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# Urban form and mobility future for the Greater Accra Metropolitan Area (GAMA): Reflections from the past and policy implications for the future

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## Abstract

The nexus between urban form and mobility patterns vis-à-vis Africa's rapid urbanization continues to be the subject of considerable theoretical debate. This paper seeks to identify the effects of the current urban form on mobility patterns (i.e., mode choice and travel time) for work and shop-related trips and reflects on various pathways to achieve the desired accessibility outcome. The paper is based on the triangulation of primary data sources from a doctoral study in 2014 and complemented with a 2021 survey of ride-hailing activities in GAMA. Results showed that the city's urban form is monocentric and sprawled, thus engendering commutes over long distances in low-capacity vehicles, particularly those operated by ride-hailing services such as Uber and Bolt. Also, most trips are made for work and study-related purposes. The paper recommends a transit-oriented development (TOD), including a de-emphasis of the current urban form by creating a multi-city structure, redevelopment and in-filling of the city centre and the promotion of mass transit.

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## Introduction

Urban form, according to van Acker and Witlox (2005, p.2), includes the "spatial distribution characteristics of land use, such as density, diversity and design, the locations of human activities, and the interaction between land uses and activities". The symbiotic relationship between urban form and transport and the feedback mechanisms among these concepts have been the subject of considerable theoretical interest (Bertolini, 2017; Wegener & Furst, 1999). For instance, rapidly expanding cities are characterized by high car dependency due to longer trip distances and travelling time (van Acker, Witlox & van Wee, 2007; Schwanen, 2002). Inversely, when urban residents reside relatively close to activity points, as is the case in most European cities, there is a high use of non-motorized transport modes, such as walking and cycling, together with large buses and trains as opposed to cars (UN-Habitat, 2011; Handy, Cao & Mokhtarian, 2006; Van Wee, 2002; Boarnet & Crane, 2001).

In many rapidly urbanizing African cities, however, urban form is typically monocentric, with a relatively high concentration of socio-economic opportunities at the city centre. Meanwhile, the cities have sprawled considerably, leading most residents to reside in distant locations relative to the city centre (UN-Habitat, 2011). The concomitants of this urban form type on mobility are well known. For instance, Cervero (2013, p.9) describes African cities as characterized by "exceedingly high traffic densities and comparatively long trips by motorized transport" as commuters access facilities and services at the city centre. Also, monocentric urban form and urban sprawl result in acute peak-hour traffic congestion, lower ambient air quality, traffic accidents and limited use of non-motorized transport modes.

The urban mobility challenges will likely worsen unless adequate measures are implemented as African cities continue to grow, welcoming an estimated 40,000 new inhabitants almost daily (Bakalian et al., 2013). According to the UN (2019), the urban population in sub-Saharan Africa, in particular, is projected to double by 2050 (99% increase). This expected growth is primarily due to rural-urban migration and natural population increase (Adarkwa, 2012). Due to the lack of commensurate socio-economic investments and opportunities, sub-Saharan African cities are in a dire situation to cope with the demand and pressure on resources, leaving many residents underserved (Welle et al., 2022).

Ghana is among the rapidly urbanizing sub-Saharan African countries. In the decade following Ghana's independence from Great Britain, the urbanization rate was around 4.7% per annum. The growth rate reduced to about 3.3% between 1970 and 1984. However, it rose again to 4.6% from 1984 to 2000 and dropped slightly to 4.2% between 2000 and 2010. Recent figures, as of 2021, show that 56.7% of Ghana's population live in urban centers (Ghana Statistical Service, 2021; 2014). According to UN-Habitat (2022), Ghana's urban population is expected to grow to around 72.3% by 2050. Greater Accra Region (GAR) arguably is the most urbanized geographic area in the country.

The population density in the area also increased by 445 persons, from 1236 in 2010 to 1681 in 2021 (Ghana Statistical Service, 2021). Therefore, it is essential to adopt fast and sustainable strategies to address the main problems deriving from rapid urbanization: limited services and infrastructure provision. In the next section of the paper, I discuss the key factors which explain the region's present astronomical growth from the pre-colonial, colonial, and post-independence periods. Meanwhile, it is important to stress that other recent studies have focused attention on urban form, including urban sprawl and various containment measures, associated spatial-environmental risks, and infrastructural and mobility challenges (Amponsah et al., 2022; Asabere et al., 2020; Poku-Boansi et al., 2020; Oteng-Ababio et al., 2013, Owusu, 2013; Abane, 2011).

Against this backdrop, this paper specifically focuses on the following objectives which are (1) to identify the effects of the current urban form on mobility patterns (i.e., mode choice and travel time) for work and shop-related trips and (2) reflect on pathways to achieve the desired accessibility outcome.

## Contextualizing urban form and mobility dynamics in GAMA

'GAMA', as used in this paper, consists of the much wider area of the GAR and its immediate functionally interlinked neighbouring settlements, notably the Awutu Senya East Municipality in the Central region (Agyemang, 2017; Oteng-Ababio et al., 2013; Moller-Jensen et al., 2007). As shown in Figure 1, this urban conurbation has a total population of over 5 million inhabitants (Ghana Statistical Service, 2020; Awutu Senya East Municipal Assembly, 2020). Earlier studies have found evidence of a relatively more robust functional interaction between Kasoa, the capital town of the above-mentioned municipality and the city of Accra in terms of trips made to work, shop, and access government services (Agyemang, 2017, Yeboah, 2000). In some recent studies, however, the concept of GAMA is expanded to include all three neighbouring administrative regions bordering the GAR. These include the Central, Volta and Eastern regions of Ghana. This continuously built geographic space of approximately 15,352 km2 of land is also referred to as the Accra City Region (Asabere et al., 2020; Agyemang et al., 2017).

One may attribute GAMA's recent unprecedented population and spatial expansion to globalization, transportation improvements, and population growth (Yeboah, 2000). For instance, as Ghana's economic and political hub, GAMA attracts global capital, expertise, and foreign direct investments (Obeng-Odoom, 2018; Owusu, 2013; Grant, 2009; Briggs & Yeboah, 2001). Indeed, advantageous forces dating back to the colonial and post-colonial eras better explain GAMA's present urban form and unique mobility patterns.

Historical sources show that the geographical location of the settlement, which permitted trade with nearby European forts, also provided relative security from tribal attacks by the Akwamu people. Most importantly, the choice of Accra over Cape Coast as the administrative capital of the Gold Coast by the British further boosted the development of socio-economic amenities for the settlement (Benneh et al., 1990;

Dickson, 1969; Boateng, 1960). The colonial administrators invested in high-value social amenities in the Victoriaborg, Christiansborg, Ussher Town, and James Town complexes, now known collectively as Accra Central, or the 'Accra city proper' (World Bank, 2015). According to Dickson (1971), due to increased commercial activities and the establishment of government offices, coupled with opportunities for better education and health services, Accra's population proliferated from a mere 19,582 in 1911 to 41,124 and 60,726 in 1921 and 1931, respectively.

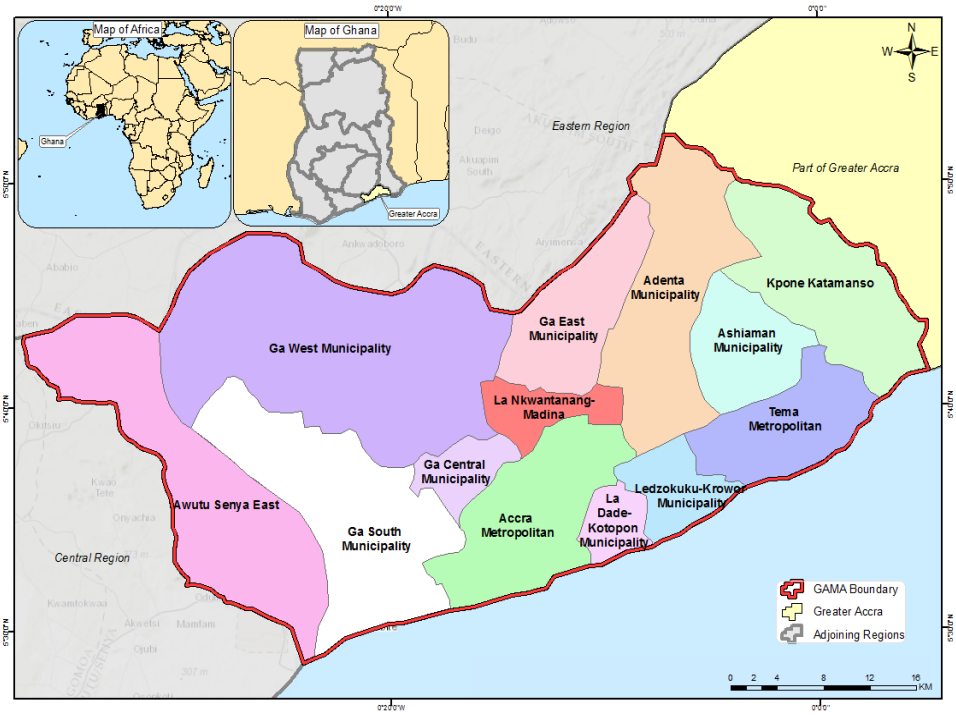


**Figure 1:** A Map of GAMA showing its constituent administrative areas. Source: Author's construct

When Ghana attained political independence from British colonial rule in 1957, the new government of Ghana did not restructure the fundamental spatial planning laws and procedures it had inherited (Songore, 2003; Odame, 1996). While spatial plans and regulations were designed to guide the city's overall development, they were largely unimplemented (GoG, 1991). To compound the problem further, Ghana's post-independence policy of accelerated industrialization and expansion in the commercial sectors between 1960 and 1970 led to massive rural-urban migration into Accra. Scholars agree that the real impetus for Accra's present sprawl-like development patterns started in the early 1980s when the state adopted macroeconomic reforms (Owusu, 2013; Doan & Oduro, 2012; Yeboah, 2003; Grant & Yankson, 2003; Grant & Nijman, 2002). The fiscal reforms paved the way for several local and global forces to modify the spatial configuration of Accra. For example, the boom in the service sector in Accra, following the adjustment program, led to massive capital and human resource inflows.

For the many urban poor, housing challenges forced them to live in slums and informal squatter settlements dotted in and around the city. Due to improved road networks, many car-owning middle and high-income residents were attracted to live in the peri-urban localities (Doan & Oduro, 2012).

## Conceptualizing urban form and mobility nexus in GAMA

In general, the interactions between urban form and mobility or transportation system are characterized by causal relationships through a series of forward and backward linkages and feedback mechanisms. These linkages and feedback mechanisms are essential elements of 'systems thinking'. The idea is that all things have connections with many other things, and the significance of any particular system depends on its relationships with others (Forrester, 1969; Bertalanffy, 1968). Forrester (1969) argues that the real world is a multi-loop, multi-state, non-linear feedback system that reacts to the decision maker's actions in anticipated and unanticipated ways. In other words, policies and strategies adopted today may have several unforeseen repercussions due to the interplay among multiple variables in the urban system. Systems thinking has been applied to solve numerous real-world urban and transportation challenges (Oteng-Ababio & Agyemang, 2012; Armah et al., 2010; Duran-Encalada & Paucar-Caceres, 2008; Forrester, 1969).

The forward and backward linkages and feedback mechanisms related to GAMA's urban form and mobility future have been illustrated using concepts adopted from van Wee et al.'s (1997) travel behaviour rationale theory and Owusu's (2008) analytical framework of spatial levels. See Figure 2. Urban form, seen here as the location of activity points for work, shopping, leisure, education, cultural activities etc., across the city, usually away from the homes of urban dwellers, directly determine or constrain certain types of travel behaviour, as well as the cost and the consumption of travel (Naess, 2012; van Acker, Witlox & van Wee, 2007; Boarnet & Crane, 2001). Therefore, the pattern of transportation behaviour (including deciding to travel to where, at what time to go, which route to travel and which particular transport mode to go with) is a function of the need or desire of trip makers to access activity points located elsewhere in the city. Trip makers must overcome specific travel resistances, including costs (in monetary and time value), quantity and quality of competing transport service types.

Transportation systems, in turn, influence the location of activity points in the urban space because trip patterns affect the geographical spread or concentration of activity points. Given the interconnectedness, linkages and feedback mechanisms between these two sub-systems (i.e., urban form and transportation systems), there is the need to properly plan, implement and integrate urban form and transport policies to enhance the efficiency of their interactions. This efficiency may be seen in the increased use of non-motorized transport modes, mainly walking, when land-use patterns allow urban dwellers to reside close to their activity point locations. Also, land use densification promotes mass transport using buses and light trains. In GAMA, as in several major

cities of the developing countries, walking is an effective form of low-cost mobility that engenders urban sustainability and social inclusion (Agyemang, 2015).

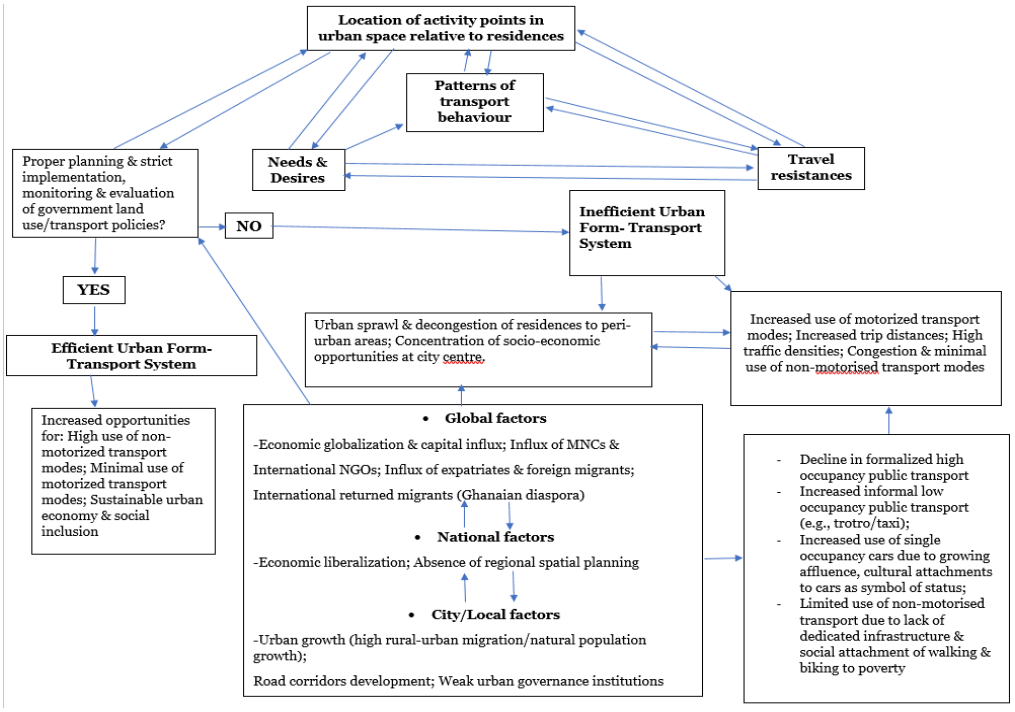


**Figure 2:** Urban form and transport system nexus in GAMA. Source: Author's construct

However, entropy may occur when the interactions between urban form and transportation systems are not properly planned and regulated, as is the case in GAMA. Entropy is reflected in urban sprawl and relocation of settlements further away from the city centre, which hosts the vital activity points to the peri-urban areas of the city. In GAMA, several global, national and local driving forces operating at different spatial scales have contributed to the inefficiencies in the present urban form (Owusu, 2008). Against this backdrop, GAMA's urban form promotes high use of motorized transport over longer distances, traffic congestion and less use of non-motorized transport modes for commuters. The increased use of motorized transport modes may also contribute to a further sprawl of the city.

## Methods

This paper has two-fold objectives. These are (1) to identify the effects of current urban form on mobility patterns (i.e., mode choice and travel time) for work and shop-related trips and (2) reflect on pathways to achieve the desired accessibility outcome. To address these objectives, the nexus between 'urban form' and 'mobility patterns' is operationalized to mean the location of activity points relative to urban dwellers' residential areas and

the transport modes utilized. In this study, three empirical datasets have been carefully triangulated to understand better the dynamic mobility patterns occasioned by GAMA's urban form.

The first dataset was obtained in May 2014 as part of a broader doctoral study of trip makers who regularly visit GAMA's city centre for various economic activities. Participants' socio-economic and demographic details, location of residences, and mode choice were collected as part of this earlier study. For a detailed description of the study design, including the sampling framework adopted, study sites visited, survey tool employed, data collection protocols, and data analysis, see Agyemang (2017).

The second dataset was obtained in June 2014 and involved a travel time survey over a 5-day period. The travel time study was conducted to objectively ascertain the average travel times reported by participants from their residences to GAMA's city centre. Research assistants randomly boarded commercial transport, referred to as trotros, from the 'Tema Station', a major public transport hub in GAMA, to Kasoa, Teshie and Madina. These three sub-urban localities have been found in an earlier study to generate the most trips to the city centre (Agyemang, 2017). The observations were done during the morning peak period between 6 am and 9 am. With a stopwatch and a survey form made up of various bus stops, each assistant measured the travel times between stops, and idle times (for passenger dis-embarkment/embarkment etc.) until a journey ended. The data was entered and analyzed using MS Excel software.

The third dataset was generated from January 25th to March 4th 2021. This follows the introduction of the disruptive, technology-enabled ride-hailing transport service in GAMA. The objective of the survey was to identify the major players in the ride-hailing industry, their level of popularity from a users' perspective, and ascertain the extent to which they have recently changed the public transport space in GAMA. A multi-stage systematic sampling technique was adopted in selecting study sites and survey participants. This involved, for instance, targeting potential hot spots for ride-hailing activities based on Google Maps data and randomly recruiting participants in these locations (see Figure 3).

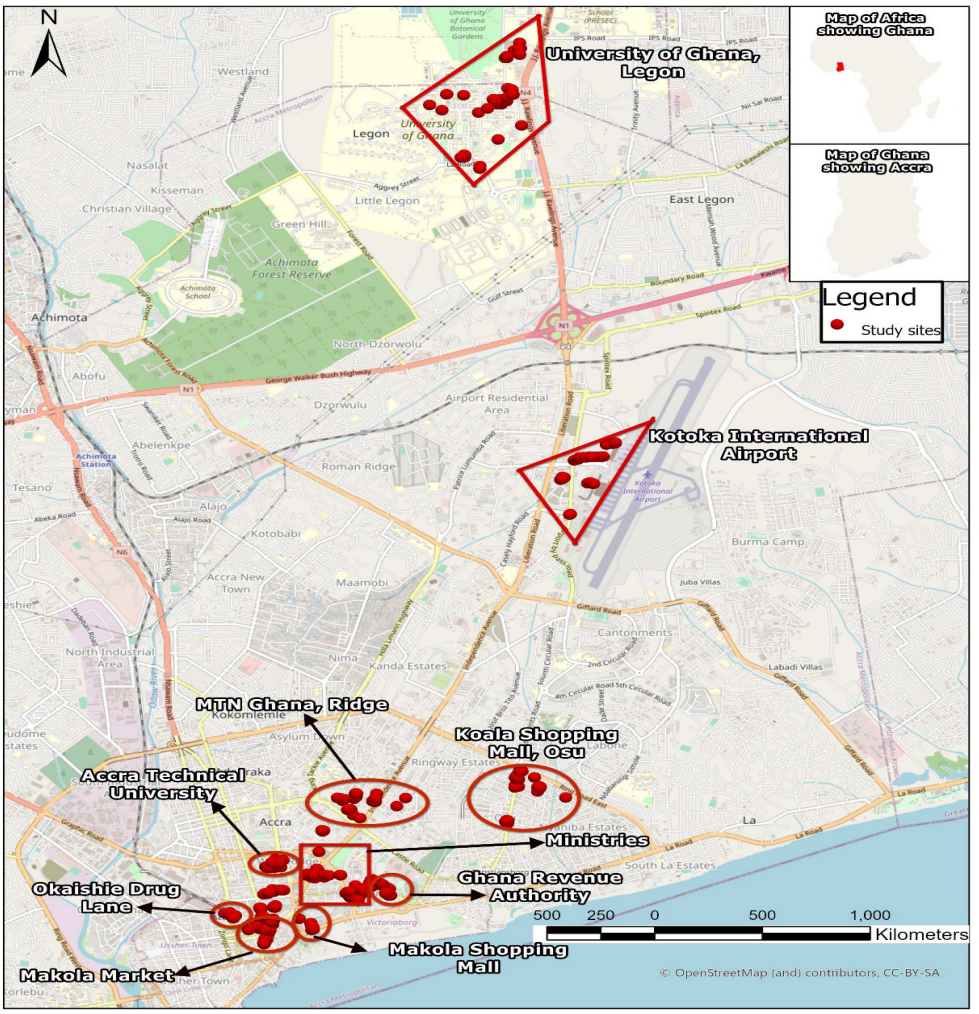


**Figure 3**: A map of Accra showing study sites where participants were recruited

The survey instrument, which was hosted online but administered face-to-face, measured participants' socio-economic status, as illustrated in Table 1 below. The survey instrument also had a list of ten popular ride-hailing brands currently operating in GAMA. In addition, participants were encouraged to add any ride-hailing brand that had not been included in the list. Participants were asked to respond to the following set of questions objectively: (1) Please rate your perception of how popular each of the following ride-hailing brands is to you on a scale of 1-5 (where 1 = never seen this brand before, 2= rarely see this brand, 3= sometimes see this brand 4= often see this brand 5=always see this brand and is very popular); (2) Which of the listed ride-hailing brands have you actually used and how often, on a scale of 1-4 (where 1= rarely; 2= Sometimes; 3= Often; 4= Always)?; (3) What was the primary purpose of your most recent journey

in your most preferred ride-hailing brand (i.e., the last trip to your destination after which you paid the driver)? and (4) Before 2016, when Uber 1st arrived in Ghana, and the others followed, which of the following transport options were you using primarily for the same trip you recently undertook using a ride-hailing service?

**Table 1:** Socio-economic profile of surveyed participants (N=515)

| Variables | Frequency (N) | Percentages (%) |
|---|---|---|
| ***Gender*** | | |
| Male | 312 | 60.6 |
| Female | 203 | 39.4 |
| ***Age groups*** | | |
| 18-24 | 150 | 29.1 |
| 25-39 | 246 | 47.8 |
| 40-54 | 100 | 19.4 |
| 55+ | 19 | 3.7 |
| ***Education*** | | |
| No formal | 14 | 2.7 |
| Basic | 71 | 13.8 |
| Senior High | 132 | 25.6 |
| Tertiary | 298 | 57.9 |
| ***Marital Status*** | | |
| Single | 303 | 58.8 |
| Married | 212 | 41.2 |
| ***Occupational Status*** | | |
| Formal Sector | 135 | 26.2 |
| Informal sector | 214 | 41.6 |
| Student | 152 | 29.5 |
| Unemployed | 11 | 2.1 |
| Retired | 3 | 0.6 |
| ***Car ownership*** | | |
| I personally own a car | 86 | 16.7 |
| I do not personally own a car | 429 | 83.3 |

In arriving at the scores to indicate how popular the various ride-hailing brands were perceived to be, the researcher multiplied the total raw scores assigned by participants per brand by a factor of 5 (for 'always'); 4 (for 'often'); 3(for 'sometimes'); 2(for 'rarely') and 1(for 'never'). A similar analysis was done to gauge participants' frequency of patronage of the various ride-hailing brands. In this instance, the total raw scores assigned by participants per brand was multiplied by a factor of 4 (for 'always'); 3 (for 'often'); 2(for 'sometimes'); and 1(for 'rarely'). The weighted scores were summed up, converted into percentages and presented as doughnuts. The two remaining questions on trip purpose and alternative means of transport were analyzed descriptively, transformed into percentages and displayed as doughnuts.

## Results and Discussion

Like in other developing cities, GAMA's present urban form is monocentric. In other words, the urban form is characterized by the concentration of high-value activity points in the city centre. These activity points create opportunities for working, shopping, and accessing government services. On the other hand, most trip makers reside at sprawled localities found several kilometers away from the city centre where these facilities are located. Figure 4 illustrates how the city's limits have sprawled over time. The continuous sprawl of Accra between 1990 and 2015 has been the subject of interest in an earlier study (Agyemang et al., 2017). Relying on Landsat images, Agyemang et al. (2017) have concluded that Accra's built-up land has increased significantly with no recourse to traditional administrative boundaries with a tremendous environmental cost.

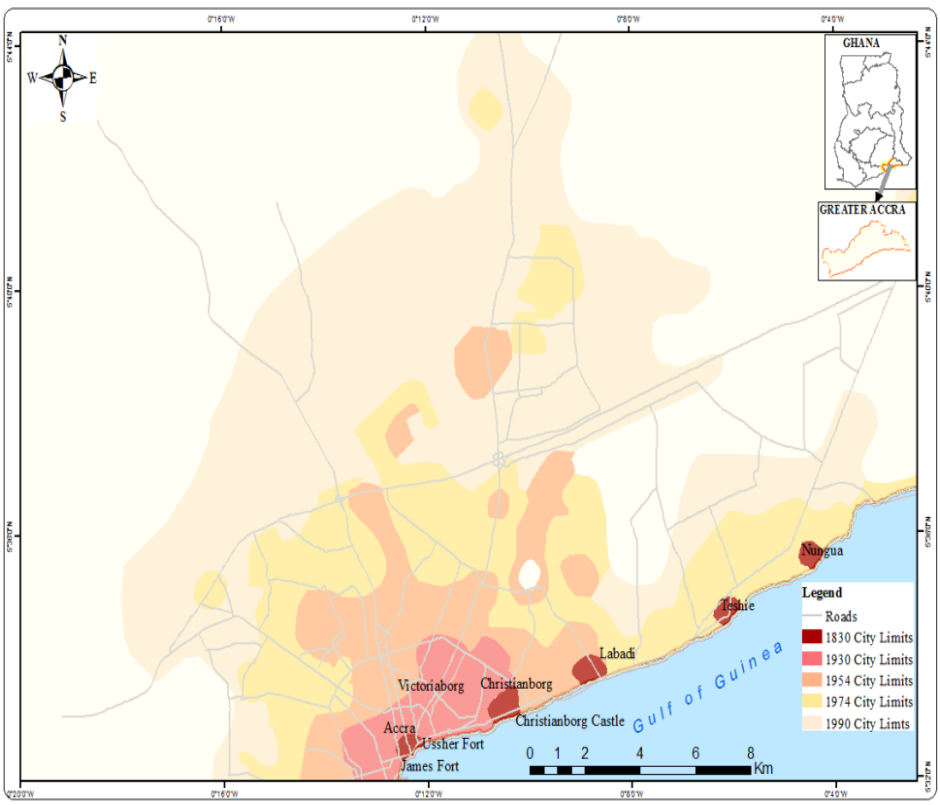


**Figure 4:** Spatial expansion of GAMA between 1830 and 1990.

Author's construct, based on Accra Planning and Development Programme (1991) data

As shown in the analytical framework (Figure 2) and argued earlier (Owusu, 2013), global, national and local spatial-level factors explain GAMA's present urban form, particularly its spatial outgrowth. Macroeconomic reforms in Ghana in the mid-1980s, and its associated open market policy attracted foreign capital, expatriates and Ghanaians

domiciled abroad to take advantage of the investment opportunities. Also, Ghana's relatively stable political climate attracted migrants from war-torn neighbouring countries in West Africa. In addition, rural-urban migration (due to a boom in the service sector, informal trading activities, and natural population increase resulted in more city growth, particularly towards the outskirts, where rent values were comparatively lower relative to the city core). Kasoa, for instance, presents an interesting case study to illustrate the above-mentioned points. In 1970, the settlement had a mere 863 inhabitants. However, in less than a year after the implementation of the macroeconomic policies, the number of people living there had grown to 2,597, representing a 33% increase. In 2000, the settlement grew by 7.5%, with a total population of 34,719 inhabitants (Ghana Statistical Service, 2005). Recently, the Land Use and Spatial Planning Authority and allied state agencies have adopted the Ghana National Spatial Development Framework to develop land and human settlement sustainably.

Before this, low-density development and open spaces in built areas were not uncommon, and most spatial developments took place in peri-urban localities like Kasoa, resulting in urban sprawl.

As mentioned earlier, several critical socio-economic amenities and job opportunities are localized at the city core, creating the need and desire to commute over long distances, as shown in Figure 5. In addition to the La township (which is located within the city centre), most trip makers who commute to access socio-economic opportunities reside at Kasoa, Madina and Teshie. These are residential areas found at approximately 27.5, 16.8 and 13 kilometres, respectively, from the city core, where trip-makers typically visit to work, shop or access government services. This finding is not surprising when one considers the results of an earlier survey that found that about 25% of GAMA's residents, for instance, worked at locations that were located beyond 5 kilometres from their residences (Ghana Statistical Service, 2007).

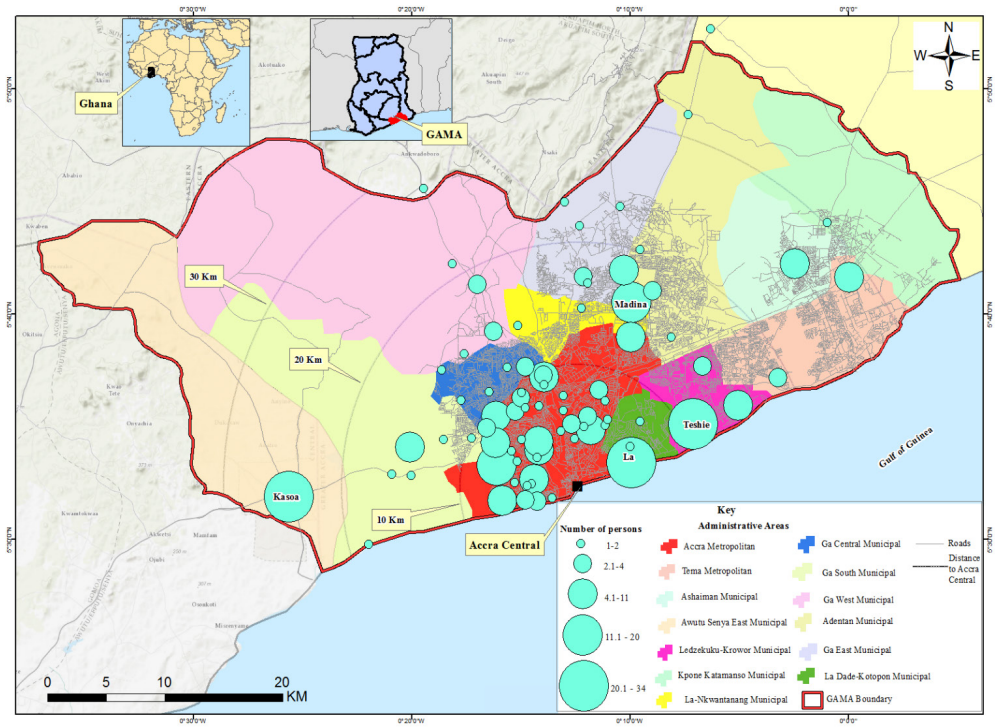


**Figure 5:** Relative commuting distances between Accra Central and residences of trip makers. **Source:** Fieldwork, 2014

The analytical framework in Figure 2 further demonstrates that GAMA's urban form promotes high vehicular use relative to non-motorized transport modes. An earlier study on long-distance mobility patterns concluded that "the long commute distances between GAMA's peri-urban localities and Accra Central [i.e., the city core] understandably results in a relatively high use of motorized transport modes" (Agyemang 2017, p.153). Many survey participants (75%) in the study indicated that they typically rely on public, commercial transport, i.e., trotro, for the long commutes. This finding corroborates earlier studies that concluded that trotros are the most dominant means of transportation in GAMA (Amoh-Gyimah & Aidoo, 2013; Abane, 2011, 1993). Agyemang (2015) and Fouracre et al. (1994) attribute the dominance of trotro in the public transport space to the ability of paratransit operations to offer door-to-door services. However, lately, trotro services have been perceived as poor and inefficient (Acheampong, 2020; Birago et al., 2017). Most of the vehicles used for trotro are seldom maintained due to low capital investments into the business, with implications for the safety and comfort of passengers.

Results from the 2021 dataset demonstrate that the technology-enabled ride-hailing service has also become popular in GAMA since July 11th 2016, when Uber officially launched its operations in the city. Five years later, the brand 'Uber' is almost synonymous with ride-hailing. It is not uncommon to hear commuters say, 'I have

ordered for Uber' when the person is actually referring to another brand altogether. The brand 'Uber' remains the most visible, with 26% of the total ratings among participants. Bolt, which launched a year later in 2017 as Taxify, follows Uber's lead closely as the second-most popular ride-hailing brand with 25% of the total score. However, in terms of how often these brands are used for commutes in GAMA, Bolt (32%) was rated high, way above Uber's 27%. This implies that most participants have switched to travelling more often with Bolt than Uber, its immediate competitor. Over two-thirds (45%) of all most recent trips undertaken by participants were either going to or returning from work and educational destinations. This finding resonates well with other studies (Agyemang, 2020; Acheampong et al., 2020), which found that these daily core journeys are embarked on primarily by young and educated trip-makers who visit offices and educational institutions. Before the advent of ride-hailing in GAMA, participants indicated that they visited the aforementioned trip destinations, typically in trotros (46%); and shared taxis (36%).

Fewer participants indicated they would have opted to walk on foot or travel by two-wheelers without ride-hailing services. Motorists' disregard for the safe use of the road space by pedestrians and two-wheeler operators, the long commute distances involved, and the lack of adequate infrastructure make walking and riding a risky venture. The market share of formal bus operations, notably the Metro Mass Transit Limited and the Ayalolo "Quality Bus System" (QBS), which usually run with high occupancy vehicles, remains relatively low. The preponderance of low occupancy vehicles for public transport (i.e., trotro, shared taxis and ride-hailing services) and private cars have implications for energy security and ambient air quality in GAMA. This is because the lack of regular servicing and maintenance of commercial vehicles, in particular, not to mention the use of sub-standard fuels, creates and exacerbates the problem of poor emissions and environmental challenges (see Figure 6). A majority of the vehicles used for commercial transport are second-hand, Conventional, and Euro I-type cars with poor emission standards. Consequently, public transportation in GAMA has been known to be a significant contributor to environmental pollution and greenhouse gas emissions, notably carbon dioxide ($CO_2$), which accounts for about 96% of all GHG emissions in Ghana (Environmental Protection Agency, 2007).

**Figure 6:** Dark smoke from a trotro contributes to reduced air quality. **Source:** Field data, 2014

Results from the 5-day travel time survey show a clear link between urban form and traffic performance. For instance, on average, peak hour travel time from Kasoa to the city core is 144 minutes. Meanwhile, commuters from Teshie and Madina spend approximately 41 and 71 minutes on their journey to the city core. This is due to the variations in the commute distances, numerous intermittent stops (for passenger embarkment/dis-embarkment) and severe traffic congestion along the routes. This finding lends credence to an earlier study which found that about 20% of work-related commutes in GAMA lasted over one hour (Ghana Statistical Service, 2007). The negative implication of long commute hours in low occupancy vehicles on productivity, energy consumption, and environmental and public health safety cannot be over-emphasized.

## Conclusion and Policy Recommendations

This study has established that GAMA's monocentric urban form promotes motorized commutes over long distances and journey times. The policy consequences of inactions regarding GAMA's urban form and transport challenges may be disastrous. Future solutions must revolve around transit-oriented development (TOD) to promote a fair, liveable, inclusive, and environmentally sustainable city. TOD ensures that spatial and transport planning are integrated to enhance accessibility, promote compact growth and deal with sprawl and the concomitant environmental issues (Abutaleb et al., 2019; Cooke et al., 2018; Hess & Lombardi, 2004).

To achieve this, the following specific and measurable future solutions are proposed. First, GAMA's monocentric urban form should be de-emphasized by creating a multi-city structure to redistribute the population. New growth points and competitive

regional markets serve as counter-magnets to reduce the pressure on existing commercial facilities in the city centre. Specifically, the Kaneshie and Madina Markets, respectively, seem to be the ideal candidates for a pilot, seeing that surveyed trip makers, in an earlier study by the author, pointed to these commercial centres as alternative destinations for their shopping needs.

Except for a few core ministries, agencies, and state departments whose relocation outside the city centre might be counter-productive, most of these public service agencies are recommended to be moved out of their present locations. The government can take a cue from new high-rise office development initiatives being led by the private sector away from the congested city centre. The full potential of using information, communication and technology should be encouraged to minimize the high emphasis on the urban centre, particularly for the formal sector employees and users of public services. If for nothing, the Covid-19 pandemic has taught us a practical lesson: social interactions and business can smoothly be conducted online and through various digital platforms. The government ministries and agencies must leverage this 'new normal' to encourage more electronic transactions, where possible, to minimize physical commutes.

For the benefit of work-related trip makers, the second proposal is to regenerate the city by developing high-density, high-rise, affordable residential apartments on vacant lands and properties in and immediately around the city centre. Most 'inner city' residents who usually commute to the city centre to work reside in areas such as La, Kaneshie, Chorkor, Bubuashie, and Laterbiorkorshie. Thus, a pilot redevelopment and in-filling of these areas are suggested to target employees who work in the Ministries Area and the informal markets. The potential benefits of this solution are enormous. It will minimize the long commute distances from the peri-urban areas in motorized transport modes and ensure a balanced re-distribution of the urban population while curtailing urban sprawl. Furthermore, the relative proximity to activity points may promote active transport such as walking and cycling. Providing safer pedestrian walkways and bicycle lanes will go a long way to ensure this desired transport and mobility future for GAMA.

Thirdly, mass transit must be promoted as a desired mobility option to meet the growing mobility demands of GAMA residents. Policy strategies enshrined in Ghana's National Transport Policy (NTP), for instance, which seek to prioritize mass transportation in urban areas, "aiming to move at least 80% of passengers" (GoG, 2008, p. 45) must be actualized. The policy further seeks to ensure that transport planning is "fully integrated with development planning and service provision" (GoG, 2008, p. 49). City authorities have promoted mass transit by establishing the Metro Mass Transit Limited and Aayalolo Quality Bus Service. The success of these formal bus services lies in proper management and the establishment of dedicated bus lanes. Another sustainable future mobility solution is to support the existing limited light rail to expand. The involvement of the private sector through a public-private partnership is critical towards achieving this desired outcome.

Finally, electro-mobility designed to de-carbonize public transport is proposed as a desired future transport opportunity. Specifically, Ghana can leverage its excess energy capacity to promote the widespread use of electric cars for those who can afford under its 'drive electric initiative'. For most commuters who rely on public transport, the interest shown by the Green Climate Fund to support the country procure energy-efficient electric buses for public transport must be embraced (Peacefmonline, 2021). City authorities have yet another opportunity to address all the challenges that derail the progress of the Ayalolo Quality Bus Service and ensure that the electric buses operate on dedicated lanes. Also, the activities of technology-enabled transport services like Bolt, Uber, Yango etc. must be regulated appropriately by the Ministry of Transport to promote even more convenient, affordable and safer journeys in GAMA.

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