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Measuring Housing Stress in Rental Condominiums: The Case of Public Service Employees in Akaki – Kality Sub-city, Addis Ababa

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Abstract

The study aimed at assessing the level of housing stress as a consequence of rent and non-rent factors of housing stress encountered by renter public sector employees. To meet the objectives of the study a mixed research approach was employed to use both quantitative and qualitative data. A questionnaire survey was carried out to collect the required data from 385sample households who are renter public sector employees. Secondary data collected from both published and unpublished documents. Tables and percentages to show variance, the '30-only rule', and mean income analysis employed to show the level of housing stress as a function of rent and income. A multiple response analysis is applied to assess the impacts of rent on non-housing needs to indicate the level of housing stress. A bar graph is applied to show the distribution of renter households by work place. The findings reveal that all renter public sector employees are suffering from housing stress caused by both rent and non-rent factors. The majority of the renter households pay a monthly rent above the 30 percent threshold and unable to meet other non-housing needs adequately after paying for housing rent. Regarding the non-rent factors, all renter households are free from housing stress emanating from housing crowding but over half of them are exposed to housing stress due to daily commuting between work place and home. Finally the study recommends the implementation of market based rent allowance and strategies to enable renter public service employees to be house owners.

Key Words: Housing Stress, Rent, condominium

1. Introduction

Affordability problems emerge when housing costs increase faster than household incomes. Affordability can only be improved through a significant reduction in market rents and prices, direct housing subsidies to households or, more realistically through large scale new housing supply (Rowley, & Ong, 2012, Kim, 2009). Housing affordability affects new household formation so policy must address this issue by overcoming existing housing supply barriers and quantifying the supply needed to deliver diverse and affordable housing for low-moderate-income groups. Besides reliable and strong evidence base is required to set specific local area

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affordable housing targets to meet the housing needs of low-moderate-income earners in their local housing markets.

Therefore, it is found essential to move towards housing market and housing needs assessment, which include the demand for various types of affordable housing, to provide a reliable evidence base for setting housing supply targets to address the negative outcomes of declining affordability. As stated in UN-Habitat (2011) a major challenge facing securing affordable housing for low –income Ethiopians has been access to housing finance following the market-led adjustments implemented in the post-1991 period, subsidized interest rates were removed which significantly increased lending rates. The same study further explains that the increased rates severely reduced the opportunity for low-income households and the majority public sector employees to secure a home loan. This study mainly focuses on the public service employees who are vulnerable to increasing rents of housing in Addis Ababa the capital city of the country and seat of numerous International Organizations. In the light of this developing policies and strategies to deliver affordable rental housing to meet the need of the increasing public sector employees requires especial government intervention.

In Addis Ababa renting has been an important form of tenure and most units are rented from private owners. The Integrated Housing Development Program (IHDP) which is government-led initially aimed at enabling the urban low and middle-income groups to be home owners. In Addis Ababa the IHDP has greatly increased the number of home owners that would never otherwise have owned a home. In parallel it has benefited the housing market by increasing the supply of owner occupied housing and rental units. Among the would- be beneficiary of the program employees of the public service are highly expected. The public service employees have got the opportunity of either being home owners or access to rental units.

This study is inspired by the recent widespread discussion on housing stress. Housing stress has become an important economic challenge for families and a salient public policy challenge for governments (Tanton et al., 2008). However, there is no general consensus about the method of measuring this important public policy concept. A commonly used method of measuring housing stress defines a household or a family to be in housing stress if it spends more than 30 per cent of its gross income on housing costs.

Although the condominium housing initially not meant for rent a growing number of renter households live in condominium units including public service employees. A number of studies have been made on different aspects of condominium housing in Addis Ababa and other major cities of the country. For instance a study made by Tesfaye, (2016) explores the post-occupancy management problems, Zelalem, (2012) aims at exploring and analyzing the determinant factors that influence performance of owners association in Bahir Dar city. On the other hand the work of Simon (2015) addresses the general supply of condominium housing for households living in slums in Addis Ababa. Tebarek, (2013) explored the impact of housing and urban development –induced displacement on poor female –headed households and the work of Agazi, and Alula, (2013) considers the views of young lives, adult, community leaders and households regarding their new house i.e. condominium. All studies made by the mentioned scholars indicated above took up different issues strongly attached to condominium housing. Unlike the studies mentioned this one is devoted to investigate the pervasive housing stress as a consequence of rent based and non-rent factors affecting the wellbeing of renter public sector employees including their families living in rental condominium housing.

Thus the study aims to explore level of housing stress as a function of house rent rates and income, identify rent and non-rent factors of housing stress encountered by renter public sector

employees and recommend strategies to be enforced by the government to facilitate rent affordability and ease the level of housing stress for public service employees. Based on the objectives explained, the study attempted to seek answers to the following questions. What is the level of housing stress as a function of rent rates and income of public sector employees? What are rent and non-rent measures of housing stress encountered by renter public sector employees? What are the strategies to be enforced by the government to facilitate rent affordability and ease housing stress for public service employees?

Thus, this study was aimed at assessing housing stress faced by renters of condominium houses. Section – One presents introduction to the study. In Section - Two, as part of the literature review contains conceptual definitions of housing stress and housing affordability, the 30 percent benchmark of income standard for housing affordability, **rating housing affordability,** factors that contribute to housing affordability, extent and impacts of housing stress and lessons learned. The methodology employed to collect and analyze data have been explained in Section - Three. In Section - Four the analysis and interpretation of data contains rent based housing stress, mean income analysis, non- housing indicators of housing stress, Non-Rent Measures of Housing Stress and distribution of renters by place of work. Finally, in Section- Five, the conclusion dealing with the findings of the research and recommendations are presented.

2. Literature Review

2.1 Defining Housing Stress and Housing Affordability

Housing affordability is a complex issue, yet it can perhaps best defined using a common benchmark known as “housing stress”. A reasonable setting of the benchmark, specifically chosen in order not to overstate the problem, is that households, who pay more than 30 percent of their income on housing costs, whether renting or buying, are said to be in housing stress (Kim, 2009, p.7).

The concept of *housing stress* has been of interest to government since the mid-1990s, particularly the issues of definition and data (King, 1994; Karmel, 1998). The Australian National Centre for Social and Economic Modeling (NATSEM) also started reporting the measure in the late 1990s (Landt & Bray, 1997) and have continued to do so ever since. As explained further by the same scholars, policy-makers were quick to embrace the measure because it was easy to understand, provided a quick indicator of ‘housing affordability’, and were convenient to incorporate within policy documents to support housing strategies. According to Flood (2012), the Australian Bureau of Statistics became aware of the conceptual problems associated with housing stress in the middle part of the last decade and became concerned because the measure was becoming so politically important. The Australian Bureau of Statistics at first modified the definitions and then rejected the indicator stating it did not measure what it was supposed to. However, housing stress figures are still widely reported to support claims of housing affordability declines and calls for more affordable housing.

Housing stress is currently being used as a proxy for all housing affordability driven outcomes. Policy-makers and the press tend to report all households that fall within the definition of housing stress as having financial problems and therefore there is a need for more ‘affordable housing’. There is no mention of a household entering stress by choice and the positive benefits of such a decision. The definition being applied in this way also assumes that households not in stress have no negative housing-related wellbeing outcomes (Rowley, and Ong, 2012).

As explained in the work of Rowley, and Ong, (2012), the trouble with existing debates surrounding housing affordability is the narrow focus on measuring the problem rather than understanding its wider implications. Ratio measures such as housing stress and price to income are applied in two ways. First, measures such as housing stress seek to quantify the affordability position of those already consuming housing, i.e. ignoring those that are homeless, in inappropriate housing or who cannot afford to form a household in an area within their existing community or with suitable employment opportunities. Second, price to income ratios establish a measure of general affordability at a defined spatial scale, commonly by suburb rather than defined housing sub-market. These ratios are usually designed to highlight how many multiples of income a median income household would require to consume typical housing within a suburb. These measures are headline grabbing because they provide an easy to understand quantification of affordability and are more applicable to assessing affordability for new purchasers rather than existing households.

2.2 The 30 Percent Benchmark of Income Standard for Housing Affordability

According to Di Napoli (2014), talk of housing affordability is plentiful, but a precise definition of housing affordability is at best ambiguous. The repeated amendments made on the Housing Act between 1937 –1981, in the United States, to determine standard bench mark in relation to income prove the above explanations sufficiently. The conventional public policy indicator of housing affordability in the United States is the percent of income spent on housing. Housing expenditures that exceed 30 percent of household income have historically been viewed as an indicator of a housing affordability problem. The conventional 30 percent of household income that a household can devote to housing costs before the household is said to be "burdened" evolved from the United States National Housing Act of 1937. The National Housing Act of 1937 created the public housing program, a program that was designed to serve those "families in the lowest income group." Income limits rather than maximum rents were established for family eligibility to live in public housing; that is, a tenant's income could not exceed five to six times the rent. By 1940, income limits gave way to the maximum rent standard in which rent could not exceed 20 percent of income – in practice, the same as the predecessor income limit standard. The Housing Act of 1959 maintained maximum rents, but it also gave local public housing authorities more autonomy in establishing them. By 1969, the escalation of rents by public housing authorities struggling to meet spiraling operation and maintenance costs nearly nullified the purpose of the public housing program established in 1937 to serve the nation's neediest. To reverse this, the Brooke Amendment (1969) to the 1968 Housing and Urban Development Act, established the rent threshold of 25 percent of family income; that is, a family would be required to pay one-quarter of its income in rent. By 1981, this threshold had been raised to 30 percent, which today remains the rent standard for most rental housing programs.

Belsky, et al. (2005), disclosed households spending 30 percent or more of their monthly income on gross rent or on the costs of owning a home are considered above the affordability threshold and are often referred to as "cost-burdened." Households spending 50 percent or more of their monthly income on gross rent or owner costs are regarded as "severely cost-burdened." Similarly the Australian Bureau of Statistics explains housing stress as a function of cost of housing and household income indicating a household spending 30 percent or more of its income can be considered "under housing stress" and under "extreme housing stress" if spending exceeds 50 percent (Rowley, & Ong, 2012), Therefore the explanations "cost-burdened" and

"under housing stress" on the one hand "severely cost-burdened" and "extreme housing stress" on the other hand appear to serve the same purpose.

2.3 Rating Housing Affordability

A study made by the Demographic International Housing Survey (2015), used four levels of rating to indicate housing affordability. The rating is calculated by dividing the median house price by the median household income which yields "median multiple" price- to- income ratio. Based on the median multiple the following housing affordability rating categories are identified as indicated in Table –1.

Table: 1 Housing Affordability rating Categories

Rating	Median Multiple
Severely Unaffordable	5.1 & Over
Seriously Unaffordable	4.1 to 5.0
Moderately Unaffordable	3.1 to 4.0
Affordable	3.0 & Under

Source: The *12th Annual Demographia International Housing Affordability Survey* 2015

The rating led to the corresponding classification of countries and cities consequently the bottom 10: least affordable and the top 10; most affordable major metropolitan markets are identified both at city and national levels. Accordingly Hong Kong (19.0), Sydney (12.2), Vancouver 9.10), San Jose, Melbourne and Auckland (9.7), San Francisco (9.4), London(8.5), San Diego, and Los Angeles (8.1) are identified as the least affordable cities as a consequence of greater value of the median multiple i.e. greater than 5.1 signifying severely unaffordable.

The most affordable cities with a median multiple value less than 3.0 include Buffalo, Cincinnati, Cleveland, Rochester (2.6), Pittsburg (2.7), Detroit, Grand Rapids, St. Louis (2.8), Columbus, Indianapolis, Oklahoma and Kansas 2.9. At national level among the 367 markets, there were 89 affordable markets, 75 in the United States, nine in Canada, three in Ireland and two in Australia. There were 112 moderately unaffordable markets, 90 in the United States, 14 in Canada, four in Australia, two in the United Kingdom and one each in Japan and Ireland. There were 74 seriously unaffordable markets and 92 severely unaffordable markets. Australia had 33 severely unaffordable markets, followed by the United States with 29and the United Kingdom with 17. New Zealand and Canada each had six severely unaffordable markets, while China's one market (Hong Kong) was also severely unaffordable (ADIHAS, 2015, p. 3).

2.4 Factors that Contribute to Housing Affordability

There are several factors identified that contribute to the affordability of housing. According to DTZ New Zealand 2004 cited in Robinson, Scobie and Hallinan, 2006), the following factors are identified and indicated:

a. Income (current and expected lifetime): directly impacts on a household's ability to purchase and make housing payments
b. House prices and rents: represents the level of payment that is required to secure housing
c. Interest rates, nominal and real: determines the cost of borrowing for home owners
d. Labor market conditions: affects a household's ability to participate in the labor market and earn an income, and thus be able to maintain housing costs over a period of time

e. Mortgage and rent payments: directly impacts on a household's ability to save and increase their housing consumption in the future. This is especially relevant for households in the rental market who are looking to purchase a house
f. Supply constraints: may limit the ability of the market to respond to excess demand for housing.

These factors are highly interrelated and interdependent. Labor market conditions directly affect people's incomes, specifically their certainty of future income streams. Mortgage and rent payments are determined by interest rates, house prices, rents, and wealth. Supply side constraints affect house prices. Interest rates can also affect house prices as a result of changes in demand for purchasing a house.

2.5 Extent and Impacts of Housing Stress

Estimates of the extent of housing stress vary by country and also by the measure employed. In the US, one in three American households spends more than 30 percent of income on housing, according to the Joint Center for Housing Studies (2008). Another reliable source similarly estimates that 95 million people, or 30 percent of the population, have housing problems including a high-cost burden, overcrowding, poor quality shelter, and homelessness. One in seven spends more than 50 percent, around 40 million Americans (Kim, 2009 p.12).

In the euro area, taking the European Community Household Panel (ECHP) as reference, analysis of the nature and extent of the persistence of housing deprivation using a cross-sectional view shows that around 20 percent of the population appears to be experiencing housing stress at a given point in time. (Ayala & Navarro, 2007).

In Australia, research by the National Centre for Social and Economic Modeling (NATSEM) released in 2008 shows that 23 percent of low and middle-income households are spending one-third or more of their gross income on rent or the mortgage. This represents a rise of 25 percent since 2004. Around six percent of lower-income households are paying more than 50 percent of their income on housing, according to recent research by the Australian Housing and Urban Research Institute (AHURI).

As explained by Di Napoli (2014**),** the estimated percentage of rental households with rents above the affordability level increased from 40.5 percent in 2000 to 50.6 percent in 2012. The number of rental households in this category jumped by more than 25 percent over the period. In 2012, more than one in four rental households paid gross rents that consumed at least half of their household income – a level the Census Bureau describes as "severely housing cost burdened." The same study disclosed for many New Yorkers, rent or homeowner costs surpass half of their household income. In 2012, some 928,000 rental households, or 27.9 percent of the statewide total, were in this "severely cost-burdened" group – an increase of nearly 30 percent from 2000.

Overcrowding results in a lack of privacy and a sense that one has no control over one's own life. It is a major source of Stress that is experienced by both adults and children living in overcrowded conditions (Dockery, 2011).

Similar studies have offered evidence high lighting important links between various aspects of housing and wellbeing. For example, children who grow up in owner -occupied homes have been found to benefit from better lifetime prospects than those in the rental tenure (Boehm and Schlottman 1999). Children of homeowners are more likely to stay in school (by 7–9%), and daughters of homeowners are less likely to have children by the age of 18 (by 2–4%) (Green &

White, 1997). Owning a home leads to improved test scores in children (9% in math and 7% in reading) and reduced behavioral problems, by three percent (Haurin and Parcel, 2002).
According to the study made by the Global Cities Business Alliance (2016), commuting patterns in global cities travel distances and commuting times in many global cities are on the rise. For example, the average distance Londoners travelled to work increased from 10.4 kilometers in 2001 to 11.2 kilometers in 2011. Similarly, in American metropolitan areas people are living further away from employment centers.

The *economic impact* of high housing costs in global cities, the effect on businesses and social wellbeing, and the potential economic gains from affordable housing provision are summarized from the works of Global Cities Business Alliance (2016) and Di Napoli (2014) and presented as follows.

- High house prices and rents can have a significant impact on individual wellbeing. Prohibitive costs can cause individuals to move away or put up with accommodation that is inadequate for their needs or preferences.
- High-cost housing can also have a direct impact on the competitiveness of businesses in global cities. Companies must either pay higher salaries and benefits to compensate for high housing costs or accept that only a limited pool of prospective employees will be available. Staff turnover rates may also be greater in expensive cities as employees may be more likely to relocate. Longer commutes, sometimes a consequence of high housing costs, can increase worker fatigue and lead to lower staff productivity.
- Cities that become too expensive for many to live in will change their social composition, with individuals on lower incomes displaced to more affordable areas. This process can lead to social and political unrest. Governments also face additional fiscal pressures, having to provide financial support for households struggling with high housing costs.
- At the same time some individuals benefit from high housing costs – such as segments of the population who are homeowners. This creates political difficulties in attempting to reduce the cost of housing – while some may gain, others will lose out. Making policy intervention in this area is a sensitive topic, particularly given that housing is often the greatest source of wealth for individuals.
- The economic success of a city attracts businesses which in turn attract new employees. A growing population needs more services and products so that more businesses are created which further propels economic and population growth. It is therefore not surprising that many of these cities struggle with rising housing costs as a result of their economic success.

2.6 Lessons Learned

The international experiences on housing stress at City and national level denote the need for government intervention to check the rising cost of housing in terms of price and or rent. As indicated in the works of various scholars the impacts of rising rent forced renter households to move away the center of cities or put up with accommodation that is inadequate or sub-standard for their needs or preferences. The classification of cities as most affordable and least affordable signifies the strong socio-economic impact of rent both positively and negatively. Ethiopia as one of the developing countries characterized by rapid urbanization, the socio-economic impacts of housing rent on the growing urban population in general and employees of the public sector is believed to be significant. Thus in Ethiopia efforts need to be emplaced in making urban centers

affordable to renter public sector employees to enable them free from housing stress. This in turn enhances the productivity of the public sector employees and attractiveness of the urban centers of the country.

3. Research Methodology

The Study adopted mixed method approach i.e. quantitative and qualitative research methods. The quantitative approach is applied to disclose the level of housing stress as a function of rent-to –income ratio and identify the corresponding typology of units in relation to income. On the other hand the qualitative approach is used to explain about the influence of high rent on the quality of life wellbeing of renter households in terms of food, clothing, health care, recreation, meeting the needs of children etc. The basic reason behind using this method of research design is that the combination of both generates a better understanding of the research problem.

3.1 Data Sources, Sample Size & Data Collection Methods

The type of research employed for this study is descriptive mainly focusing on describing the properties of data collected from five condominium sites found in *Akaki Kaliti* Sub-city as shown in Table-2. There are a total of 2531 renter public service employees /households living in the five study sites. A total of 385 renter sample households were taken by employing the following (Kothari, 2004).

$$n = \frac{z^2pq}{e^2}$$

Therefore, at 95 percent level of confidence the corresponding standard variate z = 1.96 and the desired level of significance is 0.05. Since the target population number is less than 10,000, 50% is recommended to use. The value of p = 0.5 in which 'n' will be the maximum and the sample will yield at least the desired precision. Thus, p =50% = 0.05 and q = 1 –p =1-0.50=0.50. Therefore, the sample size is given by:

$$n = \frac{(1.96)^2 (0.5) (0.5)}{(0.05)^2}$$

$$= \frac{(3.8416 * 0.25)}{0.025}$$

$$= \frac{0.9604}{0.025}$$

n = **385**, Sample size

The 385 sample households divided proportionally among the five owners' associations based on the total number of households as indicated in the distribution table. Finally the sample households were selected using a random sampling technique from each association.

Both primary and secondary sources are used to produce the required qualitative and quantitative data. Primary data are collected through questionnaires and secondary data from government documents and owners' association archives**.** The following sources are used to generate the required data.

a. Primary sources: Renter sample households as indicated in the table are sources of primary data such as income and other housing and non- housing data. To this end questionnaires were distributed to 385 sample renter households to collect primary data.
b. Secondary sources: Documents on condominium houses from housing development office of the *Akaki- Kaliti* sub-city and from the archives of the respective owners' associations were used to obtain monthly house rent of the corresponding typology units.

Table- 2 Distribution of sample renter households.

No.	Name of Owners' Ass.	Site location /woreda/	No. Renter HHs	Sample RHHs
1	Comet		238	36
2	Kaliti-Gebriel	7	85	13
3	Cheralia	7	103	16
4	Total	8	151	23
5	Gelan (1&2)	4	1954	297
Total			**2531**	**385**

Source: Owners Associations, 2018

3.2 Data Analysis Techniques

The following statistical techniques are applied to measure housing stress for renter public sector employees living in condominium houses of the study sites.

- Tables and percentages to show variance between typology of units, married and single households, stress categories, single and double income households, non-housing indicators etc.
- Bench mark analysis i.e. based on '30-only rule'. This is the most basic of the ratio measures of housing stress. According to this rule, a household is defined to be in housing stress if it spends more than 30% of its disposable income or gross income on housing costs. (Binod et al., 2008)
- Mean Income Analysis: This is applied to shoe the relationship between mean income of renter households and the level of housing stress with corresponding category of rent.
- Multiple Response Analysis: used to show the impacts of rent on other non-housing need of the households.
- UN-Habitat standard of housing crowding is applied to measure the extent of housing stress.

4. Data Analysis and Interpretation

4.1 The Study Sites

This part presents the general features of the condominium housing found in the study sites and demographic characteristics of the sample households. As indicated in Table:3 five condominium sites namely *Cheralia, Comet, Gebriel, Total* and *Gelan* are included. As indicated in the same table *Gelan* condominium site constitutes the largest number of respondents i.e. 77.5 percent in contrast to *Gebriel* condominium site accounting for 3.4 percent of the sample population. As indicated in Table-2 Part -3 the total sample size was 385 renter public sector employees but eight questionnaires were not recovered i.e. accounting for 2.1 percent of the total. Therefore the data employed in the study is obtained from 377 questionnaires as indicated in Table-3.

Table 3: Study Sites

Site Name	Frequency	Percent
Cheralia	16	4.2
Comet	33	8.8
Gebriel	13	3.4
Gelan	292	77.5
Total	23	6.1
Total	377	100.0

Source: computed from survey data, 2018

As indicated in Table-4 the highest percentage accounted by the 1bedroom units followed by studio and 2 bedroom units. The 3 bed room units included in the study is extremely small reflecting a problem in relation to rent which is the central theme of this research.

Table 4: Distribution of Condominium Units by Type

Typology	Frequency	Percent
Studio	111	29.4
1 bed room	141	37.4
2 bed room	110	29.2
3 bed room	15	4.0
Total	377	100.0

Source: computed from survey data, 2018

Besides the distribution of units by type the demographic characteristic of the respondents reveal that 52 percent are male headed and 48 percent are female headed households. Regarding marital status 72.1 percent of the respondents are married in contrast to 27.9 percent of singles. (Table-5)

Table-5: Marital Status

Typology	Marital Status				Total
	Married		Single		
	Freq.	%		%	
Studio	46	16.9	65	61.9	111
1 bed room	105	38.6	36	34.3	141
2 bed room	106	39.0	4	3.8	110
3 bed room	15	5.5	0	0.0	15
Total	272	100.0	105	100.0	377

Source: computed from survey data, 2018

The distribution of married renter households among the different typologies indicates all the 3 bed room units are occupied only by married households, 5.5 percent. The majority of singles occupy studio units, 61.9 percent followed by 1 bed room units occupied by 34.3 percent of the singles. The majority of married households occupy 1 bed room and 2 bed room units 38.6 and 39.0 percent respectively constituting over 77 percent of the total married households (Table 5).

4.2 Rent Based Housing Stress

Kim H. (2009) the term "housing stress" is a technical economic term, not a psychological one although it may easily involve mental trauma. It refers to housing-driven monetary hardship, and a more accurate term is "housing-induced financial stress". Rent induced housing stress is treated based on the following tools. The first one is the 30 percent threshold; the second one is the mean income and the third one is based on rent induced indicators of housing stress.

4.2.1 The 30 only Rule

Based on the 30 percent threshold three categories of renter households are identified. They are those paying less than 30 percent which is widely accepted as rent standard or free of housing stress, between 30 and 50 percent known as cost burdened/under housing stress and greater than 50 percent are severely cost-burdened/under extreme housing stress. The data analysis in Table-6 indicate 38.7 percent of renter households are paying a rent amount less than 30 percent of their gross monthly income acceptable or considered free from housing stress. As the same table indicates over 61 percent of renter households pay above the 30 percent threshold of which 48.3 percent pay between 30 – 49.9 percent of their monthly income implying cost-burdened/under housing stress while 13 percent pay greater than 50 percent are severely cost-burned or found under extreme housing stress.

Table- 6: % in housing stress according to traditional housing stress measures

Typology	Stress Category					
	<30% Not in Housing Stress		30 – 49.9% Cost- Burdened		≥50 % Severely Cost Burdened	
	Freq.	%	Freq.	%	Freq.	%
Studio	38	10.1	61	16.2	12	3.2
1 bed room	45	11.9	76	20.2	20	5.3
2 bed room	56	14.9	37	9.8	17	4.5
3 bed room	7	1.8	8	2.1	0	0.0
Total	146	38.7	182	48.3	49	13.0

Source: computed from survey data, 2018

Regarding the level of housing stress based on typology of units the following are observed:

Over 38 percent of the renter households pay a monthly rent less than 30 percent of their income. The corresponding share of the above mentioned percentage among the four typologies of condominium units shows clearly those without suffering from housing stress account for 14.9, 11.9, 10.1 and 1.8 percent for 2bed room, 1bed room, studio and 3bed room units respectively (Table 6).

As stated earlier over 61 percent of the renters are suffering from housing stress. These again are grouped into two as indicted in Table-6 cost-burdened/under housing stress and severely cost-burdened/under extreme housing stress. The cost-burdened/under housing stress is those paying rent between 30 – 49.9 percent of their monthly income and accounting for 48.7 percent of the total sample renter households. Those paying over 50 percent of their monthly income account for 13.0 percent are severely cost-burdened or under extreme housing stress. The corresponding level of stress for the 30 -49.9 percent group indicates 20.2 for 1 bed room, 16.2

for studio 9.8 2 bed room 2.1 percent for 3bed room units respectively. The same analysis of stress for those paying ≥ 50 percent shows 5.3 for 1 bed room, 4.5 percent for 2 bed rooms, 3.2 percent for studio and none for 3 bed room units.

Table-7: % in Housing stress by income category

Income Category	Typology	Stress category							
		1 to 29.9		30 to 49.9		≥ = 50		Total	
		Frq.	%	Frq.	%	Frq.	%	Frq.	%
Single Income Earner	Studio	19	23.8	49	61.3	12	15.0	80	
	1bed room	11	20.8	27	50.9	15	28.3	53	
	2bed room	2	11.1	5	27.8	11	61.1	18	
	3bed room	1	50.0	1	50.0	0	0.0	2	
	Total	33	21.6	82	53.6	38	24.8	**153**	**40.6**
Double Income Earner	Studio	19	61.3	12	38.7	0	0.0	31	
	1bed room	34	38.6	49	55.7	5	5.7	88	
	2bed room	54	58.7	32	34.8	6	6.5	92	
	3bed room	6	46.2	7	53.8	0	0.0	13	
	Total	113	50.4	100	44.6	11	4.9	**224**	**59.4**
	Grand Total							**377**	100.0

Source: computed from survey data, 2018

As indicated in Table-7 besides the general level of stress analysis (Table-6) it is imperative to assess the impact of single income (only husband or unmarried woman employee) and double income (husband & wife are employees) on the renter households. As shown in Table-7, 40.6 percent of the renter public sectors employees belong to the single income earner category and while 59.4 percent of them are double income earners. Based on this distribution the level of stress under each income category reveals the following:

- 21.6 percent of the single income earners are free from housing stress as they pay a rent amount below the 30 percent bench mark. On the other hand 78.4 percent of single income renters are under housing stress of which 53.6 percent pay 30 – 49.9 percent of their salary, (Cost- Burdened) and the rest 24.8 percent pay a monthly rent ≥50 of their salary consequently Severely Cost Burdened (Table-7).
- 50.4 percent of the double income earner households are free from housing stress since they pay less than the 30 percent bench mark. Those paying 30 – 49.9 and ≥50 percent of their salary account for 44.6 and 4.9 percent respectively denoting Cost- Burdened and Severely Cost Burdened levels of housing stress (Table-7).
- As indicated in the same table the comparison between the two income categories signifies that double income earning renter households are benefited from the double income (husband & wife) that enabled more number of renters to be free from housing stress. This is supported by the percentage of renter households free from housing stress i.e. 50.4 percent against 21.6 percent of the single income earners.

4.2.2 Mean Income Analysis

Besides the 30 percent threshold analysis the mean income of renter households is also used to measure the level of stress. As indicated in Table -8 the highest mean income is accounted by

38.7 percent of the renter households which is found in the percentage category of < 30. This category as indicated in Table - 6 above is free from housing stress.

Table-8: Household Mean Income Analysis

% Category	Mean Income	Freq.	%
< 30	10,747. 74	146	38.7
30 to 49.9	6,486.16	182	48.3
≥ 50	3906.27	49	13
Total		377	100

Source: computed from survey data, 2018

The mean income decreases with increasing percent of rent paid for housing. This is indicated by the mean income of the 30 to 49.9 and ≥ 50 percent category indicated in Table 8. This denotes the higher the mean income the lower the level of housing stress.

4.2.3 Non- Housing Indicators of Housing Stress

Housing costs often represent a significant cost to a family's income and determine to a large extent how much left over for living costs. A housing cost burden can impede the capacity of families to account for other necessities that affect wellbeing such as food, clothing and health care (Bratt, 2002).

The analysis made in Part- 4.3 indicate the majority public service renter households living in the study sites are suffering from rent induced housing stress. This is supported by the response of the sample households in Table – 9. As indicated in the same table 89.4 percent of the renter households admitted that the amount of rent they pay affected their life style. This is supported by the lower mean income of this group as compared to those replied 'No' accounting for 10.6 percent and with a higher mean income as indicated in Table 9.

Table-9: Rent Impact

Response	**Frequency**	**Percent**	**Mean Income**
Yes	337	89.4	7479.11
No	40	10.6	10,371.75
Total	377	100.0	7801.21

Source: computed from survey data, 2018

The rent impacts are assessed using different indicators by employing a multiple response method. To explain the impacts of rent on the wellbeing of the renter household's food consumption preference, clothing, supplying additional teaching aid materials for student children, saving, health care and recreation are used as indicators (Table10).

The multiple response analysis of the indicators produced the following:

- Food consumption preference: The adverse impact of rent on food consumption preference is ranked 1st by 11.9 percent (45) of the renter households.
- Clothing: this indicator ranked 1st by 14.6 percent (55) of the respondents who felt house rent limited them from getting their priority choice i.e. clothing preferences.
- Additional teaching aid materials: this indicator ranked first by 17.8 percent (67) of the respondents. The respondents complained that because of high house rent they are unable to buy additional teaching aid materials for their children.

- Saving; ranked 1st by over 34 percent (131) of the respondents signifying it is the most prioritized indicator but adversely affected by rent.
- Health care: compared to other indicators explained earlier the percentage of respondents selected health care as their first choice but adversely affected by rent is small 8 percent (30) of the total respondents.
- Recreation: the percentage of respondents selected recreation as their 1st choice and affected by rent is the smallest of all i.e. 2.7 percent (10).

The comparison among the indicators based on rank only conceals the number of people who are prioritizing each indicator as its first choice. Each indicator ranked 1st despite differences in the number of respondents as indicated in Table-10. Thus it is imperative to identify the most dominant indicator on the basis of number of respondents who selected the respective indicators as their first choice. Therefore based on the size of respondents saving is the most dominants indicator indicated by 131 respondents followed by additional teaching materials for children 67 respondents and clothing by 55 respondents adversely affected by rent.

Table -10: Matrix of Multiple Response Measures of Housing Stress

Rank	1st		2nd		3rd		4th		5th		6th	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Food cons.	45	11.9	39	10.3	51	13.5	70	18.6	81	21.5	51	13.5
Clothing	55	14.6	61	16.2	65	17.2	81	21.5	53	14.1	22	5.8
Teach. Aid	67	17.8	35	9.3	31	8.2	38	10.1	37	9.8	129	34.2
Saving	131	34.7	67	17.8	70	18.6	34	9.0	24	6.4	11	2.9
Health care	30	8.0	83	22.0	84	22.3	68	18.0	57	15.1	15	4.0
Recreation	10	2.7	50	13.3	37	9.8	46	12.2	86	22.8	108	28.6

Source: computed from survey data, 2018

4.3 Non- Rent Factors of Housing Stress

4.4.1 Housing Crowding

In order to explore the degree of stress caused by crowdedness the UN-HABITAT standard particularly Indicator 1.2, Habitat Agenda Goal 1 is applied. A house is considered to provide a sufficient living area for the household members if three or less people share the same room (UN-HABITAT, 2009). The total number of population including married, single and children sums up to 1159. When this divided by the total number of rooms i.e. 1159/783 = 1.48 per room. According to the standard set by the UN-Habitat stated above the general room density as well as room density for every typology is found below the standard and signify that all renters are free from stress caused by overcrowding (Table 11).

As indicated in Table-11, above 44 percent of the population of the sample households is children. The child population living in the study sites suffers from the loss of better lifetime prospects as a result of rental tenure. This is supported by multiple responses indicated in Table-10. As indicated in the same table the problems faced by the house hold heads regarding non-housing needs such as food consumption, clothing, supply of additional teaching aid materials to student children, health care and recreation are also affecting the life of children too.

Table -11: Housing Crowding

Typology	Freq.	No. Rooms *	Total no. of Rooms	Household Size					No.pers/ Room	UN-standard > 3per/room
				Adult		Child.		Total		
				F	%	F	%			
Studio	111	1	111	157		46		203	1.83	< 3
1 bed	141	2	282	246		16		415	1.47	< 3
2 bed	110	3	330	216		25		471	1.43	< 3
3 bed	15	4	60	30		40		70	1.17	< 3
Total	**377**		**783**	**649**	**56**	**510**	**4**	**1159**	**1.48**	

Source: computed from survey data, 2018

4.4.2 Distribution of Renters by Place of Work

Besides the distribution of renter public sector employees by sub-city explained the reasons behind the existing situation need to be identified. All public sector employees are served by free public service transport consequently no transportation cost to pay for. As the responses of the renter households indicated in Table-12 low rent 48.8 percent is found to be the governing factor for renting units in the study condominium sites. Next to low rent, proximity to work place 27.3 percent and lack of alternative housing 23.9 percent are found to be reasons for renting units in the same study sites.

Table 12: Distribution of Renters by Reason

Reason	Frequency	Percent
Low rent	184	48.8
Proximity to work place	103	27.3
Lack of alternative	90	23.9
Total	**377**	**100.0**

Source: compiled from survey data, 2018

Renter public sector employees live in all condominium sites found throughout the city despite the reasons dictating renters to live in a particular condominium site. Based on the data collected from the study sites. 47.2 percent of the respondents work in the same sub-city i.e. *Akaki Kaliti* where the condominium sites under study are found. The rest of the respondents i.e. **52.8** percent work in all other sub-cities including *Bishoftu* (*Debre Zeit)* a closely located city of *Oromia* Regional State.

5. Conclusion and Recommendations

5.1 Conclusions

Rent based and non-rent factors are employed to assess the level of housing stress. The rent based measures include the 30 only rule, the mean income analysis and non-housing indicators while the non-rent factors include housing crowding and distribution of renter households by place of work.

According to the traditional housing stress measure i.e. the 30 only rules three levels of housing stress are identified. The first one indicates those paying less than 30 percent of their gross salary for rent, the second those paying between 30 – 49.9 percent of their salary and the third group refer to those paying ≥ 50 percent. Only 38.7 percent of renter households are paying a rent amount less than 30 percent of their monthly income acceptable or considered free from housing stress whereas over 61 percent of renter households pay above the 30 percent threshold of which 48.3 percent pay between 30 – 49.9 percent of their monthly income implying cost-burdened or under housing stress while 13 percent pay greater than 50 percent are severely cost-burned or found under extreme housing stress. In spite of the differences in typology of units and income the great majority of renter public sector employees are suffering from either of the two levels of housing stress i.e. cost burdened or severely cost burdened. (Table-6)

The comparison between the two income categories signifies that double income earning renter households are benefited from the double income (husband & wife) that enabled more number of renters to be free from housing stress. This is supported by the percentage of renter households free from housing stress i.e. 50.4 percent against 21.6 percent of the single income earners (Table-7). This signifies the more the source of income (in this case double earner versus single earner) the higher the percentage of households free from housing stress.

The mean income analysis indicated in Table -8 indicates the same regarding the percentage of renter households that pay less than 3o percent and above i.e. 38.7 percent and 61.3 percent respectively with the 30 only analyses. The mean income assessment signifies the inverse relationship between income and level of stress. As indicated in the same table the higher the mean income the lower the level of housing stress. On the other hand the mean income decreases with increasing percent of rent paid for housing. This is indicated by the mean income of the 30 to 49.9 and ≥ 50 percent category indicated in Table 8.

A housing cost burden impeded the capacity of renter families to account for other necessities that affect wellbeing such as food, clothing , health care ,additional teaching aid materials for student children, saving, and recreation. 89.4 percent of the renter households admitted that they cannot meet other non-housing needs adequately after paying for housing. The multiple response analysis of rent induced indicators revealed based on the size of respondents saving is the most prioritized indicator followed by additional teaching materials for student children and clothing adversely affected by rent. This is also supported by the lower mean income of this group as compared to those replied 'No' accounting for 10.6 percent and with a higher mean income as indicated in Table 9.

The housing crowding analysis made according to the UN-Habitat standard the general room density as well as room density for every typology is found below the standard and signify that all renters are free from stress caused by overcrowding (Table,12). On the other hand 44 percent of the study population is children, but this population is unfortunate to enjoy a better life time prospects resulting from ownership tenure. Thus they are exposed to housing stress as a consequence of rental tenure.

Low rent 48.8 percent is found to be the governing factor for renting units in the study condominium sites. As a consequence of this 52.8 percent of the renter households work in all sub-cities including *Bishoftu* a closely located city of Oromiya. This implies over 52 percent of the renter public sector employees are forced to commute daily between their homes located in the study sites (Akaki-Kaliti) and respective sub-cities where their workplaces are located exposing them to stress caused by daily commuting.

5.2 Recommendations

The findings based on rent induced and non-rent factors of housing stress explained necessitate the implementation of the following to alleviate the housing problem of public sector employees.

1. Preferential Treatment for public sector employees to enable them get affordable rental house or own house.

To this end:

   a. Implement market based Housing Allowance: The Government/ City administration is expected to solve the problem of housing stress encountered by renter public sector employees by introducing the payment of market based housing allowance for renter public service employees.
   b. Introduce Alternative Housing Delivery Strategies: To alleviate the problems of rent induced and non- rent factors of housing stress for renter public sector employees the following alternative supply strategies need to be implemented.
      i. Public provision of serviced land: this enables incremental construction of housing and preferable to renter public sector employees. In addition the strategy helps to free renters from rent induced housing stress.
      ii. Housing finance: to mitigate the problems of finance faced by the majority public sector employees
      iii. innovative and alternative housing finance systems and packages need to be introduced. Extension of housing finance to renter public sector employees by formal financial institutions and organize and encourage housing microfinance and community funds to facilitate access to housing finance are appropriate measures to encourage renter public sector employees to be home owners and free from rental housing stress.

2. Inclusive city: Housing stress is a public policy issue. In the light of this Addis Ababa must be comfortable for all groups of people as working and living city. Towards this end the City Administration is expected to facilitate access to affordable and adequate rental housing to public sector employees to make the city inclusive.

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