat compared to compound houses.

Finally, from the model fitting information, the model is statistically fit to predict the choice of housing type in the study areas (Chi-square= 534.411; p-value 0.000). Again, from the goodness-of-fit, though the Pearson's Chi square (Chi-square= 985.214; p-value= 0.004) shows that the model does not fit the data well; Deviance Chi-square (Chi-square= 700.76; p-value= 1.000) show that the model fit the data well. The Cox and Snell R- square (R^2=0.448) shows that the independent variables put together explain 44.8% of the variation in choice of housing type by the households in the study areas. The Negerkerke R-square (R^2=0.520) shows that the independent variable put together explained 52.0% of the variation in the choice of residence types. McFadden R-square (R^2= 0.300) gives an indication that explanatory variables explain 30.0% of the variation in housing type.

Discussion of Results

This section discusses the influence of socio-economic characteristics on the choice of housing types of households. Residential choices have been studied from various perspectives by researchers in other regions (Kamyar et al., 2019; Hester & Willem, 2019). In some studies, demographic and socioeconomic variables have been identified as primary determinants of preference of housing type in other countries such as Canada and Nigeria (Kotulla et al., 2019; Ikenna & Sebnem, 2019), and this study is no exception. Demographic variables have been found to have influence on residential choices because household composition is related to housing needs (Kamyar et al., 2019). The study found majority of the respondents to be females. This finding is not surprising as it conforms to the general demographic characteristics of the Ghanaian population where women constitute about 51% of the general population (GSS, 2014s). That notwithstanding, it could also be viewed from another perspective where women are increasingly assuming the responsibility of household heads in many urban homes. It is also worthy to mention that the

researcher considered the women as a proxy in answering the questions in the absence of the men who are generally the households' heads during the data collection. Moreover, this could influence the soar in numbers of the females as household heads.

In furtherance, the study sought to find the association between socio-economic characteristics and housing choices of respondents. The study found the choice of housing type to be strongly associated with the sex of respondent. Males generally were found to prefer flat/apartment compared to their female counterparts. This may be attributed to the socio-cultural status expected of the male gender in the study areas. Males compared to females are expected to be seen as economically sound to take care of themselves and their female counterparts who may be their partners in relationships. In addition, one of the things to show a sense of maturity of a person in a Ghanaian community is the kind of housing type the person may live in. In so doing, the male respondents prefer housing types such as flat/apartments and semi-detached/detached houses to boost their images in the society. Again, as plans to marry and have families, many males plan to have flats/apartment and/or semi-detached houses to be able to accommodate their potential wives and children. These reasons may explain the strong association between housing type and the sex of the household head. This substantiates the findings of Hester & Willem (2019) that sex of households among other factors influence the selection of housing type.

Concerning ages of the respondents, the study found majority of the respondents to be between the age brackets 30 to 40 in the study areas. This may be because of the urban nature of the study areas where predominantly economic activities are more intense with young labour force steering affairs. It could also be because of the massive migration of people between the ages of 30 and 40 into the urban centres in search of jobs. Meanwhile, age was found not to have a strong association with

the choice of housing type of households in urban Ghana. Age may not be a matter much as income level or ability to afford would rather be significant in determining the housing choices of households as compared to their ages. For example, a 21-year-old person whose income level is high would be able to afford to rent a flat/apartment compared with a 51-year-old person with low-income level. This study contradicts the findings of Yirenkyi (2014) that age and others factors influence the selection of housing type among households. However, the multinomial logistic regression found that household head who is between 20 and 30 years relative to those between 51 and 60 years are less likely to live in semi-detached houses than compound houses. Again, this could be attributed to the ability of those between the ages of 51 and 60 years to build their own houses or to rent a semi-detached house. This finding is similar to Ikenna & Sebnem (2019) who assert that households' social class plays an important role in enabling households in home ownership.

The educational levels of the respondents were also sought. The findings show that majority of the respondents have formal education. The urban nature of the study might have influenced this finding. As the study was stratified to span through the various socio-economic spectrum (income, residential areas, education etc.) in the study areas, which were mainly urban, one would expect high educational levels among the respondents. Again, the study found educational attainment of respondents to have a strong association with the choice of housing type of households. It is imperative to note that the multinomial logistic regression found that household whose head had no-formal education compared with households whose heads had Master Degree are less likely to live in semi-detached houses than compound houses. This may be attributable to the perceived understanding the people with high educational attainment may have on the effects of housing on their health and the upbringing of their children. Again, this finding may be because of the fact

that educational level is mostly seen to raise the social status of people, which in turn affects their housing choices in the study areas. This finding corroborates Adjei & Kyei (2013) who placed overwhelming emphasis on the socioeconomic factor of education as causative agent to housing choices.

Furthermore, the study found majority of the respondents to be married in the study areas. Marital status of respondents was then found to have a strong association with the choice of housing type of households. This may be because marriage affects the number of households, thereby, affecting the kind of house that can accommodate the family. All other things being equal, as the number of households increases, the more the need for a larger apartment to accommodate the family for the purposes of comfortability. This finding is in consonance with the findings of Baqutaya et al. (2016) that education, income and marital status influence a household's decision to choose a housing type. Again, the study found majority of households' size to be between 4 and 6. This finding of the study is within the range of the average household sizes of the study areas (3.7 for Accra Metropolis, 4 for Kumasi Metropolis, Asokore-Mampong and Ga South Municipalities respectively) as stipulated by the Ghana Statistical Service (2014).

The study also found that the household does not have a significant relationship with the choice of housing type of households. This finding may be so because the choice of housing type may be highly influenced by the income levels of households as compared to the size of the household. . On the other hand, cultural beliefs may also influence the housing choices of households. For example, household head who hold in high esteem communal living would prefer a compound house to a flat/apartment or a semi-detached house. Besides, due to lack of strong formal social systems (Adult care centres), those with low incomes mostly prefer the compound houses to get

social leaning in times of need. This corroborates the findings of Kamyar et al. (2019) that family structure, life-course events, and social ties can significantly affect one's housing choices.

The study further found majority (80%) of the respondents to be Christians. Though not surprising, this finding is, however, a little above the national percentages for various religions (GSS, 2014) in Ghana; and the choice of the study settings may account for this. It is imperative to note that Christians dominate all the study areas with the exception of the Asokore Mampong Municipality. Religion was found not to have a significant relationship with the choice of housing type of households.

In addition, the study analysis found majority of the respondents to be in trading. The Accra and Kumasi Metropolises are the commercial hubs of Ghana. Therefore, commerce is the dominant economic activity in these areas. As a result, it is not surprising to find majority of the respondents in trading. In furtherance, occupation was found to have a significant relationship with the choice of housing type of households. In fact, occupation is a likely determinant of the income levels of households, thereby enhancing the affordability capabilities of households to choose flat/apartment or semi-detached house rather than a compound house. Moreover, the income level of household was found to have a significant relationship with the choice of housing type among households in the study areas. The multinomial logistic regression found that household with monthly income of less than GH¢1,000 compared to household with monthly income above GHs7000 are less likely to live in semi-detached houses than compound houses. Income level of a particular household would lubricate the ability to pay for a flat/apartment or semi-detached houses. As earlier stated, the income level of a household remains the major determinant of their housing choices because of ability to pay. Generally, when the incomes of households increase their preference for housing shift towards a flat/apartment or semi-detached houses. The finding

concurs with the assertion of Agyei & Kyei (2013) and Hinds et al. (2016) hat households with inadequate incomes are more likely to live in substandard housing units. They also mentioned that other factors such as levels of education and the employment status of heads of household also play a significant role in determining households' housing type

Finally, yet importantly, the study found a significant relationship between location of a community and the choice of housing type among respondents in the study areas. This may be attributed to the existing practice that high-income communities are mostly dominated with flats/apartments and semi-detached houses as compared to the middle- and low-income communities. As a result, a household living in high-income communities would prefer a flats/apartment and semi-detached houses as compared to a compound house due to the tradition in the community. This finding is not different from Filandri & Olagnero (2014) and Zhou (2018) that households' social class plays an important role in enabling the selection of housing type among households. So, to them, social stratification must be considered when looking at housing circumstances.

Conclusion and policy recommendations

The study found a significant relationship between socio-economic characteristics of households and their housing choices. The study has established a strong correlation between the choice of housing type and sex of the household head. Further, males were found to be more likely to prefer flats/apartment and semi-detached houses to compound houses compared with their female counterparts. However, the study found no significant association between the choice of housing type and age of household head. Additionally, the study posits that choice of housing type is significantly associated with educational level of the household head. Moreover, the study found

that those with higher education level prefer living in flats/apartment to compound houses. The study further found that the choice of housing type is significantly associated with marital status. Those who are married prefer to live in semi-detached houses to compound houses. In furtherance, the study found that the choice of housing type is not significantly associated with the household size.

In addition, the study found no significant relationship between the choice of housing type and the religion of the household. Further, the study found that the choice of housing type is significantly associated with occupation of the household head. Moreover, the study shows that the choice of housing type of household is significantly associated with monthly income of the households. The households with high income mostly prefer semi-detached houses to flat/apartment and compound houses. Again, the study found that the choice of housing type of household is significantly associated with location of the household. Those who live in high-income communities prefer to live in semi-detached houses to compound houses. The findings further show that most of the respondents prefer to live in semi-detached and flats/apartment houses compared to compound houses in the study areas. However, the study found that majority of respondents live in compound, which is a clear case of mismatch between housing preference and 'housing reality.'

Following from the findings, this study suggests the importance of an informed policy on neighbourhood design and development, particularly, when designing houses for people of particular socio-economic and cultural backgrounds. In furtherance, planners and architects should take into account the prevailing proxemics practices (cultural practices, educational level etc.). The study argues that there is the need to support proxemics rule where neighbours are arranged in particular ways according to the social interactions and cultural background.

Author's Contribution

We wish to state that all the authors had been personally and actively involved in substantive work leading to the research report. All the authors took part in the research design and data analysis of the manuscript preparation. We are, therefore, responsible for the content of this manuscript.

Declaration of Conflict of Interest

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Availability of Data and Material

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