

Place attachment, regional identity and perceptions of urbanization in Moshi, Tanzania

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ABSTRACT

In rural areas on the peri-urban fringe of rapidly expanding African cities, urbanization can be interpreted and conceived as an unwelcome change threatening traditional ways of life and personal and community cultural identity of rural areas with customary land tenure arrangements and generally ethnically homogenous populations. In this paper, we examine the relationship between place attachment and residents' perceptions of various aspects of urban life, using Moshi, Tanzania, located in a region long identified with the Chagga people, as a case study. We utilize a survey of approximately 700 respondents, stratified by location, and use principal component analysis to construct variables for place attachment, perceptions of cities, and perceived risks associated with urbanization. Utilizing stepwise regression techniques, we find that there was a significant decrease in levels of place attachment between rural, per-urban, and urban locations. We also find that residents who associate the city with more negative characteristics report higher levels of place attachment. This suggests that urbanization is perceived as a threat to people's sense of place. Finally, we find that place attachment is positively associated with age, while being Chagga, owning land, and being native to the area are associated with greater levels of place attachment.

1. Introduction

The UN projects that the majority of urbanization in the next century will occur in developing countries and, within those countries, through largely informal and unplanned settlements at the peripheries of expanding cities. Africa is the last rural continent and is projected to receive more urban residents than any other region (Parnell and Pieterse, 2014) due to high fertility rates and rural-to-urban migration. Rapid peri-urban development, often informal and unplanned and lacking basic services and infrastructure, infringes on rural communities. This is potentially contentious because urbanization affects the character of places important for people's identity and ways of life (von Wirth et al., 2016). Rural communities tend to have stronger economic and cultural attachments to place than their urban counterparts (Wasserman, 1982), which could amplify responses to threats of place change. Many African countries, including Tanzania, have a dual system of customary land tenure in rural areas and by-right land tenure in cities (see for example Nuhu, 2021; 2019), so urban expansion is often accompanied by changes to individual and public property rights. These changes are accompanied by higher costs of living, including for

services, necessities, and taxes, forcing the monetization of livelihoods to survive.

Because of this, in rural areas on the peri-urban fringe of rapidly expanding African cities, urbanization can be interpreted and conceived as an unwelcome change threatening traditional ways of life and personal and community cultural identity. In turn, this suggests, that (1) the perception of urbanization as a potential threat to community character can be leveraged by political actors to frame issues around urban growth (Schmidt, 2008) and that (2) place-based cultural identity has a role to play in shaping perceptions toward urban growth management policies.

Nevertheless, despite the deep and historical connection between ethnic identities and specific geographies, the role of place attachment in response to specific threats or risks posed by urbanization has been understudied. This is unfortunate, as place attachment within the African context may function differently than in the locations where the phenomenon was first studied and theories around attachment to place developed. Therefore, studying spatial dynamics of place attachment in urbanizing African cities is necessary to deepen our understanding of both place attachment and urbanization.

In this paper, we examine the interaction between perceptions of

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cities, urbanization, and place attachment in Moshi, Tanzania, a rapidly growing mid-sized city using a survey of residents. The rest of the paper is organized as follows. In the next section, we review the literature on place attachment and urbanization within the African context, noting some of the unique characteristics. We develop specific research hypotheses to examine the interaction between place attachment, the perception of cities, concerns over risks associated with urbanization, and a range of control variables, including age, ethnicity, location, and migrant status. Next, we justify our choice of Moshi, Tanzania, as an appropriate case study, and describe our sampling locations. We then discuss the development of our research design and survey tool, noting how we stratified our sampling across a transect of locations to include rural, urban, and peri-urban sites. We utilized principal component analysis to operationalize and validate variables for place attachment, perceptions of cities, and risk associated with urbanization. We then test our hypotheses to determine whether age, ethnicity, location, or those with native-born status differ in terms of the degree of place attachment and perceptions of cities. Finally, we run a hierarchical multiple regression analysis to explain variation in place attachment and discuss our results.

2. Situating place attachment in urbanizing Africa

Depending on the specific discipline, place attachment has a variety of conceptual definitions, and a common understanding remains elusive. One commonly cited definition stems from Low and Altman (1992), who referred to place attachment as “an integrating concept that emphasizes affective relations to environmental settings” (1992, p. 7). In other words, place attachment is an environmental and social psychological phenomenon that describes (often positive) emotional connection and meanings that are held by an individual or group associated with specific locations. As such, place attachment is a multidimensional concept and there is a wide range of conceptualizations and theoretical frameworks to better understand place attachment and related ideas (Hernández et al., 2020; Scannell & Gifford, 2010; Sebastien, 2020). Place attachment encompasses both *place identity* — feelings about specific places and symbolic connections to place that define and are essential aspects of individual and community identity — and *place dependence* — which refers to the ability of a place to meet instrumental needs and the functional dimensions of a place derived from the resources that enable people to secure a livelihood or the aspects of a place that people depend on to survive (Williams & Vaske, 2003). Place dependence refers most directly to location-based employment and livelihood, while social networks and other resources contribute to both place identity and place dependence necessary to secure livelihood, satisfy goals, or enhance the quality of life. Scannell and Gifford (2010) suggest a conceptual framework of place attachment that consists of three dimensions: place characteristics, personal characteristics, and the psychological processes of perceiving and experiencing place. That said, social processes and cultural narratives can also affect one’s attachment to place (Diener & Hagen, 2022). These distinct subtypes of place attachment can help researchers better understand dynamic associations between place attachment and people’s perceptions of place change, such as urbanization (Buchecker & Frick, 2020).

2.1. Urban place attachment

Debates over the relationship between place and urbanization have their origins in the seminal work of urban sociologists such as Louis Wirth, Ferdinand Tönnies, and Georg Simmel, who postulated that patterns and rates of urbanization would affect social cohesion, community bonds, and the relationship to nature, among other factors. Attachments to urban places take on a particular character compared to rural areas. While place attachments in rural areas are driven equally by the social and ecological significance of places (Eisenhauer et al., 2000), attachments to place in urban areas are driven more by cultural

significance and economic opportunities (i.e. functional place dependence). The strength of attachments often occurs at a smaller spatial scale than the city, such as the home and neighborhood (Hidalgo & Hernández, 2001; Lewicka, 2010) or street (Shamsuddin & Ujang, 2008) which means that studying urban place attachment in a city needs to consider variation across the city and what drives place attachments in different places.

A range of factors are positively associated with place attachment, including community ties measured through social networks (Bonaiuto et al., 1999; Kasarda and Janowitz, 1974; Lewicka, 2005), the length of residence (Bonaiuto et al., 1999; Brown et al., 2003; Goudy, 1990), membership in associations (Anton & Lawrence, 2014), and the physical environment, especially access to nature and neighborhood quality (Fried, 1982). However, studies are inconsistent on the roles of other socio-demographic factors like age, gender, and educational level (Bonaiuto et al., 1999; Lewicka, 2005).

Empirical work on the relationship between place attachment and urbanization has operationalized urbanization using a range of different factors and concepts related to urban areas: the physical environment (for example, public infrastructure or residential, commercial, and institutional land uses not found in rural areas), population size, residential density, social diversity and homogeneity, and beliefs, or ideologies, about urban life (Lewicka, 2011). The results have generally been variable and inconsistent. Several studies have found positive associations between urbanization and place attachment (Theodori and Luloff, 2020; Christiansen, 1979; Goudy, 1990; Kasarda and Janowitz, 1974). However, there is also evidence that urbanization hurts people’s attachment to place (Buchecker et al., 2003; Buttel et al., 1979; Dillman & Tremblay, 1977; Wasserman, 1982; Wilson & Baldassare, 1996).

A study from Switzerland is particularly relevant to ours as they consider location in determining place attachment. Buchecker and Frick (2020) examine the residential population in four study areas in Switzerland, representing rural, peri-urban, suburban, and urban stages of urbanization. They found a decrease in levels of place attachment in the transect between the rural and the suburban study area and an insignificant increase in place attachment between the suburban and the urban study area. A structural equation model (SEM) further demonstrated that the degree of urbanization had a direct negative influence on place attachment.

The majority of these studies assumed a static measure of urbanization, and few considered the effects of changes in place-on-place attachment (Wirth et al., 2016). Previous research on disruptions to place attachment (Brown & Perkins, 1992) have focused either on the relationship between place attachment and natural hazards, such as flooding or wildfires (Chirst, Schwarz and Sliuzas, 2023) or examined the relationship between resident’s place attachment and relocation due to urban regeneration (Pan, Y and Cobbinah, P.B., 2023). Devine-Wright (2009) cited three dimensions to evaluate the transformation of place change over time: its “extent, rapidity, and (the level of persons’ perceived) control” (p. 429). In addition to these dimensions, Wirth et al. (2016) include the valence of change, which they define as “(the) interpretation of urban changes as positive (enhancement, upgrading) or negative (threat, stressing) transformations unfolding over time”.

Wirth et al. (2016) use resident survey data on a transect from urban to rural to explore the influence of perceived changes in the urban environment on residents’ place attachments in Zurich, Switzerland. They utilized two different measurement scales to capture residents’ perception of urban change, the first of which asked residents to reflect on physical, demographic, and social changes in their community and the second based on an assessment of images that documented specific observations and instances of urban transformations. When change in the urban environment was perceived as an attractive upgrade, it was positively associated with place attachment. On a related note, the relationship between place attachment and perceived threat or risk has largely been focused on environmental or natural hazard risks (Bonaiuto et al., 2016), and the risk or threat posed by perceived potential urban

change has been understudied.

2.2. Place attachment in Africa

Place attachment in the African context is understudied, as much of the work has focused on communities in North America and Europe (Dlamini & Tesfamichael, 2021). This is unfortunate since African cities present two unique circumstances that are relevant to the mechanisms of place attachment found in the literature. First, land use management norms are governed more through cultural identities in African countries as compared with North America and Europe due to the lack of a consistent formal government presence. Land tenure arrangements in rural areas in African countries are often communal or customary, and people develop a sense of community and belonging organized around attachments to land (Roos, 2008). Domestic configurations common in African cities, such as family compounds held in common may produce distinct scale geographies of place attachment to family homes rather than neighborhoods (Akinjokun et al., 2018; Adewale et al., 2020). Second, unique demographic circumstances in African cities, including a young population and high rates of rural-to-urban migration, can influence place attachment. As mentioned above, rapid urbanization across African cities means that peri-urban regions are encroaching on rural areas with customary land tenure arrangements and generally ethnically homogenous populations in ways that may be more pronounced than in the more commonly studied sites for place attachment research. Because of these unique characteristics, we suggest that the concept of *place attachment* should be understood differently within the African context, compared with more western conceptualizations of place attachment. Specifically, disruptions to place will have a greater impact in the African context as place attachment is in part driven by personal and ethnic identity, and any disruptions to place will involve a change in the legal environment and potential tenure status of residents. As such, disruptions to place can potentially threaten cultural identity and/or material economic conditions. We also suggest that the concept of place attachment is particularly useful to better understand the dynamics and political implications of urbanization within the African context, a point we elaborate on in the discussion.

We expect to find a strong association between place attachment and place-based ethnic identity, particularly if there are ethnic homeland associations with the place (Sebastien, 2010). We also expect a generational or age-related shift in perceptions of urbanization, and a consequent decline in place attachment among younger people. Africa has the youngest median age (18 years) compared with any other region globally, and younger Africans tend to view their cities more positively than older generations (Schumann, 2021). As African cities experience high rates of rural-to-urban migration, we also expect that migrant status will be positively correlated with place attachment; those who are native to the area will have higher rates of place attachment. Following Von Wirth et al. (2016) and Buchecker and Frick (2020), we expect a location-based relationship between place attachment and level of urbanization: rural areas will have higher levels of place attachment compared with urban areas. In explaining place attachment, we also include controls, such as land ownership which has been positively associated with place attachment (Von Wirth et al., 2016).

We are unsure about the relationship between place attachment and the perception of cities. Cities can either be seen as a positive sign of growth and opportunity or in a negative sense, as a threat to culture and lifestyle, depending on one's view of what it means to be urban. As such, place attachment can either be driven by negative or positive associations of cities. Moreover, the causal relationship is unclear (von Wirth, 2016). On the one hand, urbanization or change more generally can produce greater place attachment, but place attachment may also influence perceptions of urbanization. We expect to find a correlation between place attachment and the perception of potential risks posed by urbanization, both in terms of the *likelihood* that urbanization will bring about unwanted change, and the degree of *concern* over those changes.

When a place is threatened by change, residents tend to be protective over aspects of a place that link to their individual or community identity (Brown & Perkins, 1992; Devine-Wright, 2014) as disruptions to identity cause emotional distress (Devine-Wright, 2014) and lead to place-protective action. However, the reverse may also be true; heightened concern over the risks posed by change can produce greater place attachment.

3. Moshi, Tanzania as a case study

In this paper, we examine the relationship between place attachment and urbanization using Moshi, Tanzania, as a case study. Moshi presents some unique characteristics that may make place attachment distinct. While it is common among Tanzanian ethnicities for land to carry cultural significance (Howland et al., 2021), the Chagga people are notable for their profound attachment to their territory, geographically centered on the region around Mt. Kilimanjaro (Sebastien, 2010), including Moshi. Other prominent local groups include the Pare, Maasai, and Kahe, who migrated from other parts of Tanzania. In a comparative study, the Chagga people were found to have relatively high levels of place dependence and place identity compared with other communities. This is in part due to the historical emergence of Chagga identity as a mobilizing response to perceived threats to the land and water resources of Mt. Kilimanjaro dating back to colonial times (Bender, 2013). Moreover, this place-based regional identity has spatial implications. Chagga settlement patterns are quite distinctive, marked by widely disbursed, low-density farms (*shamba*), and lacking any village nucleation. (Sebastien, 2020). Urban growth thus presents a unique threat to the traditional Chagga settlement pattern.

Moshi itself is a mid-sized city with a population of over 300,000, consisting of both Moshi urban and Moshi rural districts within the Kilimanjaro region, and is headed by the District Commissioner, a presidential appointee under the District Council (URT, 2016). In part due to its proximity to major tourist destinations, Moshi plays a relatively important economic role in the Tanzanian economy. The research was conducted across 6 different study areas in Moshi (both Moshi Urban and Moshi Rural districts) based on wards that represent different levels of urbanization. Two study areas were more rural (Kiboshi Mashariki, Sango-Kimochi), two urban (Majengo, Njoro), and two peri-urban (Kindi, Mabogini). These wards were chosen based on several factors, including their location, population density, demographics, economic structure, physical characteristics, and connectivity by local Tanzanian researchers familiar with Moshi and its environs. Fig. 1 for a map of locations and Table 1 for some characteristics of the study areas.

Kindi lies in the Moshi rural district, roughly 8 km from Moshi along the main Moshi-Arusha road. It is predominantly Chagga but has seen an influx of migrants from the region, although predominantly agricultural, there are also many small businesses and enterprises (Mwende & Msongazila, 2013). Mabogini, located approximately 9 miles from Moshi, has a mixed ethnicity population. Many residents are migrants from other parts of Moshi/Kilimanjaro and some are from further afield. Although predominantly agricultural, there are also many small businesses. It is poorly connected with other wards in the Moshi Rural district. Based on several criteria, we classify both Kindi and Mabogini as peri-urban due to the intense competition over land for different uses, unregulated land development, insufficient social and physical infrastructure services, and the existence of dual systems of access to land regulated by social institutions and informal actors (Kombe, 2005; Amoateng et al., 2013; Msangi, 2011).

Kiboshi is a rural ward located 23 km from Moshi on the slopes of Kilimanjaro. It is predominantly Chagga. Although rural, it has relatively good services and infrastructure, including a hospital and various colleges. Sango-Kimochi is located 13 km east of Moshi, along the main east-west thoroughfare. Although the ward is mostly composed of the Chagga, it is unique because the community is bifurcated by the highway: one side is upland on the slope of Mount Kilimanjaro and the other

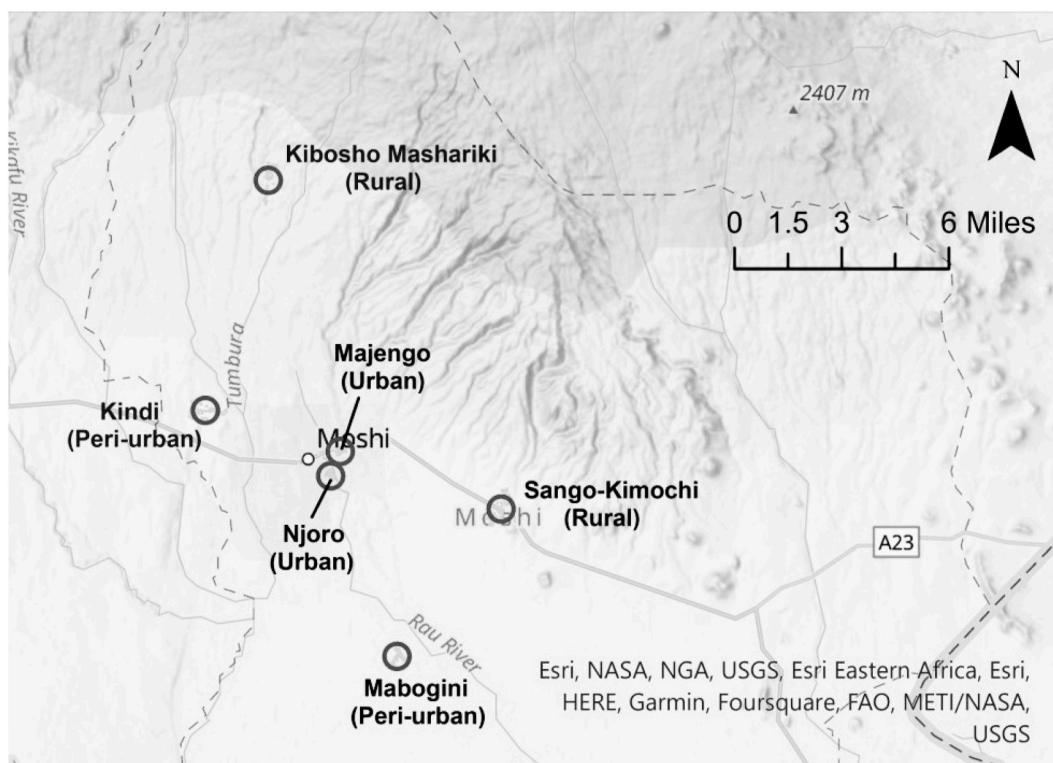


Fig. 1. The location of the wards used as study sites.

Table 1
 Characteristics of the study areas Source: URT (2012) and URT (2022).

| Ward | Total Population | Average household size | population density (per km2) | annual population change | Distance to Moshi (km) | Designation |
|-------------------|------------------|------------------------|------------------------------|--------------------------|------------------------|-------------|
| Sango-Kimochi | 16,046 | 3.7 | 439.8 | 0.69% | 13 | Rural |
| Mabogini | 57,231 | 3.7 | 854.2 | 3.5% | 9 | Peri-urban |
| Kibosho Mashariki | 13,996 | 4.3 | 248 | 1.80% | 23 | Rural |
| Kindi | 34,045 | 3.9 | 680.3 | 2.0% | 8 | Peri-urban |
| Majengo | 7385 | 2.8 | 671.4 | | within | Urban |
| Njoro- | 15,511 | 3.3 | | 3.20% | within | Urban |

side is downward along the road. Both Majengo and Njoro are high-density urban wards located within Moshi municipality. The population is very diverse with a mix of ethnic affiliations and socio-economic classes. Employment centers on small businesses in both the formal and informal sectors, and both suffer from a lack of investment in infrastructure, particularly solid waste collection (Mhina et al., 2003).

4. Research design and methods

Given the lack of previous studies of place attachment surveys within the African context, and to better operationalize abstract concepts such as the perceptions of risks posed by urbanization and generate appropriate survey questions, we conducted 13 focus group discussions in eight locations in the city and surrounding areas in the spring and summer of 2022. Focus groups were held in communities based on locations along a transect from rural to urban, and participants were separated into youth and elders, except for one jointly held focus group. Focus group participants were purposefully selected based on residence, and the selection process was structured to solicit diverse perspectives from natives and migrants concerning their place attachment to the area. The participants were selected with the help of the local community leaders and the research team cross-checked to ensure the selected participants met the criterion. Research approval was granted by local authorities for both Moshi Rural and Moshi Urban districts. In total, the focus groups included 208 people. We asked participants to discuss

important places in the area, sociocultural considerations in selling land, locations where they live and visit regularly, their feelings about Moshi and cities more broadly, and finally, how they thought of urban change; specifically, whether they felt it would have a positive or negative impact on themselves and their community and why. The facilitators compiled summaries of the focus group meetings and group interviews using contemporaneous notes. All focus group discussions and interviews were audio recorded, transcribed, and translated, and we analyzed the data through qualitative coding of transcripts to identify themes.

The analysis of the focus groups was integral in developing our survey questionnaire, which contains several sections designed to measure inhabitants' relationship to their local area and includes a wide range of factors that potentially influence this relationship (the Swahili word 'eneo' was used to refer to a respondents' place or area). In addition to individual descriptive statistics, we include questions to identify place attachment, perceptions of cities, perceived risks of urbanization, and other control measures such as relationship to land. The survey was translated into Swahili by a native speaker and Swahili language instructor and the translation was corroborated by Tanzanian partners before being administered in June 2023. Ten research assistants were recruited and trained in the questionnaire, applied survey techniques, and ethics underpinning the research activities. Survey data was collected using Open Data Kit (Hartung et al., 2010), and activities were monitored by a principal researcher with the appropriate technical

knowledge and experience. Daily meetings were held to share and address challenges. Using a simple random sampling process, we selected approximately 700 respondents, aged 18 years or older. All the respondents were asked the same questions. The format of the standardized survey started with demographic information (e.g. age, sex, occupation, and ethnicity), followed by questions related to land ownership status, area status (rural or urban), relationships between place and culture, the meaning of place and its importance, urban/rural ideology about place, relationships between urbanization and identity and risk perceptions. All responses were anonymized.

Out of 706 respondents, 68.2% were Chagga, 57.8% were female, 62.6% were native to the area, 71.1% reported owning land, and the ages of the respondents ranged from 18 to 95 (average 47.2, by comparison). 18 responses were removed due to insufficient information.

Table 2 below provides some descriptive statistics of the survey locations.

5. Operationalization of key concepts

5.1. Place attachment

Place attachment was measured using four items¹ (see Table 3 below). Some of these are standard measures and others emerged from our focus group analysis and reflect concerns specific to the African context and capture the association between ethnicity and place. Focus group participants noted the role of local traditions, like rituals, burials, celebrations, and other religious traditions in defining their relationship to the area. Survey participants then rated the items on a 5-point Likert scale (1 = Strongly agree to 5 = strongly disagree). However, the second question asked participants about personal identity and asked them to rank a range of comparative personal and group identities (area, tribe, clan, social network, occupation/livelihood) on the same scale based on importance. We reversely coded these items for the sake of interpretation (1 = Strongly disagree to 5 = strongly agree). A principal component analysis (PCA) was conducted, generating a 1-factor solution, explaining 36% of the total variance for the entire set of items. Items with factor loadings less than 0.5 were discarded due to lower relevance (in this case, 'I participate in traditions that can only be performed in this area' was dropped). The internal scale consistency for the three retained items was good, with Cronbach's alpha coefficient = 0.81. Factor scores for place attachment were created based on the mean values of the retained items, retaining the scale metric as measured. Based on the coding of the variables involved, this meant that higher factor scores indicated higher attachment to place¹.

5.2. Perception of cities

Perception of cities was measured using eight different variables, four of which were positive associations of cities and four of which were negative (see Table 4 below). These associations were derived from Félonneau (2004) and the focus groups, who were asked about how they thought of or reacted to, the city (specifically Moshi). Survey Participants rated the items on a 5-point Likert scale (1 = Strongly agree to 5 = strongly disagree). We reversely coded these items for the sake of interpretation (1 = Strongly disagree to 5 = strongly agree). A principal component analysis was conducted, generating a 2-factor solution, explaining 40% of the total variance of the entire set of items. Factor 1 explains 20% of the variation and reflects negative urban associations (higher values imply more negative associations), while Factor 2 accounted for 20% and reflects positive associations (higher values imply more positive associations). To construct the variable, items with factor loadings lower than 0.5 were discarded, and the composite scores

¹ A fifth was included: "This area is important to who I am as an individual", but had to be eliminated due to lack of response variation.

were created based on the mean values of the retained items. The internal scale consistency is good, with Cronbach's alpha coefficient = 0.79 for Factor 1 and = 0.80 for Factor 2.

5.3. Perception of urban risk

Perceptions of urban risk were measured using 9 variables (see Table 5 below). Again, the specific questions were derived from the focus group analysis. Participants were asked about urban change, whether they thought Moshi would grow, how they conceived of this growth, and what it would mean for them. A common conceptualization of urban change that participants felt could impact themselves and their community was through population growth (and its association with both economic growth and migrants from elsewhere) as well as the designation of formally rural land to urban land, which has implications for property rights, but also fees and taxes. Focus group participants also commented on the loss of farming and concerns about selling land to those not from the area. Four of the survey questions were associated with the *likelihood* of risk (question # 3,5,6,8), and participants rated the items on a 5-point Likert scale (1 = Very unlikely to 5 = Highly likely). The other four questions were associated with *concern* for the risk (questions # 2,4,7,9) and participants rated the items on a 5-point Likert scale (1 = Not at all worried to 5 = Very worried). Principal component analysis was conducted, generating a 2-factor solution explaining over 43% of the total variance of the entire set of items. Because of the coding of the variables, the interpretation is not straightforward. Factor 1 is associated with the level of concern (higher values implying higher levels of concern), while Factor 2 is associated with the likelihood of risk (higher values implying greater likelihood of risk). Composite scores for the factors were created based on the mean values of the retained items (with factor loadings greater than 0.5). The internal scale consistency was good, with Cronbach's alpha coefficient = 0.88 for the likelihood of risk and 0.79 for the concern for risk.

6. Results

We utilized analysis of variance (ANOVA) and independent *t*-tests to explore group differences (age, location, ethnicity, migrant status) on the criterion variable place attachment (see Table 6 below). To classify age categories, we used natural breaks to determine cut-off points. Ethnicity was measured as a binary (Chagga/non-Chagga), as was migrant status. The location was based on survey sites.

Place attachment (in this case, a higher value means higher levels of place attachment) performed largely as expected. Age and place attachment were correlated; older people tended to express stronger levels of place attachment compared with youth and middle-aged, and middle-aged had greater place attachment compared with youth. Chagga had higher levels of place attachment compared with non-Chagga, and those native to the area had higher levels compared with those who were not. Finally, there was a significant decrease in levels of place attachment between rural, peri-urban, and urban locations; rural residents had higher levels of place attachment compared with peri-urban residents, who had higher levels compared with urban residents, similar to the findings of Buchecker and Frick (2020).

In addition, we utilized analysis of variance (ANOVA) and independent *t*-tests to explore group differences (age, location, ethnicity, migrant status) in the criterion perception of cities (see Table 7 below).

Perception of cities performed similarly to expectations, but the group differences were fewer. Higher values for factor 1 (negative associations of the city) imply more negative or pessimistic perceptions of the city. In general, young people are more optimistic about cities, compared with middle-aged folks who are more negative. It is interesting to note that there were no significant differences between middle-aged and elderly. Being either Chagga or native-born implied being less positive about urban areas. Higher values for factor 2 (positive associations of the city) imply more positive or optimistic perceptions of the

Table 2
Descriptive statistics of survey locations.

| Location | Number of respondents | Mean age | % Female | % Chagga | % native | % owning land |
|-------------------|-----------------------|----------|----------|----------|----------|---------------|
| Sango-Kimochi | 119 | 46.58 | 52.10% | 81.5 | 70.6 | 84.0 |
| Mabogini | 110 | 44.31 | 57.27% | 26.4 | 47.3 | 74.5 |
| Kibosho Mashariki | 117 | 51.68 | 47.86% | 96.6 | 89.7 | 86.3 |
| Kindi | 125 | 48.57 | 65.60% | 91.2 | 67.2 | 73.6 |
| Majengo | 94 | 45.13 | 58.51% | 68.1 | 54.3 | 47.9 |
| Njoro | 123 | 46.50 | 63.41% | 43.5 | 43.5 | 54.8 |
| Total | 688 | 47.23 | 57.56% | 68.4 | 62.4 | 70.8 |

Table 3
Summary of rotated factor loadings based on PCA for 4 items on Place attachment.

| Variable: Place attachment (PA) | Rotated factors loadings |
|---|--------------------------|
| | Factor 1 |
| 1. I see myself living in my area for the rest of my life. | 0.76 |
| 2. When I describe myself, the first thing I think about is (my area) | 0.50 |
| 3. This area is my ancestral homeland. | 0.79 |
| 4. I participate in traditions that can only be performed in this area. | 0.05 |
| Eigenvalue | 1.46 |
| % of total variation | 36.15% |

Note: Factor loadings over 0.50 appear in bold; PCA using Varimax rotation with Kaiser’s criterion.

Table 4
Summary of rotated factor loadings based on PCA for 8 items on Perception of cities.

| | Rotated factors loadings | |
|---|--------------------------|-------------|
| | Factor 1 | Factor 2 |
| 1. The city is a place with a high level of services and infrastructure. | -0.01 | 0.59 |
| 2. The city is a place with jobs and economic opportunity. | 0.08 | 0.67 |
| 3. Urban way of life (<i>mazoea</i>) is a good way of life. | 0.14 | 0.51 |
| 4. The city is a place with secure land tenure. | -0.27 | 0.62 |
| 5. The city is a place of chaos. | 0.71 | 0.08 |
| 6. The city is a place of poverty. | 0.65 | -0.24 |
| 7. The city is a place with people who are not like me | 0.68 | 0.07 |
| 8. Urban ways of life (<i>mazoea</i>) are not compatible with my tribal culture | 0.38 | 0.32 |
| Eigenvalue | 1.63 | 1.60 |
| % of total variation | 20.23% | 20.15% |

Note: Factor loadings over 0.50 appear in bold; PCA using Varimax rotation with Kaiser’s criterion.

city. Elderly people are less optimistic about cities than youth, but there was no significant difference between youth and middle-aged. Unlike the negative perception (factor 1), location was significant regarding positive perceptions of the city; not surprisingly, urban residents were more positive about cities compared with their counterparts in rural or peri-urban areas. This suggests that urban residents were equally negative about cities compared with their rural counterparts but expressed additional positive sentiments about the city. Similarly, being Chagga or native-born had no significant differences, unlike the negative perception of cities (factor 1). This suggests that Chagga or native-born people were equally positive about cities compared with non-Chagga or non-natives, but they expressed additional negative sentiments about the city.

Table 5
Summary of rotated factor loadings based on PCA for 9 items on urban risk perception.

| Variables: urban risk perception | Rotated factors loadings | |
|---|--------------------------|-------------|
| | Factor 1 | Factor 2 |
| 1. It is likely that population growth will happen in my area in the next 10 years. | -0.25 | 0.48 |
| 2. I am worried about population growth in my area. | 0.65 | -0.18 |
| 3. It is likely that my area will be legally designated as urban during the next 10 years. | -0.11 | 0.66 |
| 4. I am worried about my land being designated legally as urban land. | 0.73 | 0.03 |
| 5. It is likely that I could be harmed by changes to my area more easily than other people in the greater Kilimanjaro region. | 0.09 | 0.65 |
| 6. What is the likelihood the loss of farmland will happen to you? | 0.39 | 0.54 |
| 7. What is your level of concern if loss of farmland were to happen to you? | 0.56 | 0.41 |
| 8. What is the likelihood that your neighbors will sell land to outsiders | 0.07 | 0.58 |
| 9. What is your level of concern if your neighbors sell land to outsiders? | 0.68 | 0.002 |
| Eigenvalue | 2.20 | 1.70 |
| % of total variation | 21.80% | 21.50% |

Note: Factor loadings over 0.50 appear in bold; PCA using Varimax rotation with Kaiser’s criterion.

Table 6
t-test, ANOVA, and post-hoc analysis for Place attachment based on: Age, Urbanization level, Chagga or not, and Native or not.

| Variables | Place attachment | | |
|------------------------------|------------------|------------|--------------------|
| | N | Group mean | Post-hoc (p-value) |
| Age | | | |
| a) Young (18–40 years) | 257 | 3.25 | a-b (<0.001) *** |
| b) Mid-aged (41–60 years) | 298 | 3.85 | b-c (<0.001) *** |
| c) Elder (≥61 years) | 133 | 4.11 | c-a (0.046) * |
| ANOVA test, <i>F</i> (2,688) | 38.16 | <0.001 | *** |
| Location | | | |
| a) Rural residents | 236 | 4.10 | a-b (<0.001) *** |
| b) Peri-urban residents | 235 | 3.69 | b-c (<0.001) *** |
| c) Urban residents | 217 | 3.21 | c-a (<0.001) *** |
| ANOVA test, <i>F</i> (2,688) | 43.06 | <0.001 | *** |
| Chagga or not? | | | |
| a) Yes | 471 | 3.91 | |
| b) No | 217 | 3.17 | |
| t-test, <i>t</i> (688) | 8.863 | <0.001 | *** |
| Native or not? | | | |
| a) Yes | 430 | 4.04 | |
| b) No | 258 | 3.07 | |
| t-test, <i>t</i> (688) | 12.71 | <0.001 | *** |

Note: *p < 0.05; **p < 0.01; ***p < 0.001; p-values are in parentheses.

Table 7

t-test, ANOVA, and post-hoc analysis for perception of cities based on: Age, Urbanization level, Chagga or not, and Native or not.

| Variables | Perception of cities | | Perception of cities | |
|---------------------------|----------------------|--------------------|----------------------|--------------------|
| | (Factor 1: negative) | | (Factor 2: positive) | |
| | Group mean | Post-hoc (p-value) | Group mean | Post-hoc (p-value) |
| Age | | | | |
| a) Young (18–40 years) | 2.78 | a-b (0.0028)** | 4.23 | a-b (0.3341) |
| b) Mid-aged (41–60 years) | 3.09 | b-c (0.9) | 4.14 | b-c (0.3952) |
| c) Elder (>=61 years) | 3.05 | c-a (0.0549) | 4.05 | c-a (0.0438)* |
| ANOVA test, F (2,688) | 5.98 (<0.0027)** | | 2.97 (0.0518) | |
| Location | | | | |
| a) Rural | 3.00 | a-b (0.5541) | 4.10 | a-b (0.9) |
| b) Peri-urban | 2.90 | b-c (0.5835) | 4.09 | b-c (0.0069)** |
| c) Urban | 3.00 | c-a (0.9) | 4.29 | c-a (0.0153)* |
| ANOVA test, F (2,688) | 0.68 (0.5074) | | 5.61 (0.0038)** | |
| Chagga or not? | | | | |
| a) Yes | 3.02 | | 4.14 | |
| b) No | 2.84 | | 4.19 | |
| t-test, t(688) | 2.01 (0.0447)* | | -0.92 (0.3592) | |
| Native or not? | | | | |
| a) Yes | 3.05 | | 4.12 | |
| b) No | 2.82 | | 4.21 | |
| t-test, t(688) | 2.69 (0.0074)** | | -1.60 (0.1102) | |

6.1. Multivariate regression analysis

To analyze the influence of perceptions of cities, and perceived urban risks on place attachment while controlling for personal and other characteristics, a hierarchical multiple regression analysis was conducted, which allowed for an additional robustness check. Respondents' perception of cities was entered first, followed by urban risk. In the third step, demographic and personal controls were included, followed by an additional relationship to land variables. Finally, the locational variables were added to the model. The results of the hierarchical regression are provided in [Table 8](#) below.

The interpretation of the coefficients is a bit tricky due to the coding of the survey answers. Perhaps the most notable of the findings: negative perceptions of the city were consistently significant (and positive) for all models, so the more the city was perceived or associated with negative characteristics (higher values imply more negative associations), the higher the level of place attachment. Furthermore, the positive perceptions of the city were not significant, implying that negative urban associations tend to drive place attachment. Place attachment can therefore be conceived more as a reaction against negative perceptions of the city, and suggests urbanization can serve as a threat to people's sense of place. The urban risk variables were only significant for model 2 and became insignificant once personal controls were included. This is interpreted as the more a respondent felt an urban risk was likely and was concerned about the potential urban risk, the greater the level of place attachment (higher values correspond with higher levels of place attachment).

The personal controls were consistently significant and positive across all models, and greatly improved the goodness of fit of the model. Place attachment is positively associated with age while being Chagga, owning land, and being native to the area (all dummy variables) were associated with greater levels of place attachment. These results were all expected. However, it's unclear if these relationships are mediated through place attachment specifically, or if other factors play a role. Finally, being in an urban or peri-urban location implied lower levels of

Table 8

stepwise regression analysis using place attachment as dependent variable.

| | Place attachment | | | | |
|--|------------------|------------------|------------------|------------------|-------------------|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| Adding perception of city variables | | | | | |
| Factor 1 (negative) | 0.246*** (0.036) | 0.203*** (0.037) | 0.122*** (0.032) | 0.111*** (0.031) | 0.123*** (0.031) |
| Factor 2 (positive) | -0.058 (0.056) | -0.04 (0.056) | 0.017 (0.047) | 0.053 (0.045) | 0.073 (0.045) |
| Adding urban risk variables | | | | | |
| Factor 1 level of concern | | 0.103** (0.043) | 0.053 (0.037) | 0.048 (0.036) | 0.039 (0.036) |
| Factor 2 Likelihood | | 0.139*** (0.038) | 0.055* (0.032) | 0.028 (0.032) | 0.036 (0.031) |
| Adding personal controls | | | | | |
| Age | | | 0.012*** (0.002) | 0.011*** (0.002) | 0.012*** (0.002) |
| Chagga? | | | 0.294*** (0.08) | 0.266*** (0.078) | 0.198** (0.077) |
| Native? | | | 0.541*** (0.083) | 0.434*** (0.083) | 0.404*** (0.081) |
| Owens land? | | | 0.659*** (0.092) | 0.554*** (0.089) | 0.466*** (0.089) |
| Adding land-related controls | | | | | |
| Likely to sell land | | | | -0.007 (0.025) | -0.012 (0.024) |
| Likely to inherit land | | | | 0.138*** (0.02) | 0.135*** (0.02) |
| Adding location controls | | | | | |
| Rural (benchmark) | | | | | |
| Peri-urban | | | | | -0.128* (0.075) |
| Urban | | | | | -0.407*** (0.083) |
| Constants | 3.188*** (0.257) | 2.629*** (0.284) | 1.418*** (0.261) | 1.119*** (0.254) | 1.286*** (0.258) |
| Observations | 688 | 688 | 688 | 688 | 688 |
| R-squared | 0.065 | 0.096 | 0.391 | 0.435 | 0.456 |

Robust standard errors are in parentheses.

***p < 00.01, **p < 00.05, *p < 00.1.

place attachment, a finding that comports with other research ([Buchecker & Frick, 2020](#)).

As an additional robustness check of our place attachment variable, we utilized the same survey and research design in Dar Es Salaam, and based on 577 survey responses, we found similar results for both age; that is, younger respondents experienced lower levels of place attachment compared with their older counterparts, and location; urban areas had lower levels of place attachment compared with peri-urban areas (no rural areas were surveyed in Dar). However, both Chagga and native-born status were not significant, because there are comparatively few Chagga and native-born residents in Dar Es Salaam. Based on this, we conclude that while place attachment does have some more generalizable characteristics and traits, it is still very much experienced locally, and it may be challenging to compare place attachment across a wider geography.

The implications of this research are not entirely academic either. Utilizing the concept of place attachment within the context of African urbanization is useful as it helps us to better understand the political dynamics around urbanization and urban growth. For example, place attachment is useful in understanding local politics in Moshi, as the perception and definition of urbanity carry political significance in Tanzania. The national government designates all areas of the country as either rural or urban, and there are separate land laws relating to each. All urban areas hold one of three classifications (town, municipality, or city), as determined by their population, geographic size, economic

activity, and significance to the country, and each of these designations legitimizes political and administrative power. In 2012, the government of Moshi Municipality began to pursue a planning process to upgrade to 'City' status, and in doing so wanted to annex adjacent communities to meet certain criteria. To initiate the expansion, planners held a series of public meetings to justify the reclassification. These meetings became contested over associations of place and identity (and generated the ideas for this study). The politicization of urban designations was exploited by both major political parties, *Chama Cha Mapinduzi* (CCM) and *Chama cha Demokrasia na Maendeleo* (Chadema), who attempted to use the annexation proposal to their political advantage. In fact, the physical boundary marker on the Moshi - Arusha Road was moved on several occasions depending on whether national CCM or Chadema politicians were visiting. The expansion became an issue for Moshi area voters in the 2020 national elections when then-President Magufuli used the issue to gain support from urban Moshi residents and win votes in the Kilimanjaro region. Attachment to place and how this intersects with perceptions of cities and urban life is useful to understand political support and voting behavior, particularly around contentious issues such as urban expansion.

7. Conclusion

In this study, we examine the relationship between place attachment and residents' perceptions of various aspects of urban life, using Moshi, Tanzania, located in a region long identified with the Chagga people, as a case study. We utilize a survey of approximately 700 respondents, stratified by location, and use principal component analysis to construct variables for place attachment, perceptions of cities, and perceived risks associated with urbanization. This research has confirmed results from similar place attachment studies, as well as identified some unique African aspects. In doing so, the study contributes to our understanding of urbanization and place attachment literature more broadly.

Specifically, this study identifies how place attachment is filtered through the lens of ethnic identities and generational differences in a secondary city in Tanzania. Similar to other studies (Buchecker & Frick, 2020; Dillman & Tremblay, 1977; Uzzell et al., 2002; Williams and Vaske, 1993; Wilson & Baldassare, 1996), we found that increasing levels of urbanization are associated with decreased levels of place attachment, although some other studies found differing results (von Wirth, 2016). Our survey results found that age was a factor, with younger people expressing less place attachment compared with older people. This comports with our hypotheses and focus group interviews. This could be due to the economic opportunities such as employment and education afforded younger people by cities in Tanzania, as well as their willingness to adapt and sense of the inevitability of urbanization, as reported in the focus groups. The role of ethnicity was also a distinct finding in our study since being Chagga was consistently significant in all our statistical analyses. A lack of formal governing institutions augments the role that cultural norms play in managing land, and ethnic identity becomes important in defining and explaining place attachment.

We also found evidence that urbanization is a threat to people's sense of place. This was borne out in our survey results by the association between place attachment and negative sentiments towards cities. This relationship holds when controlling for other factors, such as concerns over risks posed by urbanization. Other studies have similarly found that when a place is threatened by change, residents become more attached to the place, particularly if the place impacts their individual or community identity (Brown & Perkins, 1992; Devine-Wright, 2014) or, as Bonaiuto et al. (2002, p. 636) argues, "threats to territorial continuity and place-related identity may reinforce place attachment." The findings are also complementary to what Von Wirth et al. (2016) found, that urban change is positively related to residents' place attachment if those changes are seen as beneficial or familiar (and therefore not threatening).

By examining place attachment within the context of concerns over rapid urbanization, we have extended the place attachment literature both geographically and thematically. Specifically, the study highlights that a) cultural identity plays a major role in the articulation of place attachment, and b) place attachment is important in understanding the cultural and political dynamics of rapid urbanization in Africa. More research is needed to understand this, however, as these dynamics are highly contextual. We acknowledge that the importance and role of the Chagga ethnic identity suggest the findings are not necessarily generalizable. Although nominally a methodological weakness, as the Chagga are somewhat unique, the role of place-based regional identities within the context of rapid urbanization is certainly testable elsewhere. Potential comparisons could include other rapidly urbanizing smaller cities located within ethnic homelands which may also help generalize these findings.

CRedit authorship contribution statement

Stephan Schmidt: Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Funding acquisition, Conceptualization. **Said Nuhu:** Project administration, Investigation, Data curation. **Ryan Thomas:** Supervision, Project administration, Methodology, Investigation, Conceptualization. **Wenzheng Li:** Formal analysis.

Declaration of competing interest

None.

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