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## Sustainable livable housing: A review of what traditional urban areas residents find important

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### ABSTRACT

Sustainable livable housing is pre-condition for healthy living, improve quality of life and critical to economic and social survival. It also encompasses various aspects that predominantly depend on economic, social, cultural and environmental (ESCE) conditions within the locality. To this end, this paper seeks to explore, classify and assess the sustainable livable housing attributes from the existing literatures through content analysis. A review of literature revealed a total of ninety two (92) constructs, which were further grouped nine (9) livable housing-related attributes groups. Well-structured questionnaires were administered to residents of traditional urban areas (TUA) of Iwo Osun State, Nigeria with ninety two (92) constructs on Likert scale. Data were analyzed using descriptive statistic and relative importance index (RII). Out of (92) constructs from nine (9) livable housing-related attributes groups, the results identified seventy eight (78) important attributes (i.e. 35 most important and 43 important) across groups and construct that TUA residents found important. Over RII was 0.409 for overall assessment of sustainable livable housing condition by TUA residents indicating that TUA residents are dissatisfied with their current housing conditions.

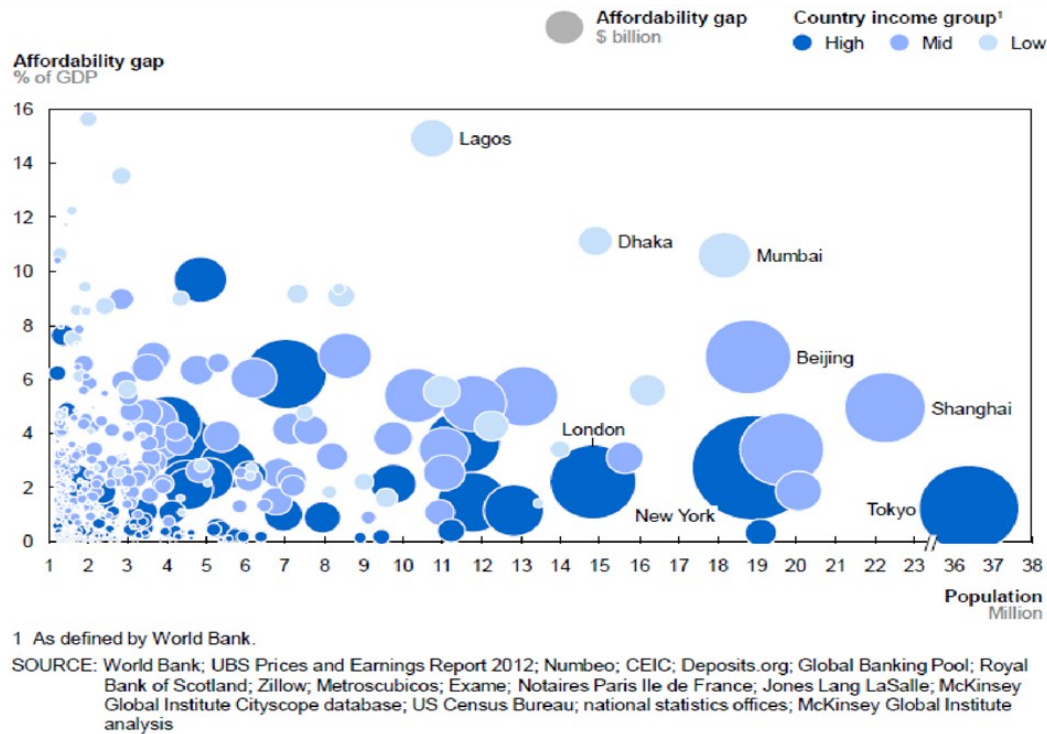
## 1. Introduction

Globally, 7.2 billion people (men, women or children) are struggling for their survival in the global economy. The poor among these billions are struggling for basic needs like food, housing, other basic facilities and services needed for bare survival. The poorest among them face daily life-and-death challenges of unsafe housing and other basic needs (Sachs, 2015). Despite the fact that living in house that meets one's needs is a fundamental human right to everyone, Golubchikov and Badyina (2012) reported that decent and safe housing has becomes a dream for majority of urban residents while governments perceive housing as a social burden, especially in most developing nations' and specifically their urban areas. But earlier studies opined that governments in some developing nations are persistent in their attempts at solving problem of affordable, adequate and sustainable housing provision (Ibem and Amole, 2010; Sengupta and Tipple, 2007; Sengupta and Sharma, 2009; Ademiluyi and Raji, 2008; Akinmoladun and Oluwoye, 2007; Obeng-Odoom, 2009; Mohit *et al.*, 2010). Figure 1 shows the global housing affordability gap across major cities of the world.

However, quantity of housing provided by various government does not match the prevailing need of the populace. In the existing housing, the prevailing housing living conditions in many African countries is worrisome, consequential and unacceptable. This situation called for all-inclusive approach by all housing stakeholders i.e. governments, private sectors, communities, local authorities, non-governmental organizations, development partner organizations, international communities etc. (Ubale *et al.*, 2013). This all-inclusive approach is in tandem Global Goals - Sustainable Development Goals (SDGs) signed by

193 countries in September 2015 and to be operational till 2030 towards dignity, prosperity, justice, partnership, planet and people. It is also important to note that SDGs are set of time-bound Goals to benchmark the success of both developing and developed countries in meeting their commitments towards 17 SDGs, with performance measured against 169 integrated and indivisible targets. Of these 17 goals with 169 targets, target 11.1 of goal 11 focuses on ensuring access for all to adequate, safe and affordable housing and basic services and upgrade slums in 2030 with a view to make housing livable and sustainable. This led to what constitute livable and sustainable housing

Concept of livability is difficult to define and evaluate (Wheeler, 2001; Balsas, 2004; Heylen, 2006; Throsby, 2005). Relatively, its actual meaning is a function of time, purpose and place of the assessment on one hand and of assessor value system on the other (Pacione, 2003). Also, it is about immediate and tangible conditions and interventions (i.e. now and here) thus more achievable (Ruth and Franklin 2014). Researches have also associated livability concept to many factors like: life quality, safety, health, services accessibility, living cost, comfort, air quality, transport/mobility, living standards, and social involvement (Howley *et al.*, 2009; Bishop and Syme, 1995). Also, livability has also been associated, linked and emerged together with sustainability (sustainable development) as concept by some researchers (Litman, 2011; Lowe *et al.*, 2013). This is why Litman (2011) remarked that livability is a subgroup of sustainability impacts that directly affect people in a community, such as economic development, affordability, public health, social equity and pollution exposure. It is upon this remark that Lowe *et al.* (2013) submitted that livability is a



*Figure 1: Housing affordability gap across major cities of the world.  
(Source: Adapted from Habitat, 2015)*

subset of sustainability and that no livability attributes is against sustainability criteria and program.

In social science, livability is a classification of happiness. Researches on happiness could be trace to the field of psychology, sociology, economics and health sciences with aims of bring prosperity characterized by happiness and life satisfaction (Veenhoven, 2004). He compares happiness with quality of life which are external (in term of environment and utility of life) and internal (life-ability of the person and satisfaction). This is in agreement with Wheeler (2001); Balsas (2004); (Throsby, 2005) believe that livability covers urban environment features that make urban area pleasing places to live and that such features are tangible and intangible. It is tangible if the feature is real such as availability of facilities, public infrastructures etc. and intangible such as social networks, native/local identity, sense of place etc.

Moreover and as stated earlier, Bishop and Syme (1995); Howley et al. (2009) have associated livability concept to comfortable living standards, life quality, health, safety sense, services accessibility, living cost, comfort, air quality, transport and mobility, living standards, and social involvement. This is in tandem Heylen (2006) who sees livability as environment from individual perspective and subjective evaluation of the quality of the housing conditions in such environment and Setijanti et al. (2015) who opine that it is living/environmental conditions which produce a combination of external opportunities and quality of life. With this understanding, one can consider (Competition and Commission, 2008) submission as a broad definition of livability which define it as community's wellbeing and features that make it where individuals want to live at present and in future.

In addition, literature on sustainable livable housing (SLH) is scanty and just evolving, as earlier works on livability focus more on community/neighborhood and cities/urban areas. According to Australia (2012), livable houses are dwellings that ensure all occupants' quality life at all life stages; easily accessible, navigate inside and around; cost-effective and easy adaptation; and occupants' changing needs responsive. It is, also, define as a safe, aesthetic, socially cohesive/inclusive, and environmentally sustainable place to be; characterized with various affordable housing that is well connected to economic, environment and social (EES) facilities and services such as employment, public open space, community shops, health services, education, leisure/cultural opportunities, other community services as well as accessible through walkways, cycling infrastructure, convenient public transport (Lowe et al., 2013).

To Shared Solution America online (2015), livable homes are homes that maximize successful independent living for all family members that poses no difficulty for all to perform daily living chores and activities with minimal effort and maximal safety. It is built to operate enjoyably, efficiently and economically. It also entails esthetic and functional universal design make homes usable to all regardless of their preference, age, ability, size etc. at every life stages. These definitions and opinions are more of design/ development focus than housing consumption. However, it is not enough for housing to be livable unless it is also sustainable (Musibau et al. 2016. This is why (Chazal, 2010) argued that an area is not truly livable unless it can be sustained over the long term.

Earlier, some studies were conducted on livability and focusing on public housing (Raji et al., 2012; Djebarni and Al-Abad, 2000; Iyanda

and Mohit, 2015; Mohit and Iyanda, 2015; Mohit and Iyanda, 2014), neighborhood (Leby and Hashim, 2010; Asiyabola et al., 2012; Yanmei, 2012), city/urban environment, (Omuta, 1988; Balsas, 2004; Chaudhury, 2005; Buys et al., 2013; Saitluanga, 2014; Pandey et al., 2014; Betanzo, 2011). Similarly, some studies were conducted on sustainable housing in urban area focusing on public housing (Ibem et al., 2015; Nicholas and Patrick, 2015; Ibem and Azuh, 2011; Olotuah and Bobadoye, 2011; Tan, 2011), housing production/provision/development (Van Wyk and Jimoh, 2015; Jimoh et al., 2014; Nicholas and Patrick, 2015; Jiboye, 2011a; Jiboye, 2011b). However, none of these studies focuses on traditional urban areas (TUAs) rather they all focused on public and planned housing areas and its neighbourhood/environment. This research tends to bridge the gap by exploring sustainable livable housing attributes from literature and determine therefrom important attributes to traditional urban areas residents.

## 2. Exploration of Sustainable Livable Housing Attributes from Literature

Previous studies revealed many attributes of measuring or achieving livability and sustainability depending on the focus or focuses study. Table 1 shows identified sustainable livable housing attributes based on various livability, sustainability and housing studies. As stated earlier, many of these studies has housing as an item in measuring livability and sustainability of neighborhood/community, city/urban environment, public housing estates amongst others. However, none of these studies focuses on traditional urban areas rather they all focused on public and planned housing areas and its neighborhood/environment. This research tends to bridge the gap. In this paper, through a comprehensive literature review, ninety two (92) constructs were identified with nine (9) livable housing-related attributes for sustainable livable housing assessment. An attempt was made to use the relative importance index (RII) method in identifying what traditional urban areas residents find important.

## 3. Materials and Methods

From existing literature and preliminary investigation conducted at the outset of this study, ninety two (92) constructs were identified for nine (9) livable housing-related attributes for sustainable livable housing assessment. A questionnaire was then drawn up and was divided into three sections. Section A sought to know the background of the respondents (residents), section B focused on housing characteristics while section C was focused on the nine (9) livable housing-related attributes for sustainable livable housing assessment. Also, the target population for this study are traditional urban area (TUA) residents in Iwo out of nine (9) major urban areas of: Iwo, Ejigbo, Ede and Ikire (Osun West); Ilesa and Ile-Ife (Osun East) and Ikirun, Ila-Orangun and Osogbo (Osun Central) recognized by Osun State Government, Nigeria. Being a pilot survey to an on-going PhD research work, the study focus on Osun West Senatorial District of the State. To this end, Iwo was purposely chosen because it is a major traditional urban area and headquarters of a federal constituencies and senatorial districts in the State. Unit of assessment is housing unit while household/residents of a housing unit represent the sample unit.

Moreover, stratified sampling was used on housing unit types or strata based on 2006 Housing and Population Census of Nigeria that stratified housing in Nigeria into: (i) house on separate stand or yard; (ii) traditional/hut structure made of traditional material; (iii) rooms/let in houses; (iv) informal/improvised dwelling; (v) flat in block of flats; (vi)

*Table 1: Sustainable and livable housing from previous researches*

Attributes	Proponents
Housing unit-related.	Omuta 1988; Vergunst 2003; Visser <i>et al.</i> 2005; Chaudhury 2005; Heylen 2006; Jasmin and Ahmad 2010; Namazi-Rad <i>et al.</i> 2012; Li <i>et al.</i> 2012; Buys <i>et al.</i> 2013; Saitluanga 2014; Pandey <i>et al.</i> 2014; Iyanda and Mohit 2015; Mohit and Iyanda 2015; Raji <i>et al.</i> 2016
Safety and security-related.	Chaudhury 2005; Heylen 2006; Jasmin and Ahmad 2010; Leby and Hashim 2010; Asiyabola <i>et al.</i> 2012; Lawanson <i>et al.</i> 2013; Mohit and Iyanda 2015; Raji <i>et al.</i> 2016
Healthy environment-related.	Omuta 1988; Vergunst 2003; Balsas 2004; Visser <i>et al.</i> 2005, Chaudhury, 2005; Heylen, 2006; Leby and Hashim 2010; Asiyabola <i>et al.</i> 2012; Li <i>et al.</i> 2012; Saitluanga 2014; Pandey <i>et al.</i> 2014; Iyanda and Mohit 2015; Mohit and Iyanda 2015; Raji <i>et al.</i> 2016
Educational choice-related.	Omuta 1988; Asiyabola <i>et al.</i> 2012; Namazi-Rad <i>et al.</i> 2012; Yanmei 2012; Pandey <i>et al.</i> 2014; Raji <i>et al.</i> 2016
Transportation choice-related.	Balsas 2004; Betanzo 2011; Asiyabola <i>et al.</i> 2012; Namazi-Rad <i>et al.</i> 2012; Yanmei 2012; Lawanson <i>et al.</i> 2013; Saitluanga 2014; Pandey <i>et al.</i> 2014; Raji <i>et al.</i> 2016
Public amenities-related.	Djebarni and Al-Abed 2000; Vergunst 2003; Balsas 2004; Visser <i>et al.</i> 2005; Chaudhury 2005; Heylen 2006; Jasmin and Ahmad 2010; Leby and Hashim 2010; Asiyabola <i>et al.</i> 2012; Yanmei 2012; Lawanson <i>et al.</i> 2013; Saitluanga 2014; Pandey <i>et al.</i> 2014; Iyanda and Mohit 2015; Raji <i>et al.</i> 2016
Community/neighborhood-related.	Holt-Jensen 2001; Vergunst 2003; Balsas 2004; Visser <i>et al.</i> 2005; Chaudhury 2005; Leby and Hashim 2010; Asiyabola <i>et al.</i> 2012; Namazi-Rad <i>et al.</i> 2012; Li <i>et al.</i> 2012; Yanmei 2012; Buys <i>et al.</i> 2013; Lawanson <i>et al.</i> 2013; Saitluanga 2014; Pandey <i>et al.</i> 2014; Iyanda and Mohit 2015; Mohit and Iyanda 2015; Raji <i>et al.</i> 2016
Economic development-related.	Omuta, 1988; Vergunst 2003; Yanmei 2012; Saitluanga 2014; Iyanda and Mohit 2015; Mohit and Iyanda 2015; Raji <i>et al.</i> 2016
Psychology impact-related.	Djebarni and Al-Abed 2000; Holt-Jensen 2001; Balsas 2004; Leby and Hashim 2010; Asiyabola <i>et al.</i> 2012; Raji <i>et al.</i> 2016; Saitluanga 2014; Mohit and Iyanda 2015

semi-detached house; and (vii) others. It is important to state that four housing strata/types were taken as housing type typical of traditional urban setting (i.e. house on separate stand or yard, traditional/hut structure made of traditional material, rooms/let in houses and informal/improvised dwelling) while the remaining three housing strata/types were taken as housing units found in modern areas of the urban areas.

Out of 100 questionnaire administered in collecting data from 100 housing units randomly selected across the housing type strata, 93 were returned and devoid of missing and incoherent values which represents 93%. The respondents were asked to assess ninety two (92) constructs of the nine (9) livable housing-related attributes for sustainable livable housing assessment through 5-point Likert (of (1= not important; 2= less important; 3= neutral; 4= important; 5= very important).

In addition, data were analyzed with descriptive and inferential statistics specifically Relative Importance Index (RII) was used to determine most important livable housing-related attributes for sustainable livable housing assessment. In the literature, RII approach has been used on various types of studies (Gunduz et al. 2012; Adegoke 2016; Tanko et al. 2017). Respondents (residents) were investigated with Likert scale so as to determine the relative importance index (RII) of the ninety two (92) constructs of the nine

Table 2: RII and ranking of sustainable livable attributes

Attributes	Code	NI (1)	LI (2)	N (3)	I (4)	MI (5)	Sum	RII	Rank within	Rank	Ranking
<b>Housing Unit</b>											
Living in Urban Area	HU1	11	34	132	32	65	274	0.589	20 <sup>th</sup>	82 <sup>nd</sup>	N
Living in crowded Housing Units	HU2	4	36	63	180	25	308	0.662	14 <sup>th</sup>	66 <sup>th</sup>	I
Housing unit too small in size	HU3	1	20	60	140	135	356	0.766	6 <sup>th</sup>	18 <sup>th</sup>	MI
Housing Unit Accessible by Road	HU4	7	12	39	212	70	340	0.731	10 <sup>th</sup>	39 <sup>th</sup>	I
Bathroom in your housing unit	HU5	1	8	54	136	180	379	0.815	1 <sup>st</sup>	3 <sup>rd</sup>	MI
Toilet facility in your housing unit	HU6	2	18	84	96	150	350	0.753	7 <sup>th</sup>	25 <sup>th</sup>	MI
Kitchen in your housing unit	HU7	1	14	39	180	135	369	0.794	3 <sup>rd</sup>	8 <sup>th</sup>	MI
Housing unit connected to electricity main	HU8	3	24	153	64	55	299	0.643	16 <sup>th</sup>	75 <sup>th</sup>	I
Independent water source to your housing unit	HU9	3	16	69	140	120	348	0.748	8 <sup>th</sup>	27 <sup>th</sup>	MI
Living in a share housing unit	HU10	9	38	90	84	70	291	0.626	18 <sup>th</sup>	79 <sup>th</sup>	N
Continuing living in the housing unit	HU11	4	24	42	172	100	342	0.735	9 <sup>th</sup>	36 <sup>th</sup>	I
Quality of your housing unit acceptability	HU12	7	36	105	100	40	288	0.619	19 <sup>th</sup>	80 <sup>th</sup>	N
Parking space	HU13	7	40	87	60	110	304	0.654	15 <sup>th</sup>	69 <sup>th</sup>	I
Poor state of repair	HU14	5	18	21	188	125	357	0.768	5 <sup>th</sup>	17 <sup>th</sup>	MI
Nearby clinic/health facilities	HU15	9	36	75	112	65	297	0.639	17 <sup>th</sup>	78 <sup>th</sup>	I
Housing unit enough for no.of people who stay	HU16	4	20	48	196	70	338	0.727	11 <sup>th</sup>	42 <sup>nd</sup>	I
Nearness to family or other supports	HU17	3	10	27	188	145	373	0.802	2 <sup>nd</sup>	4 <sup>th</sup>	MI
Nearness to football field/playground	HU18	4	22	42	212	55	335	0.720	13 <sup>th</sup>	46 <sup>th</sup>	I
Nearness to the shops, laundries, and food courts	HU19	6	8	75	172	75	336	0.723	12 <sup>th</sup>	45 <sup>th</sup>	I
Housing unit suitability for the disable/old person	HU20	1	6	51	212	95	365	0.785	4 <sup>th</sup>	11 <sup>th</sup>	MI
<b>Safety &amp; Security</b>											
Guards at your place/area (day and night)	SS1	2	14	42	220	75	353	0.760	4 <sup>th</sup>	20 <sup>th</sup>	MI
Safe walking at night in your area	SS2	4	10	30	200	120	364	0.783	2 <sup>nd</sup>	12 <sup>th</sup>	MI
Living in noisy area	SS3	8	12	57	172	85	334	0.718	10 <sup>th</sup>	49 <sup>th</sup>	I
Trust your neighbors	SS4	6	20	66	140	100	332	0.714	11 <sup>th</sup>	51 <sup>st</sup>	I
People in your place involving in crime	SS5	5	14	57	152	120	348	0.748	6 <sup>th</sup>	28 <sup>th</sup>	MI
Feeling safe where you are living	SS6	6	8	30	148	180	372	0.800	1 <sup>st</sup>	5 <sup>th</sup>	MI
Guards keeping awake at night	SS7	3	20	54	136	140	353	0.759	4 <sup>th</sup>	21 <sup>st</sup>	MI
Availability of fire hose	SS8	4	30	78	112	100	324	0.697	13 <sup>th</sup>	56 <sup>th</sup>	I
Residents in your area involve in drugs	SS9	8	16	66	144	95	329	0.708	12 <sup>th</sup>	53 <sup>rd</sup>	I
Residents in your area involve in petty crimes	SS10	4	24	45	180	85	338	0.727	9 <sup>th</sup>	43 <sup>rd</sup>	I
Residents in your area involve in house robbing	SS11	1	16	33	224	85	359	0.772	3 <sup>rd</sup>	15 <sup>th</sup>	MI
Residents in your area involve in bag snatching	SS12	5	30	69	132	85	321	0.690	14 <sup>th</sup>	59 <sup>th</sup>	I
Kidnapping cases ever reported around your place	SS13	3	30	42	136	135	346	0.744	7 <sup>th</sup>	31 <sup>st</sup>	MI
Police posts/patrol near/around your place	SS14	7	26	36	116	160	345	0.742	8 <sup>th</sup>	32 <sup>nd</sup>	MI
<b>Healthy Environment</b>											
Waste/rubbish being taken care frequently	HE1	5	16	42	148	145	356	0.766	2 <sup>nd</sup>	19 <sup>th</sup>	MI
Mosquitos or flies complaint/disturbance	HE2	11	44	93	84	40	272	0.585	6 <sup>th</sup>	83 <sup>rd</sup>	N
Clean air quality	HE3	14	76	81	44	15	230	0.495	8 <sup>th</sup>	90 <sup>th</sup>	LI
Living somewhere which is too dirty	HE4	4	24	36	160	125	349	0.751	3 <sup>rd</sup>	26 <sup>th</sup>	MI
Living somewhere which costly to cool	HE5	12	66	105	36	20	239	0.514	7 <sup>th</sup>	88 <sup>th</sup>	LI
Satisfied with electromagnetic (power lines, masts)	HE6	0	14	42	200	110	366	0.787	1 <sup>st</sup>	10 <sup>th</sup>	MI
Satisfied with quality of drinking water supply	HE7	14	32	81	100	55	282	0.606	5 <sup>th</sup>	81 <sup>st</sup>	N
Vehicle, industrial & other pollution/disturbance	HE8	5	48	72	104	70	299	0.643	4 <sup>th</sup>	76 <sup>th</sup>	I
<b>Educational Choice</b>											
Childcare availability	EC1	11	30	63	96	110	310	0.667	3 <sup>rd</sup>	65 <sup>th</sup>	I
Nearness to child's pre-/primary/secondary schools	EC2	2	22	87	124	100	335	0.720	1 <sup>st</sup>	47 <sup>th</sup>	I
Child use school bus to go into the school	EC3	4	20	90	116	100	330	0.710	2 <sup>nd</sup>	52 <sup>nd</sup>	I
<b>Transportation Choice</b>											
Children schools transportations problems	TC1	6	28	81	96	110	321	0.690	6 <sup>th</sup>	60 <sup>th</sup>	I
Usage of private transportation	TC2	5	56	114	72	20	267	0.574	8 <sup>th</sup>	84 <sup>th</sup>	N
Having A car in your housing unit	TC3	2	18	36	180	125	361	0.776	3 <sup>rd</sup>	13 <sup>th</sup>	MI
Having more than one cars	TC4	45	84	9	12	0	150	0.323	9 <sup>th</sup>	92 <sup>nd</sup>	NI
Public transportation usage	TC5	4	12	60	160	115	351	0.755	5 <sup>th</sup>	24 <sup>th</sup>	MI
Housing unit nearness to motor parks/bus station	TC6	5	30	63	188	25	311	0.669	7 <sup>th</sup>	64 <sup>th</sup>	I
Motorcycle easily comes to your housing unit	TC7	7	14	3	172	175	371	0.798	1 <sup>st</sup>	6 <sup>th</sup>	MI
Spending more money on transportation	TC8	2	12	39	244	55	352	0.757	4 <sup>th</sup>	23 <sup>rd</sup>	MI
Taxis easily comes to your housing unit	TC9	4	12	12	212	130	370	0.796	2 <sup>nd</sup>	7 <sup>th</sup>	MI

Table 2: RII and ranking of sustainable livable attributes (continued)

Attributes	Code	NI (1)	LI (2)	N (3)	I (4)	MI (5)	Sum	RII	Rank within	Rank	Ranking
<b>Public Amenities</b>											
Nearness to markets	PA1	2	16	6	196	160	380	0.817	2 <sup>nd</sup>	2 <sup>nd</sup>	MI
Nearness to groceries	PA2	6	14	57	148	120	345	0.742	3 <sup>rd</sup>	33 <sup>rd</sup>	MI
Nearness to public library	PA3	5	32	93	124	50	304	0.654	9 <sup>th</sup>	70 <sup>th</sup>	I
Nearness to playground	PA4	9	22	42	96	175	344	0.740	4 <sup>th</sup>	34 <sup>th</sup>	MI
Nearness to shopping complex	PA5	4	10	24	112	240	390	0.839	1 <sup>st</sup>	1 <sup>st</sup>	MI
Nearness to any sports facilities	PA6	1	18	99	116	105	339	0.729	6 <sup>th</sup>	41 <sup>st</sup>	I
Access/coverage of internet/broadband	PA7	2	22	102	156	35	317	0.682	7 <sup>th</sup>	62 <sup>nd</sup>	I
Nearness to place of worship places	PA8	6	38	57	152	55	308	0.662	8 <sup>th</sup>	67 <sup>th</sup>	I
Availability of drainage system	PA9	1	32	51	156	100	340	0.731	5 <sup>th</sup>	40 <sup>th</sup>	I
<b>Community/Neighborhood</b>											
Neighbors friendliness	CN1	1	12	66	204	65	348	0.748	4 <sup>th</sup>	29 <sup>th</sup>	MI
Neighbors helpful	CN2	0	6	69	208	75	358	0.770	2 <sup>nd</sup>	16 <sup>th</sup>	MI
Like your neighbours	CN3	5	10	30	164	160	369	0.794	1 <sup>st</sup>	9 <sup>th</sup>	MI
Trust your neighbours	CN4	3	20	54	136	140	353	0.759	3 <sup>rd</sup>	22 <sup>nd</sup>	MI
Staying in a close community	CN5	8	30	69	168	25	300	0.645	8 <sup>th</sup>	74 <sup>th</sup>	I
Facing problems with neighbours	CN6	7	28	57	200	15	307	0.660	6 <sup>th</sup>	68 <sup>th</sup>	I
Community club/association	CN7	8	14	36	216	60	334	0.718	5 <sup>th</sup>	50 <sup>th</sup>	I
Being member of any of the association	CN8	5	36	75	152	35	303	0.652	7 <sup>th</sup>	71 <sup>st</sup>	I
<b>Economic Development</b>											
Place of work near to your housing unit	ED1	3	26	144	80	45	298	0.641	6 <sup>th</sup>	77 <sup>th</sup>	I
Affording living near to work	ED2	1	24	105	80	125	335	0.720	2 <sup>nd</sup>	48 <sup>th</sup>	I
Moving nearer to place of work	ED3	5	28	99	84	100	316	0.680	5 <sup>th</sup>	63 <sup>rd</sup>	I
Housing unit price/rent suite your incomes	ED4	2	22	63	160	95	342	0.735	1 <sup>st</sup>	37 <sup>th</sup>	I
Work in the same urban where you live	ED5	3	34	63	128	100	328	0.705	3 <sup>rd</sup>	54 <sup>th</sup>	I
Home nearness to commercial/industrial zone	ED6	5	32	48	172	65	322	0.692	4 <sup>th</sup>	57 <sup>th</sup>	I
<b>Psychological Impact</b>											
Happiness with where you are living	PI1	4	18	81	100	140	343	0.738	3 <sup>rd</sup>	35 <sup>th</sup>	MI
Stressed with where you are living	PI2	6	42	96	44	115	303	0.652	9 <sup>th</sup>	72 <sup>nd</sup>	I
Place is affecting your child's behavior	PI3	3	48	90	76	85	302	0.649	10 <sup>th</sup>	73 <sup>rd</sup>	I
Ashamed of inviting friends	PI4	4	38	54	124	105	325	0.670	6 <sup>th</sup>	55 <sup>th</sup>	I
Tensed thinking of your house condition	PI5	0	24	69	140	115	348	0.748	2 <sup>nd</sup>	30 <sup>th</sup>	MI
Child(s) spend most time outside the house	PI6	3	44	39	172	60	318	0.684	8 <sup>th</sup>	61 <sup>st</sup>	I
House size affecting child's growth & well-being	PI7	17	50	99	60	15	241	0.518	13 <sup>th</sup>	87 <sup>th</sup>	LI
Feeling tense & cannot breath because of house size	PI8	4	36	45	172	65	322	0.692	7 <sup>th</sup>	58 <sup>th</sup>	I
Worried over possibility of house robbery	PI9	4	10	48	168	130	360	0.774	1 <sup>st</sup>	14 <sup>th</sup>	MI
Feeling jittery because of noises and pollutions	PI10	15	62	114	28	10	229	0.492	15 <sup>th</sup>	91 <sup>st</sup>	LI
Any changes on your child's attitude as an outcome of the place you are staying	PI11	6	14	63	144	115	342	0.735	4 <sup>th</sup>	38 <sup>th</sup>	I
Feeling depressed when you heard about the cases of crimes at your place	PI12	7	18	45	168	100	338	0.727	5 <sup>th</sup>	44 <sup>th</sup>	I
Finding it difficult to live in that kind of house but you have no other choice	PI13	9	46	120	60	30	265	0.570	11 <sup>th</sup>	85 <sup>th</sup>	N
Worry about your family because of the unsafe house environment	PI14	6	54	120	64	20	264	0.568	12 <sup>th</sup>	86 <sup>th</sup>	N
Feeling indecisive & think whether to go back home or stay outside all the time	PI15	19	54	99	44	15	231	0.497	14 <sup>th</sup>	89 <sup>th</sup>	LI
<b>Overall satisfaction</b>											
<b>Attributes Overall satisfaction</b>	<b>Code</b>	<b>VD (1)</b>	<b>D (2)</b>	<b>N (3)</b>	<b>S (4)</b>	<b>VS (5)</b>	<b>Sum</b>	<b>RII</b>			<b>Rank</b>
Overall satisfaction of current housing unit	OSHU	30	64	84	12	0	190	0.409			D

Where: NI is not important; LI is less important; N is neutral; I is important; and MI is most important.  
 VD is very dissatisfied; D is dissatisfied, N is neutral, S is satisfied; and VS is very satisfied.

(9) livable housing-related attributes for sustainable livable housing assessment. The RII was investigated using:

$$RII = \frac{\sum W}{A \times N}$$

Whereas:

W represents weight given to each factor by the residents (i.e. 1=not important to 5=most important).

A represents highest weight

N represents total number of residents responded.

And a decision rule was adopted in determining the ranges for most important (MI) to not important (NI) using:

$$RII \text{ Decision Rule} = \frac{(Max RII - Min RII)}{A}$$

Please refer to Table 2.

#### 4. Research Findings, Results and Discussion

Tables 2 depicts residents' ranking of the sustainable livable housing attributes within and among the grouping. The 1st and 2nd most important attributes are nearness to shopping complex (RII=0.838) and nearness to markets nearness to markets (RII=0.817) under public amenities-related attributes. Bathroom within housing unit (RII=0.815) and nearness to family or other supports (RII=0.802)

under housing unit-related attributes ranked 3rd and 4th. Feeling safe where you are living under safety & security-related attributes was ranked 5th. Figure 2 showcases pictorial clustered view of the important, neutral, less important and not important attributed .

As evidenced from Table 3, this study revealed six (6) most important SLH attributes groups which include: public amenities-related; housing unit-related; safety and security-related; transportation choice-related; community/neighbourhood -related and healthy environment- related groups. Out of nine (9) SLH attributes groups, educational choice-related attributes, economic development-related attributes and psychology impact-related attributes groups did not fall under the ten (10) most important sustainable livable housing attributes to traditional urban residents.

#### 5. Conclusions

The study has identified ninety two (92) attributes for sustainable livable housing assessment from the literature. It further classified the sustainable livable housing attributes into nine (9) sustainable livable housing-related attributes groups. Out of these nine (9) livable housing -related attributes groups, one is housing unit-related, one is economic development-related, four groups are facilities and services-related (healthy environment, educational choice, transportation choice and public amenities) and three are socio-psychological-related (safety and security, Community/neighborhood, and psychology impact). Of these ninety two (92) attributes from nine (9) livable housing-related attributes groups, the study has also identified seventy eight (78) attributes, from the same nine (9) sustainable livable housing-related attributes groups, that traditional urban areas residents find important

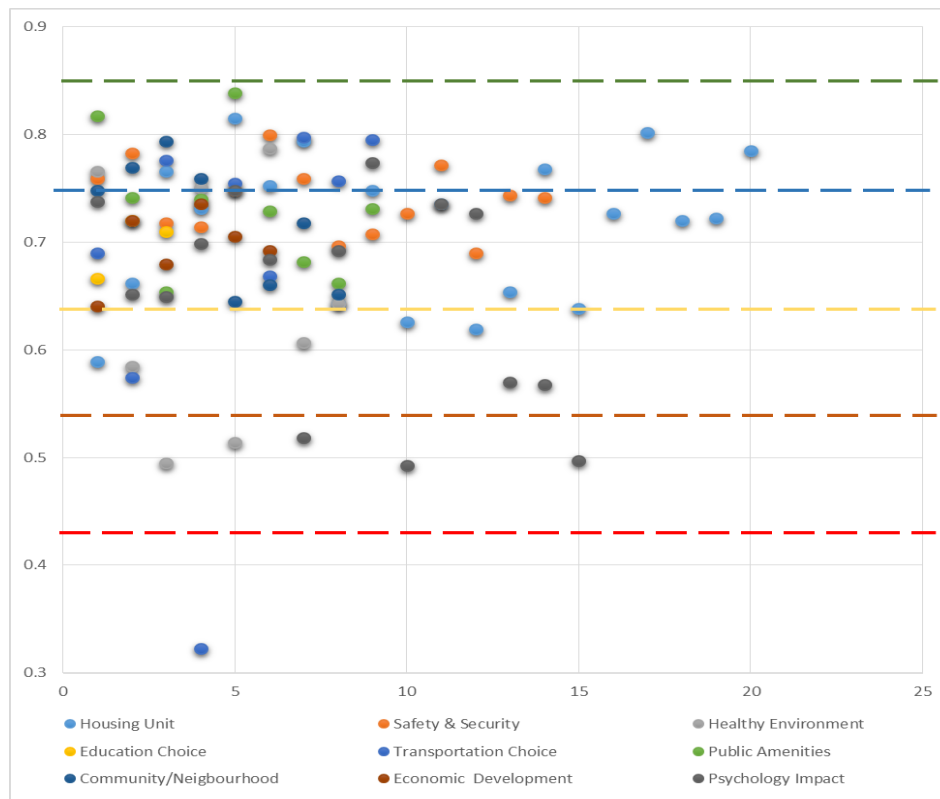


Figure 2: RII and ranking sustainable livable housing attributes

**Table 3:** Top ten (10) most important sustainable livable housing attributes to traditional urban areas residents.

Attributes	Code	Attributes	RII	Rank
Nearness to shopping complex	PA5	Public amenities-related	0.839	1 <sup>st</sup>
Nearness to markets	PA1	Public amenities-related	0.817	2 <sup>nd</sup>
Bathroom in your housing unit	HU5	Housing unit-related	0.815	3 <sup>rd</sup>
Nearness to family or other supports	HU17	Housing unit-related	0.802	4 <sup>th</sup>
Feeling safe where you are living	SS6	Safety and security-related	0.800	5 <sup>th</sup>
Motorcycle easily comes to your housing unit	TC7	Transportation choice-related	0.798	6 <sup>th</sup>
Taxis easily comes to your housing unit	TC9	Transportation choice-related	0.796	7 <sup>th</sup>
Kitchen in your housing unit	HU7	Housing unit-related	0.794	8 <sup>th</sup>
Like your neighbors	CN3	Community/neighborhood-related	0.794	9 <sup>th</sup>
Satisfied with electromagnetic (power lines, masts)	HE6	Healthy environment-related	0.787	10 <sup>th</sup>

(35 most important and 43 important) for sustainable livable assessment of their housing.

In TUAs context, nearness to shopping complex and nearness to markets (public amenities-related group), bathroom within housing unit, kitchen within housing unit and nearness to football field/playground (housing unit-related group), motorcycle easily comes to your housing unit and taxis easily comes to your housing unit from transportation choice-related group; like your neighbors (community/neighborhood-related group), satisfied with electromagnetic like power lines, masts, etc. (healthy environment-related group), feeling safe where you are living (safety and security-related attributes) are ten (10) most important sustainable livable housing attributes.

While public amenities-related; housing unit-related; safety and security-related; transportation choice-related; community/neighborhood-related and healthy environment-related groups are the six (6) important sustainable livable housing-related attributes groups. These are seen as major attributes in providing the basic and ambience sustainable livable housing conditions in the traditional urban areas.

Moreover, TUA residents felt that inbuilt housing facilities and public amenities and socio-psychological needs have serious impact on them and need to be planned in an integrated manner for desired sustainable livable housing. They envisioned their housing units with all inbuilt housing facilities and public amenities so as to ameliorate existing housing living condition in the TUA. Also, sense of safety and security as well as community/neighborhood are very sacrosanct to TUA residents' desire for sustainable livable housing. This is perceived in term of: feeling safe and safe walking; availability of guards day and night; TUA residents' involvement in drugs, petty crime, house robbing, bag snatching, kidnapping; neighbor friendliness, helpful, trust and being member of community association. They also desire ease of mobility that would enable them catering for daily needs within shortest possible distance with emphasis on availability of services and amenities in quantitative and qualitative forms. For instance, quantitative and

qualitative availability of water supply, sewerage, storm drainage etc. Hence sustainable livable housing in TUA context refers to both good quantity and quality in-built housing facilities and public amenities, a clean and pollution free environment which would also instill a sense of identity, safety and community living amongst residents.

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