Ahasan
Azunre
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Todtz
Puwurayire

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Table of Contents

Dear readers,

Welcome to Volume 18 of Planning Forum. This year's volume returns after a brief hiatus. Our editorial board and designers worked tirelessly under the guidance of The University of Texas at Austin faculty to create this volume and transfer both our previous and current volumes to a fresh reorganized website, which has enhanced the reader's experience and documented all our previous efforts. The new site is sites.utexas.edu/planningforum

We have continued to work under our mission statement:

"To serve as a platform for emerging voices and new perspectives on the most pressing issues in planning."

Additionally, we ensured due diligence in the solicitation, review, and selection processes of this year's volume, and collaborated with talented designers who provided the aesthetic oomph needed to better represent the research content. We hope these efforts will support the continued vitality of Planning Forum for years to come.

Volume 18 expands Planning Forum's horizons by tapping into international planning issues from both the Global North and South. We begin with four Inquiries, which incorporate traditional, peer-reviewed scholarly articles, each making an original and compelling argument. Azunre, Azerigyik and Puwurayire use push-and-pull theory to explore the institutional factors behind slum growth in Ghana. Todz uses ethnography to understand how shared citizenship and social control are impacted by public infrastructure such as escalators in Colombia. Ahasan analyzes the vitality of public transportation in Dhaka, Bangladesh, through performance evaluation. Lastly, Ezeadichie explores home-based enterprises in Nigeria and their impacts on neighborhood growth and social mobility.

Next, we continue with three Exploration pieces, which are non-traditional opinion-based articles that allow authors to share budding ideas. Syvixay and Bohle use results from a design competition to understand the feasibility for medium-density housing in Edmonton,

Canada. Edwards takes on an Uber driver role for a day to describe passenger interactions and experiences in Cincinnati. And Gabriel explores the concept and theorizations of abandonment and adaptive use by analyzing a particular building in Santiago De Chile.

Finally, we return to Planning Forum tradition with a list of Project Reports, Theses and Dissertations by UT Community and Regional Planning students from the 2020-2021 academic year. We also included the abstract from the best project report. Albornoz, in her report, explores how buyout floodplain land can be used viably to ensure racial equity in Austin, Texas.

We hope this volume continues to do justice to our mission. We would like to extend our sincerest thanks to all those who submitted for this volume, to our fantastic editorial board and faculty reviewers, and to everyone who helped to make this publication a reality for another year.

Aabiya Baqai and Haijing Liu, Managing Editors

About

Planning Forum is an annual publication produced by graduate and doctoral students in the Department of Community and Regional Planning at The University of Texas at Austin. The journal publishes peer-reviewed scholarly articles as well as critical explorations in less-conventional formats. Planning Forum serves as a platform for emerging voices and new perspectives on the most pressing issues in the field. Scholars, practitioners, activists, and writers of all kinds are welcome to submit.

Article Types

Inquires
The Inquiry section is for original scholarly research and is double-blind peer-reviewed.

Explorations
Articles in the Explorations section may take a variety of forms. Critical, theoretical, and exploratory essays, personal or journalistic accounts, interviews, and conversations are all possibilities.

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Inquires

Deciphering the Drivers of Informal Urbanization by Ghana's Urban Poor Through the Lens of the Push-Pull Theory

Gideon Abagna Azunre, Richard Azerigyik, Pearl Puwurayire

Abstract

For years, informal urbanization by the urban poor and its spatial outcomes—i.e., slums—have become ubiquitous in Global South cities, particularly Africa. Consequently, authorities are engineering strategies that could arrest and slow down its proliferation in the quest for resilient and sustainable cities. Within the complex discourse of informal urbanization, one very crucial piece of evidence that appears to be unclear pertains to its driving factors. Using Ghana—particularly rapidly urbanizing southern Ghanaian cities—as an empirical case, this paper untangles the complex and multidimensional drivers of slum growth beyond the traditional population-heavy approaches. Using the push-pull theory as a conceptual and analytical prism, analyses reveal that poorly designed housing policies, the informal economy, weak urban planning, political interferences, and political clientelism accelerate slum growth. The article argues that coping with unplanned urbanization by the urban poor may be extremely tenuous if these complex factors are not well-understood and seriously considered in policy circles. The findings of the article also lend credence to arguments that call for a shift from population-heavy readings of urban challenges in Africa to more institutional, political, and historical perspectives. The paper concludes by recommending that states and city authorities ought to recognize and address their institutional culpabilities in contributing to slum growth. A critical starting point could be the re-examination of draconian policies and the adoption of inclusive, pro-poor, and proactive urban strategies.

Keywords

1. Introduction

Urbanization is traditionally presumed to be a catalyst of productivity, industrialization, and socioeconomic transition (Cobbinah et al., 2015b). Despite a recent study (Vollset et al., 2020) pointing out fluctuations in the world's projected population, the consensus remains that the global urban population will continue increasing. As of 2015, 54% of the world's population lives in urban areas and is projected to reach 70% by 2050 (UNDESA/PD, 2012). The majority of this growth will occur in Africa, with nearly a quarter (1.3 billion) of the world's urban population by 2050. While some developing countries like China reap the benefits of urbanization (Cohen, 2006), it seems to rather disrupt urban functionality and stall socio-economic development in most African countries (Cobbinah et al., 2015a). This underlies the long-held pathological-indeed Malthusian-view that overurbanization is the prime cause of urban development problems in African cities (Boateng, 2020a). One of these critical urban challenges is unplanned urbanization—also called informal urbanization. For the purposes of this paper, our central focus is on the spatial by-product of informal urbanization by the urban poor— that is, slums.

According to recent estimates, there has been a reduction in the proportion of urban slum dwellers from 28% in 2000 to 20% in 2014. However, the absolute number of slum dwellers has increased from 792 million in 2000 to 880 million in 2014 (UN-Habitat, 2016a). Recent statistics have painted a dire picture, suggesting that about 1 billion people currently live in slum settlements. Households living in such settlements constantly face harsh conditions such as inadequate access to clean water, sanitation, and durable housing. This informal urbanization trajectory is a valid paradigm of several countries in sub-Saharan Africa, particularly Ghana (Amoako & Boamah, 2017; Amoako & Inkoom, 2018; Poku-Boansi et al., 2020). Available statistics show that Ghana's cities are rapidly urbanizing and unauthorized development is gradually becoming a norm. It is, therefore, no surprise that two out of five Ghanaian urban dwellers (37.9%) live in settlements that can be classified as slum (UN, 2017).

Given its current scale and future contours, informal urbanization by the poor has garnered enormous international attention. One principal medium through which this global interest has been crystallized is with international goals and accords. The overarching aim of these commitments is to improve slum livelihoods and bring decent living conditions to such neighborhoods. For instance, the 'cities without slums' agenda advanced in the year 2000 echoed the international ambitions to reduce the proliferation of slums in cities. Similarly, the current Sustainable Development Goals (Goal No. 11, Target 11.1) anticipate that by 2030 all slums will be upgraded, and all urban residents will have adequate, safe, and affordable housing. In the quest to achieve these goals, city authorities strategically implement promising urban policies and programs such as participatory slum upgrading and large-scale affordable housing schemes. Remarkably, these efforts have slowed the pace of informal urbanization and have enhanced the living conditions of slum dwellers.

The global aspiration to arrest informal urbanization or slum growth has also fueled numerous academic studies, prominent among those are the works of scholars such as Hernando de Soto and Ananya Roy. All these serve as fodder for the intellectual mill aimed at addressing informal urbanization among the urban poor. However, a critical question that still lingers is: what are the complex drivers of this seemingly untenable phenomenon? Answers to this seem to be cursory in the informal urbanization discourse. In fact, available studies have done little to move beyond the population-heavy diagnosis of informal urbanization which implicitly suggests that slum settlers are solely to blame for the situation. Also, little to no studies untangle how the complex factors act in 'push' and 'pull' scenarios. Therefore, the aims of this study are twofold: 1) to determine the multi-dimensional drivers of informal urbanization beyond population-heavy factors, and 2) to assess the interconnected nature of the factors using the prism of the 'push and pull theory'. Our study adds to the already rich and extensive body of literature from a sub-Saharan African context, Ghana.

In what follows, we review relevant literature on informal urbanization ('Section 2: Informal urbanization: a literature outlook'). Section 3

captures the methodology adopted to perform the analysis while Section 4 thematically presents the results. Section 5 covers the discussion of key findings and lessons learned. The final remarks of the study are presented in Section 6.

2. Informal Urbanization: A Literature Outlook

2.1. Conceptualizing Informal Urbanization and its Spatial Outcome
Informal urbanization is defined as a systematic "dwelling process" through which settlements and housing are "constructed individually and incrementally, using locally available materials" in an informal manner that reflects the socio-economic status of owners (McFarlane, 2011b, p. 664, 2011a, p. 216). This complex urban phenomenon involves very different classes of households who utilize urban lands by generally violating land-use and spatial regulations. The outcome of these incremental informal processes could be viewed from a two-pronged perspective: economic and spatial (Rigon et al., 2020). The spatial outcomes and by-products of informal urbanization have been a contentious subject in the conventional literature. On one hand, it is argued that informal urbanization produces informal settlements while on the other it is argued that it generates slums. Some commentators even go further to use both terminologies synonymously. Before going on, these need to be clarified.

In our view, the terms 'slums' and 'informal settlements' can be designated to a settlement depending on the types of households involved, the legal status, and the services or infrastructure present. According to UN-Habitat (2016a), slums are contiguous settlements that lack one or more of the following: 1) access to clean and potable water; 2) access to improved sanitation; 3) sufficient living area that is not overcrowded; 4) durable housing; 5) security of tenure. On the other hand, settlements are defined as informal when they reflect the primary criteria of informality: that is, tenure insecurity and violation of planning regulations (e.g., land use plans, zoning guidelines). Premised on the foregone definitions, some informal settlements can be defined as slums if they further lack essential services such as water and sanitation. Contrarily, some informal settlements or developments are not slums: for example, those produced by

middle- and high-class households. This process is gaining ground in the literature, with several scholars (Banks et al., 2020; Roy, 2011) elevating the term 'elite informalities' to refer to informalities transcending the urban poor (see Section 3.1 for examples in Ghana). According to Roy (2011), elite informalities are mostly valorized due to the economic and political power such actors wield while subaltern informalities (those by the poor) are criminalized.

Additionally, some slums cannot be strictly defined as informal settlements if they are legitimized or recognized by authorities. For instance, in India, some slums are notified under the Slum Areas Act of 1956 which makes them legal in the eyes of local and national authorities. However, because they are produced by poor households, they still lack crucial social services. In short, it is maintained that slums and informal settlements are not completely synonymous. This study, thus, elects to use slums as the by-product of informal urbanization since the focus is on the urban poor. We are aware of the growing critiques on the nomenclature of the terms "slum" and "slum dwellers" because it is implicitly derogatory and stereotypical, and it downgrades the value and agency of such settlements (see: Butola, 2019; Mayne, 2017; Roy, 2011). However, we deem it appropriate in the present study for two main reasons.

First, international commitments such as the Sustainable Development Goals (SDGs) have adopted the term "slums" in setting global targets. For instance, target 11.1 under SDG 11 aims to reduce the proportion of "slum dwellers" by 2030. This study is thus consistent with the global trend. Secondly, as would be made more explicit shortly, statistical estimates and research on the drivers of informal urbanization have generally been reported on slums. Focusing our analysis on slums is therefore a good way to obtain reliable information to clearly understand informal urbanization beyond population factors. The present study, strongly supported elsewhere (Azunre et al., 2021), is also rooted in the idea that there is enormous value in some of the activities of households in such settlements. Therefore, it is important to understand the drivers of such a dynamic and complex urban phenomenon for the purpose of both policy and planning.

2.2 From Population-Heavy to Historical-Institutional Drivers of Slum Growth

The literature is replete with variegated factors that drive informal urbanization and slum growth in the Global South. Rapid urbanization and population growth seem to be the most consistent underlying factors across the literature—so-called population-heavy diagnosis. According to these arguments, the continued rural-urban gap has caused several rural dwellers to seek economic success, livelihood opportunities, and access to social services and infrastructure in urban areas (Tacoli et al., 2014). This migration pattern fuels the rapid urbanization trend in most parts of the Global South today. The world's population is expected to reach about 9.8 billion in 2050 with about 66.4 percent (two-thirds) of those living in urban areas (UN-DESA, 2014). The surge in urban population has coincided with several sustainable development challenges. Premised on the foregoing, population-heavy theorists conclude that urbanization in the Global South, and Africa in particular, is 'parasitic' because it negatively correlates with socio-economic development.

However, some urban scholars (Boateng, 2020b, 2020a; Njoh, 2003) have criticized population-heavy readings of urban problems in Africa and raised arguments to incorporate the interplay of several other local and external factors—particularly historical-institutional. This appears to be a valid point of view for understanding informal urbanization by the poor. City authorities in many parts of the Global South lack the capacity (i.e., financial resources, logistics, and human resources) to plan and provide affordable housing and social infrastructure for the urban poor. This phenomenon is evident in Asia and Africa—touted as the fastest urbanizing regions. With limited budgets, city authorities are unable to finance new housing production to alleviate the housing deficit (Ooi & Phua, 2007; United Nations, 2014). The demand for land for new development in urban areas has aggravated the situation. Since the supply of land is fixed, competition has been increasing from various interest groups. The increasing demand for land among competing land users has made land, irrespective of its quality, relevant in the urban space (Zhang, 2016). This ongoing land crisis has priced out the urban poor thus making them encroachers[1] and creators of substandard housing and

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1   Encroachers are individuals who usurp the right to possession and use of land that belongs to communities and individuals (Bhan, 2009).

unsanitary settlements and neighborhoods. Also, high poverty levels, the informal sector, poor urban governance, weak institutions to ensure compliance, and outmoded land laws and regulations, have contributed immensely to the growth of slums in city centers (see: Azerigyik et al., 2018; Lau & Chiu, 2013; Mishra, 2011; Ooi & Phua, 2007).

Furthermore, slums continue to swell up due to the inherent socio-political and economic opportunities they present to the urban poor. Many slums across the globe are close-knit and near Central Business Districts (CBD) because of the available economic and employment opportunities. According to Lau & Chiu (2013), slum dwellers live and explore livelihood opportunities in close-knit ways to reduce or avoid the cost of transportation. Also, due to the high social network and family ties exhibited by slum dwellers, slums have become attractive for migrants. The population, social network, and high sense of solidarity exhibited by slums have made them influential in policies, political discourses, and elections (Jha et al., 2011).

To sum up, the preceding underscores how pervasive unplanned urbanization is and its attendant driving factors. Most population-heavy assessments seem to relate slum growth directly to the influx of people in urban areas with little to no recognition of the economic, institutional, political, and cultural factors which shape the phenomenon. These studies also implicitly suggest that settlers are the sole protagonists of the informal urbanization situation. However, the central argument of this article is that this is not necessarily the case. A complex assemblage of factors such as the failures of the government or state to respond to the basic needs of the growing urban poor class, distributional and investment inequalities, political factors, among others drives slum growth. This study looks to unpack these other factors using Ghana as a case study.

3. Materials and Methods

3.1 Case Study in Perspective
The Republic of Ghana (simply known as Ghana) is a West African country located on the Atlantic Ocean and shares borders with

Togo, Côte d'Ivoire, and Burkina Faso (see Figure 1.1). Ghana is one of several Anglophone countries in the sub-Saharan region because of its colonial affiliation to Great Britain (Lassou et al., 2019). Similar to the state of Texas in the United States of America, Ghana has a population of about 30 million (Ghana Statistical Service, 2019; United States Census Bureau, 2019). This population is unevenly distributed across the country, with regions in the southern part being the most populous in comparison to those in the northern part. Currently, the country is administratively divided into 16 regions after a recent constitutional instrument created six new regions. Ghana's international recognition arises from its prominent role in the mass exportation of raw materials such as gold, cocoa, and timber.

Figure 1.1: Ghana in the context of Africa

Source: Charles Sturt University Spatial Analysis Unit (2015) cited in (Cobbinah & Erdiaw-Kwasie, 2016, p. 89)

Ghana is an interesting case in point to untangle the determinants of informal urbanization because the country has been rapidly urbanizing since 2010 when for the first time over half of the population lived in urban areas (Ghana Statistical Service, 2014b). The national capital, Accra, currently boasts of being the most urbanized followed closely by Kumasi (Cobbinah, 2021, p. 3). Other cities in the northern part of Ghana such as Bolgatanga and Wa have gradually urbanized at a pace closer to that of the southern cities. The urbanization trajectory of several Ghanaian cities has brought informal urbanization to the forefront of policy and academic discourses. The population-heavy assessments are also visibly seen across the literature in Ghana, with urban population growth touted as the main cause of informal urbanization.

However, it is worth highlighting that informal urbanization in Ghana touches various classes or groups from low-income to high-income. Informal urbanization by middle to high-income households has been extensively reported by several scholars (Asante & Sasu, 2018; Boateng, 2020b, 2020a) among property developers. In fact, Boamah, Gyimah, & Bediako Nelson (2012) found that 10% of households in a high-class residential area in the Wa Municipality did not apply for building permits. Some of these housing developers try to circumvent building regulations or permitting processes which have caused several buildings to collapse across major cities in Ghana. Some examples are a six-story Melcom shopping complex in Achimota Accra which collapsed on November 7, 2012, and an uncompleted five-story hotel building in Tarkwa which collapsed in 2010 (see Asante & Sasu, 2018; Boateng, 2020b for in-depth discussions and examples of these).

Despite these, informal urbanization in Ghana is much more prevalent among low-income households. This is evident, first and foremost, from the class distribution of new urban migrants who are mostly from rural communities (see Table 1.1). Rural communities in Ghana are characterized by high poverty levels. Thus, in an attempt to escape poverty, a significant proportion of rural dwellers migrate into cities in search of greener pastures (Ghana Statistical Service, 2014b). Due to the generally low income or economic standings,

these rural-urban migrants encroach unoccupied urban lands, squat, or live in slums that offer affordable housing. For example, several studies (Adamtey et al., 2021; Adusei et al., 2017; Azerigyik et al., 2018) reveal that most slum communities in Ghana (such as Old Tulaku, Old Fadama, Agbogbloshie, Dagomba Line, Avenor) are predominant recipients of migrants from rural areas and/or poor communities in Northern Ghana.

Table 1.1: Population and structure of migrant population in Ghana

Place of destination	2000		2010		Annual Growth Rate
	Population	Percent	Population	Percent	
Urban Destination					
Urban-urban migrant	724,723	11.1	1,904,336	18.2	9.7
Rural-urban migrant	1,758,721	26.9	2,752,623	26.3	4.5
Urban non-migrant	4045466	62	5,827,192	55.6	3.6
Total	**6,528,910**	**100**	**10,484,151**	**100**	**4.7**

Source: (Ghana Statistical Service, 2014a)

Another evidence of informal urbanization's rapidity and strong correlation to the poor is the growth of slums across most major Ghanaian cities. Estimates suggest that two out of five urban dwellers in Ghana (37.9%) live in slum settlements (UN, 2017). Accra and Kumasi are the two cities in which slums are rife (see Figure 1.2). From the maps, it can be observed that slums in Accra and Kumasi, and by extension Ghana, have strong centrality in relation to the Central Business District (CBD) where jobs and economic opportunities are available for the urban poor. The foregoing justifies the focus of the present article on informal urbanization by the poor, and more particularly on their spatial outcomes which are slum settlements.

Before going on, it is crucial to first underscore the types of "slums" in Ghana. Ghanaian slums are sometimes difficult to distinctly classify, but a study by Paller (2015) introduced a comprehensive categorization with which we adopt for the current study. First, extra-legal slums in Ghana are settlements viewed as illegitimate and not officially recognized by local and national authorities, which are mostly labeled as squatter settlements. Secondly, indigenous slums are those settlements that have a traditional connotation and gradually become slum settlements due to poor planning and neglect by authorities. Finally, purchased slums are legal in nature, in
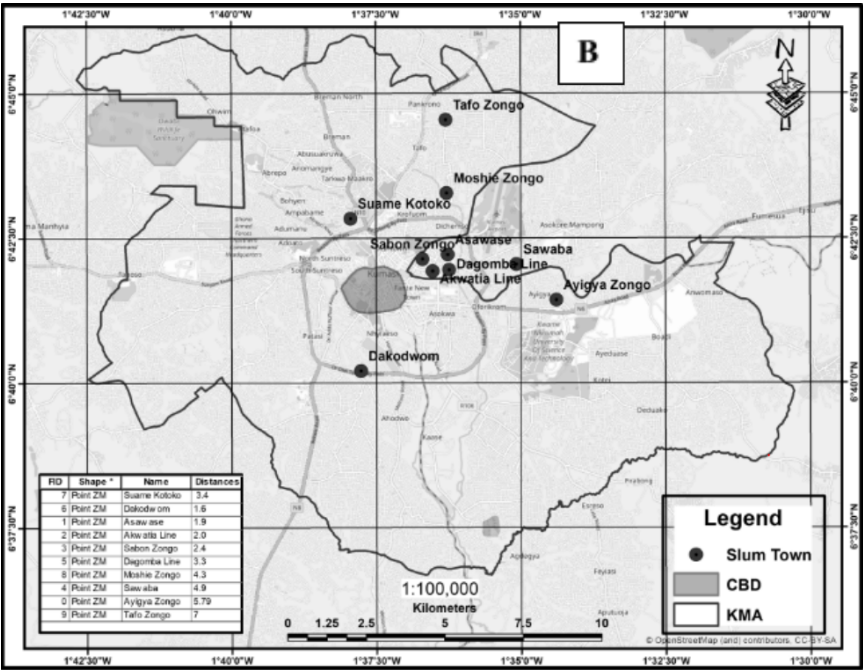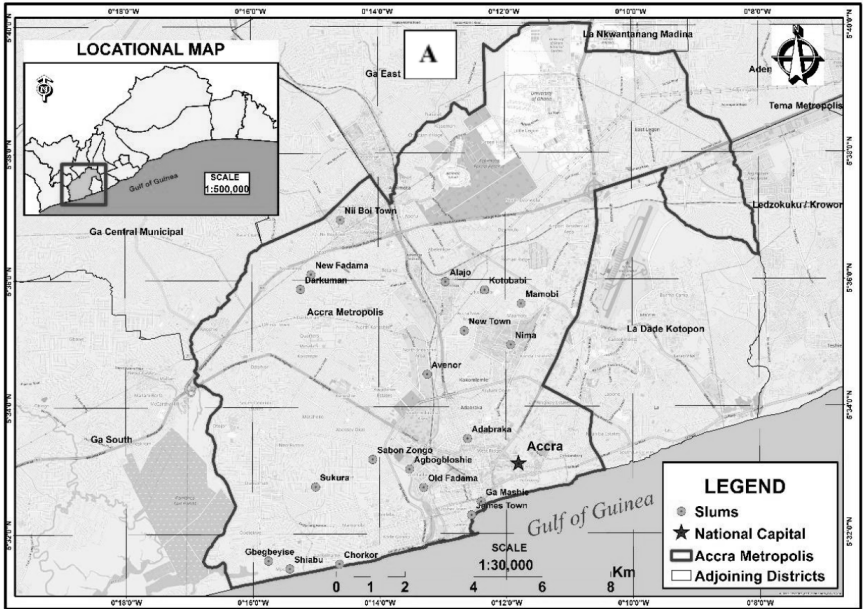
Figure 1.2: Location of slums in two major Ghanaian cities; A= Accra, B=Kumasi
Source: (Takyi et al., 2020, p. 9)

that all formal land purchasing and customary processes have been followed by owners; however, they have become slums because they lack essential services such as water and sanitation. Among these three slum typologies, extra-legal slums are the most politically vulnerable and they constantly face threats of evictions. A well-documented example in the Ghanaian literature is in Old Fadama, Accra—the largest slum in the country (Afenah, 2012; Farouk & Owusu, 2012; Housing the Masses, 2010).

3.2 Empirical Methodology

The current study is based on a systematic review of the literature. The review was applied under the case study research design. The case study design provides the opportunity to gain concrete, contextual, in-depth knowledge about the intricate web of factors that engender slum growth (Bryman, 2012; Yin, 2013). Specifically, the study focused on Ghana to help systematically synthesize secondary data. Secondary data is used in this study to refer to data collected by some researchers but manipulated by others to achieve research objectives different from the original collector (Hox & Boeije, 2005; Vartanian, 2011). Secondary data mainly comprised peer-reviewed journal articles, institutional documents (e.g., census records from Ghana Statistical Service [GSS]), and gray literature (e.g., online news posts).

To search for literature, a thematic approach was adopted. Four themes were developed: 1) Ineffectual housing policies, 2) Informal economy, 3) Politics and distributional/investment inequalities, and 4) Weak urban planning and land tenure issues. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach (Moher et al., 2009) was employed to extract literature under each of the four themes. Additionally, the Boolean search method was adopted to develop search strings by pairing keywords (e.g., "slums", "slum growth", "housing policies in Ghana", "politics", "urban planning in Ghana", etc.) and their synonyms with Boolean operators (e.g., "AND", "OR"). A combination of these keywords generated phrases that were run in search engines such as Google, Google Scholar, and Mendeley literature search. This facilitated the swift access of scholarly works from online repositories such as

JSTOR, Elsevier, SAGE, and Taylor and Francis.

Furthermore, content and thematic analytical tools were employed to analyze the literature obtained. The aim of the analysis was to build an argumentative narrative on the driving factors of informal urbanization and slum growth beyond population-heavy diagnosis. Also, the analysis was guided by a specific theoretical framework (i.e., the push-pull theory) to help unpack how the driving factors attract or force households into slum settlements. The theoretical framework of the study is discussed in Section 3.2.1 below. It is worth noting that the researchers have a fair understanding of the research context and case study. Therefore, this tacit knowledge was fused with the secondary data to enrich the analysis and discussion. At the end of the search and analysis, 70 articles/reports/websites were used (see Table 1.2).

Table 1.2: Literature Search Method

S/N	Theme	Keywords/Search strings	Resources	Web Address
1.	Ineffectual housing policies	Informal urbanization	**Search Engines**	
			Google	http://www.google.com
		Slums		
2.	Informal economy		Google Scholar	http://www.scholar.google.com
		Slum growth		
			Databases	
			JSTOR	https://www.jstor.org/
3.	Politics and distributional/investment inequalities	Housing policies in Ghana	Elsevier	https://www.elsevier.com/
4.	Weak urban planning and land tenure issues	Politics	SAGE	https://us.sagepub.com/en-us/nam/home
			Taylor and Francis	https://www.tandfonline.com/
		Urban planning in Ghana	**Websites**	
		Land tenure in Ghana	https://www.ghanaweb.com https://theconversation.com/ghanas-unstable-building-problem-is-about-more-than-lax-regulation-153201 https://borgenproject.org/fwd-slums-in-ghana/	
	Total literature used		**70**	

3.2.1 Theoretical Framework: Push-Pull Theory

Theories of migration have rapidly evolved since the notable works of Ernst Ravenstein on the "Laws of Migration" in the mid to late twentieth century. Ravenstein was the first to theoretically frame the phenomenon of migration and how it emerges. Following this, other works mushroomed to disentangle the phenomenon of migration and the drivers of international or national mobility. For the purposes of this study, Lee's (1966) theory of migration is considered comprehensive enough to unpack the diverse factors of spatial mobility at both a macro and micro scale. Lee identified four main categories of factors in the act of migration: (i) factors associated with the place of origin, (ii) factors associated with the place of destination, (iii) intervening obstacles, and (iv) personal factors. As presented in Figure 1.3, each origin and destination point have a set of positive and negative factors that attract or repel people. Consequently, the push factors are those situations that give one reason to be dissatisfied with one's present locale (Dorigo & Tobler, 1983). People are then forced to leave the origin to the destination, not because of the attractive nature of the destination but because migrating is the best available option. By contrast, pull factors are the attractive elements in the destination that appeals to individuals.

The push-pull theory grounds this paper and allows for a more structured exploration of the factors that lead to informal urbanization by the poor. The destination points in this regard are slums and the origin points are other neighborhoods in the city, peri-urban areas, or rural areas. It is worth mentioning that we do not intend to exhaustively apply the model to the informal urbanization phenomenon. It is beyond the capacity of any brief article because informal urbanization involves complex individual decisions (i.e., personal factors) that would require rigorous primary data to disentangle clearly. Nevertheless, the model presents a remarkable opportunity to systematically explain the more general factors and trends that engenders informal urbanization and how households (particularly the poor) are pushed or pulled to live in slums. The push-pull theory also allows for an in-depth exploration of the historical-institutional factors which condition the actions of low-income households towards slums.

Furthermore, the literature overview in Section 2.2 shows that a plethora of studies have investigated informal urbanization and conceptualized some of its causal factors. However, none of the studies reflected on the factors from a push-pull scenario nor did they clearly discuss how these factors interrelate in a rapidly urbanizing sub-Saharan African city like Ghana. These are but a few gaps the current study will help plug.
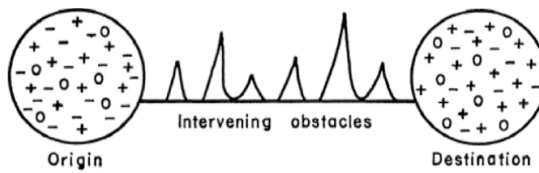
Figure 1.3: Origin and destination factors in migration
Source: (Lee, 1966)

4. Results: Drivers of Informal Urbanization by the Poor in Ghana

The drivers of informal urbanization in Ghana are analyzed under four (4) themes. The analysis under each theme will tease out the "push or pull" dynamics of the causal factors.
- Ineffectual housing policies,
- Informal economy,
- Politics and distributional/investment inequalities, and
- Weak urban planning and land tenure issues.

4.1 Ineffectual Housing Policies in Delivering Low-Income Housing
Public policies are the most important instruments used by city authorities to redress the ills facing various sectors of the economy, including the housing sector. In the Global South, it has been extensively documented that housing policies are generally poorly developed, inefficiently implemented, and fail to benefit the worst off (Monkkonen, 2018; Rojas, 2019; Scheba & Turok, 2020). This has been the case in Ghana for the past few decades. The problems facing housing policies and their attendant effects on informal urbanization can best be disentangled from a path-dependency perspective. The path-dependency theory, which emerged from economics,

posits the situation where historical events have the possibility of creating "lock-in" structures that define pathways of development (Arthur, 1988; David, 1985, 1988). Consequently, some scholars (e.g., Kay, 2005; Poku-Boansi, 2020) assert that path dependency is an essential mechanism for understanding public policy development. As such, the problems that Ghana's housing sector and policies are facing today with respect to low-income housing are a consequence of previous historical happenings.

Generally, Ghana's housing policies have been deeply politicized with policy ambitions and aims changing with every successive government (Boamah, 2014). During the colonial era, housing was mainly directed at expatriate and senior indigenous staff members holding positions in the colonial public service (Hornsby-Odoi & Glover-Akpey, 1988). The most important low-income housing scheme during the colonial era came in 1924 after an outbreak of cholera in Kumasi and other parts of Ghana. This health crisis required the mass clearance of slums and the construction of housing projects to re-house the displaced (Agyapong, 1990; Songsore, 2003; Songsore et al., 2004). However, during this period, housing access by low-income groups was hampered by some restrictive rules such as the town and country planning laws (Konadu-Agyeman, 2001).

From 1951, housing policies began to explicitly focus on low- and middle-income groups. Two mid-term development plans from 1951-1964 were rooted in a socialist philosophy and primarily aimed at providing adequate and subsidized housing for low-income households (Ansah & Ametepey, 2013). The highlight of the plans was the formation of housing-related institutions such as: i) First Ghana Building Society, ii) Tema Development Corporation (TDC), and iii) Ghana Housing Corporation (now known as the State Housing Company) (Bank of Ghana, 2007; Konadu-Agyeman, 2001). Specifically, TDC helped develop eight new housing Communities in Tema by constructing about 2,255 units (Ansah & Ametepey, 2013). Also, the Roof and Wall Loan Scheme which was started in 1955 advanced the aided self-help housing idea (Addo, 2014). The government provided materials, loans, and serviced sites at moderate rents to low-income households.

Nevertheless, governmental changes in 1966 to the National Liberation Council (NLC), in 1969 to the Progress Party (PP), in 1972 to the military leadership of the National Redemption Council, and in 1979 to the military rule of the Armed Forces Revolutionary Council (AFRC) led to housing policy agendas slipping and sliding from direct housing construction for the urban poor to complete neglect.

A watershed in Ghana's housing policy landscape occurred in the 1980s when the Structural Adjustment Program (SAP) and Economic Recovery Program (ERP) were developed under the conditionalities of the World Bank and International Monetary Fund. Neo-liberal and 'enabling environment' approaches were advanced; this facilitated housing provision by the private sector and avoided interventionist provision of public housing by the state (Harris, 2003; UN-Habitat, 2005). The government significantly retreated from direct housing production and lost grips of the housing market. According to several scholars (e.g., Addo, 2014; Songsore et al., 2004), this period kickstarted the substantial housing deficits faced in the country (see Table 1.3).

Table 1.3: Housing deficit of Ghana

Year	Housing Demand	Housing Supply	Housing Deficit
1970	1,678,296	941,639	736,657
1984	2,410,096	1,226,360	1,184,636
2000	3,708,250	2,181,975	1,526,275
2010	5,467,136	3,392,745	2,074,391

Source: (Ghana Statistical Service, 2012; Obeng-Odoom, 2011; Tandoh, 2016)

To alleviate the housing deficit, the government developed a comprehensive National Housing Policy in 2015 that "...envisions a country in which everyone is able to access safe, secure, decent and affordable housing either owned or rented." (Ministry of Water Resources Works and Housing, 2015). Consequently, investments have been placed in large-scale affordable housing projects such as OAS affordable housing program in Saglemi, Borteyman affordable housing, Asokore Mampong affordable housing project, among others. However, these projects are failing for two main reasons: firstly, they are highly politicized and causing implementational delays and/or abandonment; and secondly, the prices quoted for completed units are only affordable for middle- and high-income

households. [2]

To sum up, the slow rate in producing houses in Ghana, particularly for the poor, is strongly attributable to how ineffective previous housing policies have been. The formal housing sector (i.e., formal public and formal private sector) seems to be targeting middle- and high-income households at the expense of low-income groups. Urban poor households are having to contend with higher rents and land prices which affects their ability to participate in the formal market. They are thus "pushed" and "pulled" to slums where affordable housing is provided (Addo, 2014; Takyi et al., 2020). As Grant (2006, p. 13) writes:

> "[Slum dwellers'] position exposes the G[overnment] o[f] G[hana]'s failure to address the housing situation of the poor… [P]eople squat because there are no alternatives...".

From the foregoing, it is right to argue that Ghana's unproductive housing policies profoundly influence informal urbanization by poor households.

4.2 Informal Economy

The first scholar to thematize economic informality was Keith Hart with his research that focused on Accra, Ghana. Hart (1973, p. 68) introduced the term 'informal sector (IS)' and described it as a "world of economic activities outside the organized labor force." Similarly, Feige (1989) defined the IS as all unregistered economic activities that contribute to the officially calculated gross national product. However, debates following the earlier conceptualization of the informal sector prompted the introduction of a new concept: 'informal economy (IE)'. The International Labor Organization defines the IE as "[...] all economic activities by workers and economic units that are - in law or in practice - not covered or insufficiently covered by formal arrangements" (ILO, 2002, p. 5). Precisely, the informal economy is much broader and can be split into two: 1) informal sector, which comprises production and employment in unincorporated or unregistered enterprises (ILO, 1993); and 2) informal employment

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[2]   https://www.ghanaweb.com/GhanaHomePage/business/Government-s-Affordable-Housing-Project-to-begin-sales-in-March-880369

which is work without labor-based protection in informal enterprises, formal firms, and households (Basu & Chau, 2015; Chen, 2007, 2012).

Given that the "informal sector" was originally thematicized based on a study of Ghana, there is no surprise as to how conspicuous it is in Ghana's urban landscape and its implications on informal urbanization by the poor. Data shows that the private informal economy engages about two out of every five (41.9%) of the currently employed persons 15 years and older: 47.8% of females and 35.5% of males (Ghana Statistical Service, 2014c). Also, three-fifths (61.5%) of the employed urban population are engaged informally whereas less than one-quarter (23.3%) of their rural counterparts are informally employed. Irrespective of the locality of residence, more females than males are usually engaged in the informal economy. Some examples of urban informal activities in Ghana are hawking, food vending, scrap metal collection, hair-dressing, shopkeeping, security services, and door-to-door waste collection (Agyei et al., 2016; Asibey et al., 2019).

Generally, slums are hubs for most of the aforementioned activities which low-income households primarily depend on. For instance, e-waste activities in slums such as Agbogbloshie, Accra—the world's largest e-waste dumpsite—and Aboabo, Kumasi creates income-generating prospects for several households (Asibey et al., 2020; Oteng-Ababio, 2012). The implication, therefore, is that slums turn to attract the urban poor acting as a "pull" factor towards informal urbanization. The Todaro paradox, developed by Todaro (1976), similarly captures the attractive and magnetic power of slums for poor households, especially rural migrants in search of greener pastures. In another vein, because of the centrality of slums within Ghanaian cities, they have become attractive locations to live and pursue informal economic opportunities in other parts of the city. Azerigyik et al. (2018) assert that this helps to reduce the cost of commuting to the CBD. As indicated in Section 4.1, the affordable housing provided in slums also makes it economically logical for households to live and work in the city.

In short, the quest for employment opportunities by the urban poor and rural migrants, which is mainly offered through the informal

economy, serves as a critical driver of informal urbanization in Ghana.

4.3 Politics and Distributional/Investment Inequalities

Informal urbanization in Ghana has always been politically shaped. The existence of slums can be partly attributed to the politics played by traditional leaders, community leaders, city authorities, and government. The case of Old Fadama which is the largest extra-legal slum in Ghana is especially emblematic. Old Fadama occupies 31 hectares of government-owned land beside the Odaw River and near the Korle Lagoon (Farouk & Owusu, 2012). As shown in Figure 1.4, it is situated across one of Accra's most important markets, the Agbogbloshie market, on land that was largely a lagoon. Much of this land has been reclaimed from the lagoon and river and has slowly been filled up by residents using temporary materials, including sawdust from the timber market across the road. According to Yeboah and Obeng-Odoom (2010, p. 88) and Afenah (2012, p. 537), this settlement has persisted because it assumed a political tussle between both local and central political actors which crippled any action on that settlement. Several evictions since 2002 failed because residents have been able to collaborate with several organizations such as Shack Dwellers International, a global network of community-based organizations of urban poor. Also, the creation of the NGO 'People's Dialogue on Human Settlement' in 2003 and the Ghana Federation of the Urban Poor (GHAFUP) all curtailed eviction attempts.

Within the first three years of inception, People's Dialogue and GHAFUP realized a number of political achievements for those living in Old Fadama (Afenah, 2012). Also, because of the vast population living in Old Fadama (about 100,000), politicians have identified it as a strategic source of electoral votes. Therefore, they make promises to residents which may run counter to sustainable urban plans that aim at slowing down informal urbanization. All these decisions have resulted in the abandonment of some much-needed long-term slum treatments in favor of more short-term politically friendly initiatives. This phenomenon is widely known across the literature as political clientelism. A "patron-client" relationship exists in slum communities which has created a scenario where political patrons have a huge

stake in these communities and are better served if they remain as they are and are not formalized or fully developed. A vicious cycle is generated where due to continued dependence and vulnerabilities, slum communities rely on political patrons for their survival and are willing to pay for the patrons' help with political allegiance. Several scholars (Paller, 2015; Schildkrout, 1970, 1978) have reported this scenario in Ghanaian Zongos—strangers' quarters, where migrants to African cities settle. Formal public services to these informal neighborhoods are generally mediated by political entrepreneurs or brokers with high levels of power. The political status of brokers allow them to lobby for services; however, they do not seek universal provision so as not to lose their power.

It is worth noting that the political tussles described above cut across several slum communities in Ghana. This has propelled informal urbanization and has guaranteed its presence in cities. Also, several political twists have affected the integration of some settlements into socio-economic and infrastructural plans. Sadly, officialdom tends to limit investment in communities that are viewed as illegal: that is, extra-legal slums (Paller, 2015). According to city authorities, investing in these communities is a validation of their legitimacy. Some authors (e.g., Amoako, 2016; Amoako et al., 2019) have extensively documented this complex phenomenon with regard to flood management regimes in urban Ghana. In short, the political

Figure 1.4: Geographic location of Old Fadama (largest Ghanaian slum)

position of slum communities restricts and constructs responses to informal urbanization serving as an important determinant of its continued proliferation in Ghana.

4.4 Weak Urban planning and a Complex Land Tenure System

There is a general notion that urban governance and spatial planning in Ghana are quite weak and ineffective. Urban planning in Ghana dates back to European colonization which largely focused on health and sanitation emergencies such as the outbreak of diseases (Gocking, 2005; Quarcoopome, 1993). Nationwide planning became much consolidated after the passing of the Town and Country Planning Ordinance of 1945 (Cap 84) which established the Town and Country Planning Department (TCPD), now the Land Use and Spatial Planning Authority (LUSPA) (Cobbinah & Niminga-Beka, 2017; Fuseini & Kemp, 2015; Poku-boansi, 2021). Following the adoption of a decentralized system of planning in 1988, several normative and legislative frameworks such as the Local Government Act of 1993 (Act 462) - now Local Governance Act of 2016 (Act 936), National Development Planning Systems Act of 1994 (Act 480), and the Land Use and Spatial Planning Act 2016 (Act 925), was introduced to condition urban planning and governance.

Despite this rich normative environment, several scholars (Boadi et al., 2005; Yeboah & Obeng-Odoom, 2010b) note that urban and land use planning in Ghana has been exclusionary and has failed to address the sustainability challenges from urbanization. As discussed in Section 4.3, this is partly attributable to political interferences that shape urban planning's operations. Some scholars (Boamah et al., 2012; Yeboah & Obeng-Odoom, 2010b) also associate poor planning with authorities' limited capacities to enforce rules and guarantee compliance. On the contrary, others (Ayambire et al., 2019; Cobbinah, 2021; Cobbinah et al., 2020; Poku-boansi, 2021; Siiba et al., 2018; Yeboah & Shaw, 2013) strongly relate weak urban planning to the counter-productive institutional roles played by traditional authorities.

The complex land tenure system in Ghana demands explicit emphasis given its enormous role in rendering urban land use and spatial plans

ineffective. In Ghana, customary land holding institutions control about 80% of the lands. These lands are communally owned, typically by kingdoms, tribes, clans, or families who hold the lands in the trust of the people (Yeboah & Shaw, 2013). Aside from the ownership of lands, these traditional institutions play administrative roles which sometimes go contrary to zoning and land use plans (Cobbinah et al., 2020). The land-use decisions are mostly made through contracted surveyors who have very little knowledge of formal planning procedures. This process has been largely welcomed by locals because of the bureaucracies and corruption of formal planning institutions. Due to this weak urban planning system, urban poor households sometimes find it easy to squat on lands that are idle or not policed thereby exerting their squatters' rights and rights to the city. Also, poor households are sometimes given the de facto right to settle by traditional authorities through the informal sale or lease of lands.

To sum up, it is logical to argue that weak urban planning has made uncontrolled urbanization and squatting desirable to several urbanites, especially the urban poor acting as a "pull" effect. However, it should be noted that this attractiveness must not be isolated from the numerous "push" factors such as inadequate access to the formal housing and land market that frames their need to obtain housing informally. Also, it is worth noting that customary land ownership is not the sole contributor to informal urbanization by the poor. Some studies (e.g., Ubink, 2007) have shown significant haphazard development even on state-owned lands that are administered directly by formal agencies.

5. Discussion and Lessons Learned

The results of the current study reveal that informal urbanization by the poor is driven by a complex interplay of factors which has been given less attention in the conventional literature. More generally, studies tend to emphasize population dynamics as the main driver of this phenomenon. This implicitly suggests that those living in such communities are solely to blame for informal urbanization, diverting away from the other crucial actors and institutions that may have

conditioned the actions of the poor. To fill the existing knowledge gap, the present study focused on Ghana as a case study. Findings show that the informal economy, politics, ineffectual policies, and weak urban planning and governance systems are critical in generating slum growth. With respect to housing policies, it is observed that historical policies have engendered the present-day housing deficits faced in Ghanaian cities. Consequently, low-income households are being excluded from formal housing provisions. As a result, slums offer low-income individuals the best option for affordable housing within cities. These slums are also acting as economic hubs and are attracting poor households. Literature reveals that the urban poor, in their quest to obtain employment in cities (particularly within the informal economy), have to rely on slums for housing. The slum modernization theory (Frankenhoff, 1967; Turner, 1969) validates this finding and demonstrates the pull effect of slums.

Furthermore, political interferences and weak urban planning have framed and constructed the way and manner in which strategies are deployed to slow down informal urbanization. Instead of adopting pragmatic and scientifically feasible policies, authorities have to relegate strategies to the political arena. Some politicians, under the guise of settlements being illegal, are limiting investments in slums, making it difficult for them to improve. The emergence of political clientelism and patrons who have ulterior motives (e.g., continued neighborhood degradation) has further hindered the development of slum communities (Deuskar, 2019). Also, poor urban planning has quietly exacerbated informal urbanization in its inability to enforce the rich and fertile planning rules that exist. The customary land tenure system in Ghana has further compounded the challenges faced by urban planning in dealing with uncontrolled urbanization. Boateng (2020b, p. 6) notes that for a long time, "most post-colonial developing societies' so-called 'modern' planning and building systems/regulations, to all intents and purposes, are postcolonial - i.e. they are still structurally embedded in colonial standards and requirements." This postcolonial attribute of Ghana's urban planning is highlighted in this article as a crucial driver of informal urbanization by the poor. Renewed efforts to transform planning through a National Urban Policy Framework (NUPF) and a Land

Use and Spatial Planning Bill (LUSPB) are very laudable approaches to move away from the obsolete 1945 colonial planning ordinance that underlain Ghana's planning system (Fuseini & Kemp, 2015; Poku-boansi, 2021). These policies would help in Ghana's quest for sustainable development and also address some of the systemic challenges that have driven informal urbanization among the urban poor for decades.

Overall, the results point to several "push" and "pull" scenarios that drive informal urbanization and the "unavoidable" movement of poor households to slum communities. The study findings also support criticisms raised against the population-heavy diagnosis of urban problems in Africa and the need to adopt more historical-institutional perspectives (see e.g., Boateng, 2020a, 2020b). A few lessons can be drawn from the above systematic review.

First, slum growth in the Global South is likely to continue increasing given the challenges faced by governments and city authorities to address the needs of its ever-growing population. If this persists as projected, the economic, social, and environmental sustainability of cities could be under serious threat. This partly underpins the global commitments such as Sustainable Development Goal 11 (Target No. 11.1) and national plans aimed at dealing with informal urbanization. However, it is imperative to constructively design current and future policies by taking cognizance of the multidimensional drivers of informal urbanization. The results in this study clearly depict various ways that the invasion and succession of lands by the urban poor are involuntary and sometimes conditioned on external push drivers. Sadly, some current urban management policies fail to embrace these intricacies and would therefore need to be critically re-examined. For instance, draconian policies that solely focus on slum eviction and clearance without resettlement or resettlement to fringe locations must be abandoned as some poor households are caught up in "do or die" situations leading to their habitation in slums. On the contrary, inclusive, pro-poor, and proactive policies should be favored by city authorities. Policies should also exclusively target the "push" drivers such as the housing inequalities generated by inadequate low-income housing supply. There is great promise

in the sites and services approach which was swiftly deserted in the late 1990s. A recent evaluation (see: Owens et al., 2018) shows this could be an incredible opportunity to adopt John Turner's "freedom to build" and "aided self-help" philosophy to tackle informal urbanization and provide decent housing to the urban poor.

6. Concluding Remarks

Informal urbanization by the urban poor has become the lived reality for several cities in Africa, especially Ghana. In this article, we deciphered the complex web of informal urbanization drivers among Ghana's urban poor by discussing how the factors act as "push" and "pull" agents. The underlying logic behind this review was that, without disentangling these intricacies, it may be next to impossible to address informal urbanization. Four broad drivers were examined: housing policies, informal economy, politics, and weak urban planning. Our findings argumentatively support critiques against population-heavy pathological readings of urban problems in Africa (Boateng, 2020a).

Overall, the paper offers important entry points to manage and slow down unplanned urbanization in Ghana and guarantee cities are sustainable and resilient. This study, though geographically limited to Ghana, presents valuable lessons for countries and cities in Africa and the Global South that are facing informal urbanization and are determined to manage their cities sustainably. This paper has not been exhaustive of all the drivers of informal urbanization among the poor; however, it should feed directly into future studies aiming to examine its nature, processes, effects, and impacts. Particularly, it is recommended that further studies employ rigorous empirical data to try and unpack the drivers of informal urbanization in a more in-depth fashion. The "push and pull" scenarios must not be lost in future studies as it has profound implications on understanding more generally what frames the actions of the poor and more specifically the kind of policies and strategies that may be proffered to deal with the root causes of informal urbanization.

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Image Credit: Medellin, Travel Bureau de Medellin

'Planning Ambassadors' as Insurgent Spatial Actors: Women and the Re-Territorialization of the Public Escalators in Medellín, Colombia

Evan Todtz

Abstract

Situated in the western hillsides of Medellín, the central stairway in Las Independencias (I) historically served as the primary neighborhood circulation route, but also acted as an invisible border delimiting conflicting spatial claims by disparate armed factions vying for territorial control. Decades of intense urban violence culminated in the early 2000s with a series of state-sponsored military interventions that left the community reeling. The emergent model of social urbanism in the mid-2000s sought to redress historic inequities in the city's peripheries. Under this directive, the state executed a physical intervention in the community to de-territorialize the underlying geographies of violence by replacing the central stairway with a new public escalator system. While projects executed under social urbanism frequently attribute success to the project's design merit and broad social impact, this mixed-methods design study completed along the public escalators shows that the primary driver of individual and neighborhood advancement in Las Independencias (I) has been the re-territorialization of these spaces through insurgent spatial practices by residents rather than the state's physical intervention. Intimate insights into daily life along the public escalators reveal how women, in particular, emerge as critical actors in the re-territorialization of the escalators, despite persistent gender imbalances in public space and shifting geographies of violence encroaching into the domestic realm. Focusing on people rather than the state underscores how centering the narratives and perspectives of women allows these community ambassadors to plan for, create, and steward emancipatory spaces where individual and community autonomy reside.

Keywords

1. Introduction

Once one of the most violent places in the world, the district of San Javier in Medellín, Colombia, has emerged as a global model for urban transformation through equitable planning and urban design practice. Nowhere is this change more evident than in the neighborhood of Las Independencias (I), where an informally constructed stairway became the historic borderline between various armed groups fighting for territorial control throughout the late 1980s until the early 2000s. Following a series of violent military raids on the community, the mayoral administration of Sergio Fajardo in the mid-2000s instituted the Integrated Urban Project (PUI) in San Javier as part of a state planning strategy known as social urbanism. The plan sought to disrupt the existing geographies of violence, referred to by local residents as invisible borders (fronteras invisibles), while simultaneously creating new mobility infrastructures and public spaces to promote a culture of coexistence (convivencia) and civic culture (cultura ciudadana). In Las Independencias (I), this strategy materialized through the installation of a public escalator system along the former stairway in the heart of the community. While architects and planners have since critiqued social urbanism projects for their design merit and broad equity impacts, this article focuses on the public escalators and asks: What are the unintended day-to-day consequences of having constructed the public escalators and how have residents, particularly women, responded to the physical changes to their neighborhood?

Scholars of Colombian planning and urban design practice often wholly attribute the observed advances in social and economic security under social urbanism to the emblematic public space and mobility megaprojects designed to de-territorialize existing geographies of violence, expand access to resources, and increase state visibility in historically marginalized communities. I argue in this article, however, that the primary driver of individual and neighborhood advancement is the re-territorialization of these spaces through insurgent spatial practices by residents rather than the state's physical interventions (Souza, 2015). Employing Souza's definition of territorialization as the act of embedding social meaning

and power onto space, this article documents how these spatial practices manifest along the public escalators in the neighborhood of Las Independencias (I). Highlighting the insurgent nature of such spatial practices underscores the political intentionality and power struggles occurring in and associated with urban space.

As a key scholar of public space in Colombia, Rachel Berney's investigations on new public spaces in Bogotá expose the underlying contradictions between how spaces like "equalizing networks," (2010) or linear circulation routes designed to enhance mobility and access, are intended to advance social equity while simultaneously enforcing desirable social behavior through surveillance and policing (2011, 2017). Though Berney's work highlights how public spaces shape social behavior and further deepen certain socio-economic inequities, this study expands on how residents, in turn, shape public spaces and respond to inequities imposed by the state, particularly those related to gender. Similarly, Luisa Sotomayor (2017) investigates the policy strategies and physical interventions employed by the state in San Javier and their role in historically embedding and perpetuating socio-economic inequities in the district under constantly shifting spatial relationships. In so doing, Sotomayor centers her critique on the deterritorialization of San Javier on behalf of the state, whereas this article instead shifts the focus to the re-territorialization of the community by residents as evidenced through symbolic and deliberate acts along the public escalators. Orlando Alves dos Santos, Jr. (2014) reflects on the scholarship surrounding these persistent social and spatial tensions within urban common spaces, noting that through the careful study of the material and personal dimensions of these spaces, researchers are able to develop more heightened awareness towards acts of physical appropriation or re-territorialization.

My field research along the public escalators of Las Independencias (I) documents some of these practices, demonstrating how residents use graffiti, performance art, and the physical appropriation of space through activities such as street vending and neighborhood tourism to generate local economic activity, collective healing, and to build community. At the same time, my study reveals that the installation

of the public escalators did not eradicate networks of crime and violence, but instead dispersed these activities into different, less visible geographies in adjacent neighborhoods, side alleyways, private businesses, and the domestic sphere. Ultimately, my findings underscore the vital role of women in re-territorializing the public escalators, who, despite prevailing gender imbalances in public spaces and increased vulnerability to the shifting spatial networks of crime and violence, leverage their individual entrepreneurship and collective pride and sense of community to improve their economic and social welfare.

2. Research Methodology

This article presents findings from a year-long study including a three-month field research effort in the summer of 2017 at the public escalators of Las Independencias (I) in the district of San Javier, Medellín. My research design draws inspiration from the critical design ethnography model defined by Barab et al. (2004) as a participatory design research method focusing on the empowerment of participants to create their own shared vision and knowledge through collective design thinking and action with the researcher. However, due to my limited prior exposure to the community of focus and relatively brief duration of field work, the study instead was classified as a mixed-methods research design leveraging quantitative and qualitative methods. These methods included site documentation and measurement, mapping, and spatial analysis, as well as ethnographic approaches including observations, field notes, informal and semi-formal interviews, and digital recordings of physical artifacts generated during or resulting from the research effort. In combination, these methods sought to mitigate the influence of the colonial, patriarchal, and positivist research paradigms traditionally associated with Western planning.

As a foreign researcher embedded within a historically marginalized community, I continuously reflected upon and refined my research methods to prioritize situated knowledges, or the lived experiences, histories, and stories of local residents, over that of technical experts (i.e. architects, planners) to assemble a more deep-rooted context

of the community (Haraway, 1988). As such, informal conversations, observations, and interactions with community members and leaders did not take place in spaces within the formal planning apparatus such as the town hall or community center, but rather in the invented spaces (Miraftab, 2004) of civic engagement and participation in the neighborhood, including the escalators, platforms, and back alleyways. Three continuous months of engagement within the modest communal spaces of the neighborhood between four to six days per week allowed me to compose a thick description (Geertz, 1973) of the community and to develop close relationships with the residents.

Due to the lack of available digital geographic data for this informally settled sector of the city, my field research began with several weeks of preliminary site visits and documentation. Documentation consisted of physically measuring individual escalator segments, platforms, and connecting alleyways and taking photos and hand sketches of individual spaces and construction details. This data built the foundation on which to layer additional spatial information, observations, and notes onto maps of the public escalator system. Simultaneously, informal interviews based on casual, organic conversations with local residents on-site began occurring and continued throughout later phases of research including public space observations. Semi-structured interviews were scheduled and digitally recorded with government and private sector planners, architects, and urban designers early in the project, and as resident informants emerged from personal referrals and the site documentation and observation processes, additional interviews were conducted with neighborhood leaders, activists, and business owners. In total, 25 key informants contributed to the project through interviews.

Additionally, local narratives and histories were documented through other artistic media reflecting the unique cultural practices and traditions of the residents of Las Independencias (I). These media included street art and graffiti murals, hip-hop dance performances, rap and song writing, as well as a cognitive map of the neighborhood provided by a local artist. These cultural artifacts complement the more formally-sourced documentation methods of this study,

providing rich social and spatial commentary. Finally, I conducted public space observations over roughly two weeks towards the end of my fieldwork. Using a self-developed coding system comprised of letters, numbers, and symbols, I collected rapid spatial and demographic information reflecting the perceived gender, age range, ethnicity, and directional movement of individual users of a set of discrete public spaces. Between two to three times a day, I rotated sequentially between seven escalator platforms and two points along the adjacent viaduct over 15-minute time intervals, resulting in over 6,000 unique data entries upon completion of my observations. While this subjective coding system certainly introduced a degree of variance in the data, the large sample size and general alignment of findings with broader citywide demographics suggests the method demonstrates satisfactory reliability. Collectively, these methods produced a robust primary dataset which informed my assessment and research findings discussed later in the article. In the future, longitudinal research efforts would benefit this study to document the neighborhood's evolution and to better inform planning in other neighborhoods in Medellín that are undergoing similar transitions.

3. Colombian Cultural Paradigms

It is vital to first understand the cultural paradigms which shape historic and evolving planning values, beliefs, and practices in Colombia before critiquing social urbanism or emblematic projects like the public escalators.

3.1 Convivencia and Cultura Ciudadana

As a society marked by historic violence, convivencia, or coexistence, underpins the aspirations of contemporary Colombian urban life. Convivencia can be conceptualized as "the practice of [social] encounter" and the sense of safety that arises through community-building in urban common spaces (Graffiti Artist, personal communication, July 9, 2017). Complementary to this idea is cultura ciudadana, or civic culture. The concept emerged from the new Political Constitution of 1991 and the city plan of Bogotá, entitled Formar Ciudad, defined as "the set of shared customs, actions and minimum shared rules that generates a sense of belonging, facilitates

urban coexistence, and leads to respect for common heritage and the recognition of citizens' rights and duties" (Escobar, 2010). In Bogotá, mayors Antanas Mockus and Enrique Peñalosa first used public space as a key tool to promote cultura ciudadana. While Peñalosa focused on the physical construction and reclamation of public spaces (Peñalosa, 2005), Mockus viewed public space as "a privileged space to construct citizen culture... [and] to learn to self-regulate and mutually regulate one another" (2005) and, as such, developed a didactic system of signage and art within public spaces to re-socialize citizens under a shared moral code based on mutual respect, coexistence, and citizenship. Conversely, in Medellín, the prevailing cultural attitudes reflected a strong sense of self-determination, entrepreneurial spirit, and modernity that was best represented through the Cultura Metro, or Metro Culture, associated with the city's rail line which opened in 1996 (Stienen, 2009). While the installation of the Metro line helped revive many of the city's existing central public spaces, investment in new public spaces concentrated largely within self-built communities at the city's peripheries to create and elevate civic culture and co-existence in areas classified as zones of violence (Echeverri & Orsini, 2011).

3.2 Invasiones and Fronteras Invisibles

The terms used to describe the settlement of informal hillside communities in Colombia vary by geographic region as well as the means of settlement, but often use language evoking notions of illegality or violent action such as invasiones (invasions) or urbanizaciones piratas (pirate urbanizations). While the state's historic absence and limited physical intervention in these gray spaces (Yiftachel, 2009) engendered and deepened socio-political marginalization, their topographic complexity and geographic isolation from the urban center eventually resulted in the co-optation of these communities by disparate armed factions who delineated fronteras invisibles, or invisible borders within the landscape to exert their territorial claims (Aricapa, 2005; López-López et al., 2014). These liminal spaces became sites of frequent encroachment, confrontation, and conflict leading residents to refer to these invisible borders as "the trenches" (Local Artist, personal communication, July 9, 2017; Samper, 2014). Under the auspices of social urbanism, public space recovery efforts

in Medellín intentionally sought to disrupt fronteras invisibles and reclaim spatial control from armed groups, thereby enhancing the state's ability to govern these remote regions (Duque Franco, 2014). This increasingly integral role of public space in Colombian planning policies, tools, and practices sets the stage for a critical assessment of the public escalators in subsequent sections. Next, this article explores the interrelationships and conflicts between historic views towards these 'invasive' settlements and fronteras invisibles and their perceived threats to popular notions of cultura ciudadana and convivencia.

4. Evolution of Colombian Planning Practice

The number and scale of self-built communities in Medellín surged during the rapid urbanization of the city beginning in the 1950s as accelerated rural-to-urban migration occurred due to the combined effects of land and economic reforms, territorial conflict, and political violence stemming from the country's decade-long civil war, La Violencia (Giraldo and Martínez, 1997). In the 1970s, economic instability brought on by the global recession exacerbated the rate of rural displacement and heightened levels of violence between paramilitary and narcotrafficking operations vying for territorial control (Bellalta, 2020). Between the mid-1980s and the early 2000s, the Consultancy for Human Rights and Displacement (CODHES) estimated that over 2.9 million persons were displaced across Colombia (Escobar, 2010). In Medellín, this "massive expansion of urban precarity, informality, and poverty" ran virtually unchecked during this period, with "very limited and weak local institutions and democratic control" to address the growing socio-economic challenges facing vast proportions of the city's growing population (Private Architect, personal communication, July 31, 2017).

In response to this national crisis, a new Political Constitution was ratified in 1991 and equipped the state with new tools to address the mounting challenges unfolding. The document fundamentally redefined Colombia's geographical and institutional governance structures including territorial decentralization, substantial fiscal restructuring, increased municipal autonomy, and the adoption

of local and participatory planning practice (Castillo and Ferro, 2001; Private Architect, personal communication, July 31, 2017). At the same time, the President's Advisory Council for Medellín was specially appointed to convene new public forums, elevate public participation, and collectively develop strategies specifically aimed at addressing the high levels of urban violence and poverty in the city's peripheries (Moncada, 2016). In 1993, the group conceived of the Program for the Integral Improvement of Subnormal Neighborhoods (PRIMED) which posited that violence and social decline in informal settlements could be reversed through new neighborhood infrastructure and strong state presence; however, the technical decision-making and implementation of these projects lacked the social investment of neighborhood residents necessary to sustain community progress (Velásquez-Castañeda, 2013).

In 1997, the Law of Territorial Organization (Law 388) formalized democratic participation in the planning process, identified public space as an effective spatial framework for planning, and introduced the Territorial Organization Plan (POT) as a systems-based planning approach designed to establish a more rational and equitable built environment (Castillo and Ferro, 2001). The adoption of the first POT in Medellín in 1999 also formulated the Urban Regularization and Legalization Plan (PRLU), a mechanism aimed specifically at planning in self-built communities. Following a similar logic to the POT, plans were organized around natural or built systems; however, the planning focus on the legalization of land tenure failed to gain political traction and left most PRLUs in the diagnostics phase with limited implementation (Velásquez-Castañeda, 2013). As recent history demonstrates, shifting attitudes towards informal or self-built communities manifested in distinct planning policy approaches, but all of the strategies fell short of improving the quality of life for the city's most marginalized residents.

In 2004, the incoming mayoral administration of Sergio Fajardo acknowledged the state's historic disinvestment in these communities and renewed a commitment to reconciling this deficit by working collaboratively with the Empresa de Desarrollo Urbano (EDU) to formulate the Integrated Urban Project (PUI) as a tool to

directly impact marginalized communities through targeted physical planning interventions (Echeverri and Orsini, 2011). Each PUI is structured around three components: a physical intervention in the built (or natural) environment such as new mobility infrastructure or high-quality public spaces, a socially engaged process to promote community cohesion, and the establishment of an institutional (state) presence (Sotomayor, 2015). Once the PUI's framing organizational feature has been identified, a series of community workshops first highlight existing neighborhood challenges and then allow residents to envision potential solutions while building cultura ciudadana and a sense of shared ownership of the project and its implementation. Analyzing the input gathered from community engagement efforts, technical planners then translate findings into a final recommended intervention. To date, the PUI has achieved more success than its planning predecessors due to the dedicated economic funds available for implementation as well as the continuity of project management under the direction of the EDU rather than a particular mayoral administration (EDU Planner, personal communication, July 4, 2017).

Critics of social urbanism and the PUI process often cite the inadequate attention to environmental factors in the analysis and implementation of new projects, the limited provision of new and secure housing in projects, the tension between the global marketability of high-profile design interventions and the ability of said projects to meet basic socioeconomic needs, and the lack of sustained investment in social programming and maintenance and operations as the most troublesome procedural shortfalls. Furthermore, the structural co-optation of the PUI model forced residents to concede the re-territorialization of their communities through physical displacement and embedded institutional presence in perpetuity to purportedly reconcile the state's historic disinvestment (Souza, 2006). Equal and oppositely, desirable social outcomes are almost exclusively attributed to the PUI process and its built projects, with little to no consideration of the residents' own response to these interventions. Some planners seek to elevate the role of residents by arguing that the participatory planning process is as important or greater than the built project because it builds the social cohesion necessary

to sustain future neighborhood improvement; however, the PUI planning process still relies on the planner as a technical expert to make final recommendations and implement built projects (Private Architect, personal communication, July 31, 2017). This arrangement limits the potential to establish shared power structures or to shift decision-making control to neighborhood residents to assert community autonomy. In response, this article examines PUI San Javier, specifically the implementation of public escalators in Las Independencias (I) as a case study that documents resident responses to the project by highlighting some of the key spatial practices and community organizing efforts employed to generate improved socioeconomic outcomes.

5. De-territorialization by the State in San Javier

5.1 Historic Growth Trajectory

The district of San Javier, situated along the western foothills of the Aburrá Valley, epitomizes Medellín's urban transformation as a region that overcame its reputation as one of the most violent districts of the city to arrive as a vibrant social and cultural hub today. However, the state's planning strategies in San Javier have shifted significantly leading up to the present day. Sotomayor identifies three distinct periods of official state policy in San Javier: state absence from the 1970s to early 2000s, strong-arm intervention and (para) militarization in the early 2000s, and beginning in the late 2000s, a renewed focus on community participation, local governance, and physical infrastructure and public space as embodied through social urbanism (2017).

Occupied for over a century by working class families in mining and farming, the rapid urbanization of San Javier began in the 1970s in geographic isolation across a complex and insular topography resulting in decades of growth marked by limited state visibility and planning intervention. Initial petitions by the local women's group to the Medellín Public Enterprise (EPM) in the 1980s to extend public services to Las Independencias (I) and other hillside neighborhoods in San Javier were dismissed because the state did not yet formally recognize their legitimacy and legality (Aricapa,

2005). The first documented state investment in this area was the introduction of public infrastructure systems during Phase 1 PRIMED implementation between 1993 - 1997 (Velásquez-Castañeda, 2013). Soon thereafter, a PRLU was formulated for San Javier, but the plan was never actualized. As evidenced, the state's minimal and sporadic investment in San Javier resulted in high socio-economic precarity that partially contributed to the proliferation of armed, non-state groups who leveraged the desperate urban conditions to assert territorial control.

By the early 2000s, the rate of violence ran unchecked in San Javier and the state determined that strong-arm military intervention was the only means of reclaiming territorial control over the region. A series of smaller, targeted military interventions culminated in October 2002 with a large-scale, state-sponsored raid known as Operación Orión that detained over 350 individuals, injured 38 and killed 10 civilians, and left four others missing (Amnesty International, 2005). While the violent intervention disrupted paramilitary and narcotrafficking operations, invisible borders and underlying networks of territorial control persisted. Residents claim that state armed forces remained in place to enforce strict systems of surveillance, such as daily curfews, which continued to expose residents to a heightened incidence of violence throughout the early 2000s. Residents recall navigating public spaces during this period by avoiding the "war trenches," particular streets or alleys frequently occupied by paramilitary or other armed groups to maintain their personal safety (Graffiti Artist, personal communication, July 9, 2017). Deteriorating social conditions elevated the formulation of the PUI San Javier as a priority in the 2004 - 2007 Medellin Development Plan, codifying a planning process that began in 2006 and culminated in a series of projects executed between 2008 and 2011 (Bellalta, 2020).

5.2 Conceptual Planning Framework for PUI San Javier Projects
The PUI San Javier, similar to other completed PUIs, articulated a series of projects each consisting of a physical, social, and institutional component; however, the historic context and distinct geography of each region informed how these components would ultimately manifest. Given that San Javier was most notorious for

the high incidence of violence present, the primary goal of the PUI San Javier was to formulate projects that collectively help the state to reclaim territorial control in the region and to cease violence between urban gangs and the military police (EDU Planner, personal communication, July 4, 2017). At a regional level, the organizational framework for the proposed projects under the PUI San Javier was to introduce new "centralities," or neighborhood activity nodes, dispersed throughout the district to deliver diverse public services including legal counsel, economic development offices, a police substation, a library-park, and other recreation facilities. New "equalizing networks" of public spaces including parks, greenways, and streets, created and strengthened linear connections between these nodes and worked to disrupt fronteras invisibles by re-integrating disparate communities once in-conflict, providing more "dignified and appropriate conditions" for residents, and connecting households to major transit stations (Berney, 2010; EDU Planner, personal communication, July 4, 2017). Additionally, public spaces along these corridors became vital community gathering places, providing the state an opportunity to further promote cultura ciudadana, superimpose more formal spatial organization, and exert territorial control (Private Urban Designer, personal communication, August 4, 2017; Velásquez-Castañeda, 2013).

5.3 PUI Engagement Process in Las Independencias (I)

The state's historic neighborhood delegitimization and disinvestment and recent military intervention in Las Independencias (I) had collectively bred a great distrust of the state by residents. This palpable tension led construction crews to request military police escorts to accompany them in the community while executing the PUI in 2010 (EDU Planner, personal communication, July 4, 2017). The planning process for the project was viewed not only as an opportunity to identify a built intervention and strategy to embed state presence, but also a means of "changing the ways of inhabiting these territories" (EDU Planner, personal communication, July 4, 2017). As such, the EDU began by distributing t-shirts and memorabilia to neighborhood youth who were appointed as "local EDU representatives" to help planners gain access to the community, socialize the planning goals, and promote the visioning

workshops used to inform the final recommended project (EDU Planner, personal communication, July 4, 2017). The re-socialization of youth representatives by the state subsequently facilitated the re-education of neighborhood participants during the engagement process, but still did not give residents greater decision-making or implementation authority. For example, engagement highlighted many social inequities, but planners settled on addressing mobility and safety as the guiding directive for the PUI. As the only way in and out of Las Independencias (I), the central stairway functioned as a frontera invisible where conflicts frequently erupted between armed factions vying for territorial control (Neighborhood Resident, personal communication, July 13, 2017). In addition, fragmented sets of lateral alleyways and staircases prohibited open movement and, as such, had been "heavily appropriated by delinquent gangs" characterized by "criminal activities borrowing those hidden spaces" and allowing them to "direct these territories to their liking" (EDU Planner, personal communication, July 4, 2017). The delimitation of violence within the physical confines of these dense urban spaces restricted the ability of stairways and alleys to foster convivencia and intensified the social precarity of the residents (Graffiti Artist, personal communication, July 9, 2017).

5.4 PUI Planning Strategy for Public Escalators in Las Independencias (I)

Using these findings, technical planners generated the idea for public escalators: a strategic, linear mobility project to simultaneously disrupt invisible borders and recover space to introduce new, quality public spaces for residents to co-exist. A planner describes the role of the escalators and the intended connections to other projects conceived under the PUI San Javier:

> That is what we wanted for this project, to break down these invisible borders… We did two projects, more than just concentrating them in a node or park, we did linear projects like the public escalators, and we broke down those borders between those above and below. And in the upper half, we did the viaduct to break down Independencias (I) and Independencias (II) (EDU Planner, personal communication, July 4, 2017).

The public escalators of Las Independencias (I) replaced a steep, narrow stairway of over 300 steps rising from the more

traditionally developed neighborhood of 20 de Julio (Departamento Administrativo de Planeación, 2015). Through the de-territorialization of the historic central stairway, modest landings between escalator segments became new public spaces that were conceived not only as "platforms of encounter" between residents, but also as a foundational link between residents and the state (Private Urban Designer, personal communication, August 4, 2017). Additionally, the prominent and imposing design of the physical intervention asserts symbolic state presence and power, flanking the escalators uphill with a state-operated community center and a local education center sited at the base below (Kapferer, 2007).

Figure 2.1 Map of the urban context (informal settlements and plans)

The violent history of Las Independencias (I), as evidenced most recently through Operación Orión, biased the state's objectives for the PUI San Javier in Las Independencias (I) by prioritizing security and territorial control over other social support and resources through a lens of dispositional spatial rationality (Huxley, 2006) whereby the perceived social disorder and unruliness of the population was intrinsically tied to the lack of physical neighborhood organization

and structure. It follows that the public escalators sought to de-territorialize the central stairway by inserting new public spaces and embedding institutional presence within the community while simultaneously failing to address other critical social needs articulated in the engagement process such as lack of employment opportunities and access to adequate housing. Furthermore, the physical disruption wrought by the state actually increased violence initially as fragmented groups sought to re-territorialize the new spaces, ultimately failing to eradicate the criminality and violence present along the central stairway. In fact, turf battles and drug operations have now shifted to less visible spaces like back alleyways, behind seemingly formal shop fronts, as well as the domestic sphere (Local Shopkeeper, personal communication, July 18, 2017). Sotomayor's (2017) work further substantiates this claim, noting how local business owners and residents continue to experience regular threats of extortion by organized criminal actors. In short, by pushing violence into hidden geographies such as the domestic sphere and other private spaces traditionally occupied by women, the state disproportionately impacted women and their livelihoods and further deepened the social injustices it allegedly sought to redress through their interventions (Buckingham and Kulcur, 2009). The following section will expand on these findings by focusing on the day-to-day experiences of residents living within Las Independencias (I) and how the individual and community responses to the escalators have maximized socioeconomic benefits rather than as a result of the state's intervention.

6. Re-territorialization of the Public Escalators Through Insurgent Spatial Practices

6.1 Symbolic Occupation and Materiality

The historic settlement and growth patterns observed in Las Independencias (I) and the other hillside communities of San Javier present similar formal and material characteristics and degrees of socio-economic marginality as other informal settlements across Latin America (Davids, 2016). However, the persistent threat of deadly violence throughout much the history of Las Independencias (I) led spaces like the central stairway to function as critical mobility

infrastructure devoid of the social, recreational, and commercial activities typically observed within these dynamic spatial voids in dense informal settlements (Brillembourg and Klumpner, 2010). Following the replacement of the stairway with the public escalators, residents were slow to embrace the new public spaces given the painful neighborhood memories and lack of established public space culture resulting from the legacy of invisible borders within the community. As such, individual households began to re-territorialize these spaces by casually placing household artifacts such as patio chairs, children's toys, or clothes lines in public spaces that gently began to blur the domestic and public spheres. This quiet encroachment (Bayat, 2000) of the domestic became more commonplace as women started permanently placing their gardens and plantings along the stairs and alleyways. As one woman explains: because many residents originate from the countryside, they bring traditions closely tied to the earth and planting and, as such, gardens still hold vital importance to their histories and identity (Women's Organization Leader, personal communication, July 20, 2017). Though less tangible than the physical artifacts described above, the blurring of the domestic and public realms continued to evolve as residents began redefining their relationships to these spaces and to one another.
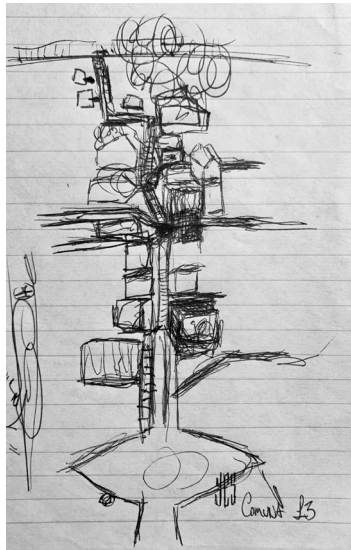

Figure 2.2 A resident artist draws a mental map of the historic central stairway

When discussing community public spaces, one neighborhood resident reflected on what he considered was the historic heart of Las Independencias (I). He recalled a small home goods store operating in the living room of a neighbor's home at the intersection of the central stairway and the main alley, a safe space to socialize with others in the neighborhood while simultaneously preventing the added burden of risk to go down the hill to access the more formal markets and stores to purchase basic goods (Neighborhood Resident, personal communication, July 13, 2017). The design of the public escalators today hosts a modest platform (platform 3) at this intersection, but integrates a larger plaza (platform 4) with permanent street furniture one segment above. While the public escalators sought to de-territorialize invisible borders along the stairway and reintroduce new public spaces for residents, they unintentionally dissolved one of the only community spaces in the neighborhood in the process and effectively shifted the neighborhood's center of gravity uphill even farther from the goods and services below. However, social connections to place appear to transcend material space, as observations revealed that nearly 90% of users who paused on the third platform were residents, compared to less than half of those occupying the fourth platform. Furthermore, platform 3 also was one of the most gender-balanced spaces recorded during observations, with many women re-territorializing the platform as a meeting point or space for informal conversation in passing at this historic community intersection.

6.2 Expressing Culture, Identity, and Community Healing through Street and Performance Art

Simultaneously, youth have been building community in Las Independencias (I) through artistic expression. While residents historically rooted artistic practice in graffiti and street art, influences from Afro-Colombian migrants predominantly from the Atlantic Coast have accelerated the cultural renaissance underway, with performances ranging from hip-hop to breakdancing to rap and song (Women's Organization Leader, personal communication, July 20, 2017). The state's perceived threat of loud music and 'messy' graffiti undermining convivencia within public spaces led the state to require artists to seek formal approval prior to commissioning

Table 2.1 Observations on the social character and identity of the escalator platforms

Resident vs. Tourist Use of Public Spaces

Percentages represent resident share of the total observed count (n=5,257)

Platform ID	Up/Down	Pause	Lateral	Grand Total
01 Base of Escalators	78%	61%	100%	74%
02 Education Center	77%	89%	100%	78%
03 Traditional Center	78%	88%	100%	80%
04 New Center	62%	45%	100%	57%
05 Small Outlook	62%	30%	N/A	59%
06 Juice Stand	53%	42%	N/A	50%
07 Viaduct Outlook	73%	52%	88%	64%
Total	70%	57%	90%	**68%**

*majority tourist

Gender Patterns in Public Spaces

Percentages represent share of male residents to all residents (n=3,573)

Platform ID	Up/Down	Pause	Lateral	Grand Total
01 Base of Escalators	54%	67%	64%	56%
02 Education Center	53%	54%	100%	53%
03 Traditional Center	49%	57%	76%	51%
04 New Center	53%	66%	50%	56%
05 Small Outlook	44%	67%	N/A	45%
06 Juice Stand	46%	67%	N/A	50%
07 Viaduct Outlook	57%	54%	61%	57%
Total	51%	60%	63%	**54%**

*majority tourist

a 'legitimate' work. This City-mandated permitting and approval process for messaging, designs, and performances essentially controls the expression of public culture (Kapferer, 2007). However, young artists re-territorialized the state-approved messaging by re-signifying their work using coded symbols that help to explore their own cultural identities, promote community healing by reflecting on historic neighborhood memories and traumas, and imagine new futures for themselves and their community (Graffiti Artist, personal

communication, July 9, 2017). Today, graffiti covers almost every wall framing the escalator system, with daily performances typically occurring on platform 7 or along the mid-hill viaduct adjacent to the escalators due to the space's ability to host a large number of spectators. In this sense, residents of Las Independencias (I) were able to re-territorialize the public escalators through the novel re-envisioning of mobility infrastructure to better reflect their own identities, culture, and neighborhood histories. This resignification of place (Souza, 2015) forms the foundation on which residents were able to generate local economic opportunities like tourism and street vending.

Figure 2.3 Breakdancers rehearse on Platform 4 before the tour groups arrive

6.3 Direct Occupation: Spatial Restructuring, Repurposing, and Generating Alternative Economies

As the arts matured in the community and began to generate alternative economic potential, the re-territorialization of the public escalators became more deliberate and assertive on behalf of the residents. This potential translates into upwards of 400 - 500 tourists visiting the escalators each day during peak tourism season in late spring, with observations revealing that the total volume of tourists occupying several platforms exceeded half of the total recorded users

(Tour Guide, personal communication, July 16, 2017). Members of a local hip-hop and graffiti troupe were among the first to organize and facilitate these tours as a means of extending their message of healing and community transformation to a broader audience, with several additional tour companies led by local young adults materializing in recent years (Graffiti Artist, personal communication, July 9, 2017). Today, tourism does not solely function as a local economic engine that re-affirms community pride and history, but it has also fostered a global network of artists sharing their message of solidarity in the struggle to inspire other communities across Latin America and the world to exercise individual and community autonomy to become their own agents of change (Graffiti Artist, personal communication, July 9, 2017).

Residents re-territorialized the public escalators by repurposing them as a marketplace as well as a space for social encounter and recreation, diluting the state's original intent for the project. However, the explosion in national and international tourism in the neighborhood accompanied rapid growth in the number of vendors situated along the escalators. Women increasingly began pursuing their own entrepreneurial goals outside the domestic realm by starting to sell handmade artisanal goods and other traditional foods catering predominantly towards this large influx of tourists (Women's Organization Leader, personal communication, July 20, 2017). The state initially responded by prohibiting all vending in the name of preserving public health, free mobility, and proper public space etiquette, mirroring many of the arguments often presented to justify street vendor clearing efforts in Colombia (Donovan, 2008). The vendors, led by representatives from the local women's group, the Red de Apoyo para Las Mujeres, swiftly organized and asserted: (1) private landowners with storefronts along the escalators would unfairly enjoy disproportional economic benefits from the system and, therefore, (2) all residents should have the right to occupy and sell goods within these common spaces (Women's Organization Leader, personal communication, July 20, 2017).

While vendors can be found throughout the escalator platforms, the majority of women vendors typically concentrate their sales to

platform 7 and the adjacent viaduct given the amount of space and the high levels of local and tourist foot traffic present. Therefore, it is not surprising that observation findings confirm more gender parity in these spaces compared to others in the neighborhood. Here and throughout the neighborhood, vendors have adapted material space along the escalators to best fit their needs by introducing self-built kiosks featuring seating, storage, and shading structures to display and sell their goods. The flexible designs employed by vendors resist the rigidity of the material spaces imposed by the state, allowing for temporary physical occupation without major restructuring of public spaces and preserving modularity to allow for incremental improvement and expansion as operations scale up or down. While all from the neighborhood are welcome to sell, an informal, community-based code of ethics stipulates that vendors may only sell non-competitive goods on the same platform, though no rules govern whether vendors must cater to tourists or residents with their business (Escalator Vendor, personal communication, July 13, 2017). These kinds of occupations in public spaces exemplify the notion of coexistence and contestation (Low, 1996), whereby these women are advancing community autonomy through alternative economic channels while simultaneously contesting the state for their right to occupy and sell in these spaces.

6.4 Enduring Occupation and Resistance

From the historically empty streets whereby violence forced the exchange of basic goods to occur in private spaces within the home through a covert neighborhood network, the physical occupation of public spaces by vendors in Las Independencias (I) today originates from a strong tradition of resistance and perseverance by the community residents (Tour Guide, personal communication, July 16, 2017). As the commodification of the neighborhood has intensified, new private businesses catering to tourists such as restaurants, coffee shops, and hostels have established themselves in the neighborhood and, as a result, the level of neighborhood regulation and scrutiny by the state has increased. Along the public escalators, this manifests not only through the presence of state-owned facilities, but also through Escalator Ambassadors who, in an effort to promote convivencia, monitor what they deem as undesirable behaviors such

as walking on the escalators or running in public spaces. Whereas perhaps six of these Ambassadors were traditionally in charge of monitoring these spaces, over one dozen can be found patrolling the system today (Tour Guide, personal communication, July 16, 2017). Berney's (2011) work highlights how this trend of increased security, policing, and enforcement in new, equitable public spaces in Colombia disproportionately impacts marginalized and lower-class populations. For a local woman contracted with the City to serve as an Ambassador, these tensions embody feelings of joy for the opportunity to work close to her family and pride for helping to keep the neighborhood safe, but also dismay that crime persists in the neighborhood, explaining how a nearby household along an adjacent alleyway had recently been confronted for holding a utility lineman for ransom (personal communication, July 27, 2017). These findings highlight that the re-territorialization of Las Independencias (I) not only concerns itself with the neighborhood scale as it relates to criminality and invisible borders and the blurring of domestic and public spheres, but also at the scale of the body, with residents simultaneously exercising individual autonomy while acting as a security agent of the state.

7. Summary of Findings

7.1 Documenting the Unintended Consequences of De-Territorialization

Despite the prevalence of other pressing social challenges in the district, the main objective of the PUI San Javier was to de-territorialize existing geographies of violence by introducing new public spaces and permanent state occupation through institutional fixtures and mobility infrastructure. In the case of the public escalators in Las Independencias (I), the disruption of invisible borders along the central stairway did not eradicate criminality and violence, but, rather, shifted it into less visible and hidden geographies like the domestic sphere where women are disproportionately affected. Furthermore, this de-territorialization also eroded what minimal community networks existed by restructuring the public realm and relationships between private households and the new escalator platforms as well as to the larger markets and shops at the base of the hillside by

Figure 2.4 Vendors re-appropriate spaces conceived for recreation into spaces for commerce and artistic expression

assuming a sense of public space culture in the neighborhood which was not historically present due to violence.

7.2 Documenting Residents' Spatial acts of Re-Territorialization

Residents of Las Independencias (I) initially, and perhaps unintentionally, approached the re-territorialization of the public escalators through subtle physical encroachments from the domestic realm. As residents continued to interpret the new public spaces, they re-attributed their histories and memory to the platforms first through casual socialization and later through the tradition of rich, visual storytelling through graffiti, street art, as well as dance, rap, and musical performances to promote a sense of pride, community identity, and collective healing which, in turn, generated opportunities for creating alternative local economic streams. This led to the rise of tourism and street vending along the escalators, effectively repurposing spaces originally intended exclusively for socialization and recreation into spaces of commerce and artistic expression as well. Street vendors, graffiti artists, and other performers restructured spatial relationships within these new public spaces through temporary and flexible physical artifacts including shade structures, storage and display carts, and other moveable furniture to facilitate commerce. Finally, the role of women throughout this process of re-territorialization cannot be understated. The legacy of advocacy and ingenuity by local women continues in spite of marginalization across dimensions of class, ethnicity, gender, and geography. These virtues manifest through entrepreneurial endeavors such as street vending and tour operations as well as the extension of subtle symbols of the domestic sphere into new public spaces such as plantings and seating to demonstrate implicit sense of pride, ownership, history, and memory of place. Ultimately, it was through the re-territorialization of the public escalators by residents rather than the state's physical intervention that has driven community change and improvement, and while social issues and criminality persist, the collective and individual autonomy demonstrated through this process will be essential to maintaining the positive trajectory of Las Independencias (I) moving forward.

7.3 Research Conclusions

This study centers around the stories, actions, and day-to-day lived experiences of residents, particularly women, in Las Independencias (I) in response to the creation of new common spaces along the public escalators. In particular, it demonstrates that residents' acts of subtle physical occupation, graffiti, street and performance art, and street vending and tourism subverted state intentions for the public escalators and facilitated the community's re-territorialization of these spaces to best meet their needs. Through personal narratives like that of the Escalator Ambassador, this research extends a gendered dimension to the paradoxical relationship articulated by Berney (2011) regarding new, equitable public spaces and the enforcement of desirable societal principles within these spaces. Additionally, by employing a 'quasi' design ethnography, my findings complement Sotomayor's (2017) insights on the spatial conflicts and inequities perpetuated by the state in San Javier while redirecting the focus of this conflict to the re-territorialization of these spaces through insurgent spatial practices by the residents of Las Independencias (I). Future studies of interest could re-visit these practices as part of a broader longitudinal study, or could be contrasted with a similar study in the adjacent community of Las Independencias (II) which lacks the same degree of physical intervention and significantly higher Afro-Colombian population than their neighbors in Las Independencias (I).

By shifting the focus of this research inquiry to the people rather than the state, new understandings begin to emerge regarding how and where planning occurs and who is ultimately responsible for leading planning efforts and upholding commitments to the community. Despite the participatory nature of the PUI engagement process, this 'progressive' model still presents procedural deficiencies that risk structural co-optation (Souza, 2006) of local community organizations and neighborhood leaders by gathering their input and ideas without providing decision-making authority or financial resources to implement or steward physical interventions in the neighborhood. Though disproportionately impacted by planning matters and under-represented in existing power and decision-making structures, the planning contributions of women in Las

Independencias (I) span decades of persistent occupation and resistance. To reconcile these historic transgressions, planning practice must radically re-envision its process, beginning by intentionally centering the narratives and perspectives of women to understand their needs and aspirations, elevating their leadership and decision-making power, and continuing to allow these community ambassadors to create and steward emancipatory spaces where individual and community autonomy reside.
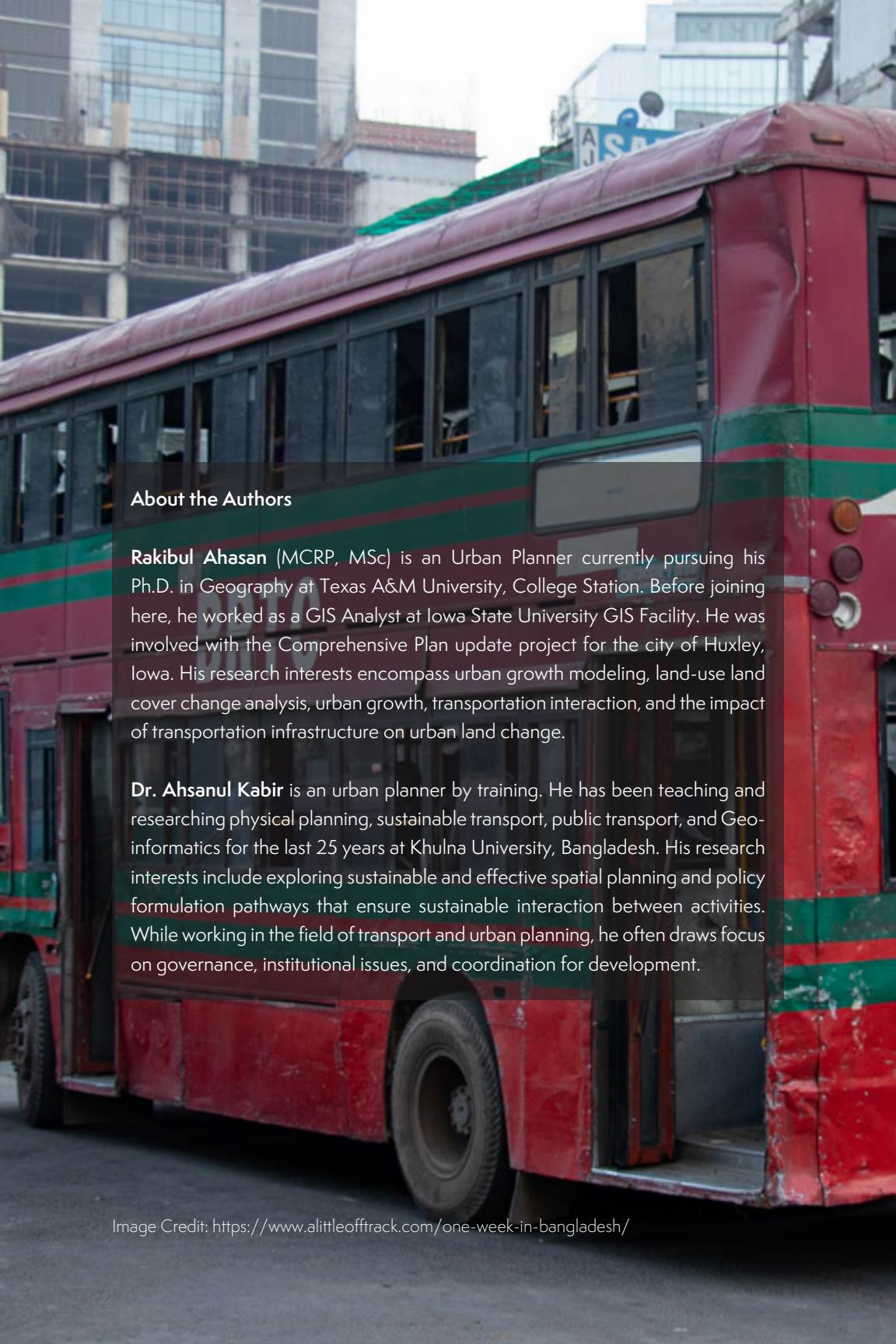
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Performance Evaluation of A Public Transportation System: Analyzing the Case of Dhaka, Bangladesh

Rakibul Ahasan, Ahsanul Kabir

Abstract

Performance evaluation of public transportation systems is an important prerequisite to making a rapidly growing city livable. Despite the presence of public transportation since the 1960s, few studies talk about the efficiency of transportation systems in cities. The objective of this research is to assess the performance of an existing system. Based on a set of performance measurements identified from the literature, we captured five categories: passengers' and operators' perspectives - service efficiency, system efficiency, cost efficiency, utilization efficiency, and network efficiency to evaluate public transit efficiency. The results indicated that the existing service quality in Dhaka is less satisfactory compared to other cities with system, network, and cost efficiency being below average. But utilization efficiency is better, which could result from the overuse of vehicles and workers being involved in operating them. Also, the most concerning issue with the existing transportation system is congestion. In terms of the strengths and weaknesses, we find that the implementation of metro rails, bus route restructuring, and a separate policy for the city's public transportation system cast some hope in addressing some immediate problems in the rapidly growing city of Dhaka.

Keywords

Public Transportation; Performance Evaluation; System Efficiency; Service Efficiency; Quality of Service; Dhaka; Bangladesh

1. Introduction

Urban areas consist of a series of interconnected subsystems, and transportation is an integrated component of such areas, and a driver of urban growth (Berling-Wolff & Wu, 2004). An efficient transportation system is essential to accommodate a growing urban population that ensures mobility for users. Dhaka, one of the most densely populated and fastest-growing megacities, is no exception and requires a public transportation system to efficiently run the city functions and serve its inhabitants (Ahasan, 2018; DTCA & JICA, 2015). Previously, the city was designated as the "traffic capital of the world" for its congested streets (Hoque et al., 2009; Morshed, 2015). The city established its first transportation authority back in the 1960s and currently has a public transit system that is more than two decades old (DTCA & ALG, 2015). The current system cannot meet the ever-increasing demand efficiently (Ahasan et al., 2020; Hasnine, 2011), and is not suitable to accommodate standard bus services or adequately serve all areas (DTCA & JICA, 2015). Additionally, due to a shortage of budget, there weren't enough efforts to evaluate the system's performance or find an effective way to address the increased demand with satisfactory service quality (Ahasan et al., 2020).

There were several structural improvement projects that aimed to resolve the transportation situation, but weren't enough (e.g., Dhaka Urban Transport Network Development Study 2010; Dhaka Bus Network and Regulatory Reform Implementation Study 2015, etc.). Most of the earlier studies focused on capacity gaps and introduced new schemes to reduce congestion on the street on a short-term basis. However, there were no attempts to institutionalize the existing transportation system's performance evaluation practice and improve it based on the results of the evaluation.

To improve the system, it is first necessary to identify the current system's deficiencies, which can be achieved through performance evaluation, which can explain how well the system is running and how well it supports the urban structure. The evaluation process includes measurement of performance in-network level, which

eventually provides an idea of the continuity and coverage of existing routes, and how accessible those are from the major residential, commercial, and other activity hubs. It also identifies the areas by which the system is lagging from both passenger and operator points of view. Past studies reported that performance measurement techniques vary based on context, scale, and other socioeconomic factors. In general, the motivation behind these techniques is to evaluate the system's efficiency and performance per the standards practiced (Abreha, 2007; Berhan et al., 2013; Cruz et al., 2012; Eboli & Mazzulla, 2012; Georgiadis et al., 2014; Niyonsenga, 2012; Ryus, 2010). However, most of them apply to developed countries' cities, which differ in many ways from Dhaka. Even with the city's rapidly growing nature, Dhaka differs from other megacities in spatial arrangements, economic structure, and socio-economic conditions.

Thus, this study aims to find a set of performance measurement indicators that will provide contextual findings for Dhaka and evaluate the existing transportation system's performance, because only using the indicators suitable to developed countries' cities may not give a realistic visualization for the city.

2. Literature Review

Studies have examined the importance of public transit, especially in the context of densely populated cities. These studies have focused on providing options to users while ensuring better mobility and accessibility. With rapid urban population growth, the demand for transportation services is also proliferating, and public transit can help meet this increased demand (Schmöcker et al., 2004; Berg & Ihlström, 2019). Public transportation options are also helpful in reducing congestion on streets by eliminating the need for single-occupancy vehicles (Hensher, 2018; Migliore & Ciccarelli, 2020). Therefore, it is instrumental in low-income countries with limited financial resources. Previous transportation-related studies and analysis also reported the importance of public transportation in the context of Dhaka, Bangladesh. One of the earliest initiatives was in the early 1990s - the Dhaka Urban Transportation Plan (DUTP) which proposed that the city required an efficient public transit system,

and recommended the establishment of a coordination authority. The authority, the Dhaka Transport Coordination Authority (DTCA), has prepared policy documents over the years emphasizing the importance of mass transit in the city, and they are currently implementing six Bus Rapid Transit (BRT) and Metro Rail projects.

Previous studies defined performance measurement as evaluating how well an organization utilizes resources by comparing the input and output (Eboli & Mazzulla, 2012). It is in the form of capital or logistics supply, i.e., vehicles and infrastructures. The measurement comprises collecting, evaluating, and reporting data related to how well the organization performs its functions and meets its goals and objectives. Performance measurement of the public transportation system helps achieve aims from different viewpoints: evaluating the public transportation system's overall performance, evaluating management performance, and diagnosing problems. The problems can be inconsistency in expenditure regarding the maintenance of transit vehicles, resource allocation among competing institutions, providing a management control system for monitoring and improving transit services, and other legal and regulatory works (Eboli & Mazzulla, 2011). It also paves the way for techniques that translate into a constant effort to improve services to match standards (Dhingra, 2011).

It is worth noting the variations in definition of transit performance measures (Bordagaray et al., 2014; Das & Pandit, 2013; Deb & Ahmed, 2018; Friman et al., 2020; Güner, 2018; Ojo, 2019; Park et al., 2020; Quddus et al., 2019). These perspectives guided evaluations on the passenger's perception of the service, how transit agencies view the system from a business perspective, and the community's view on the transit's role in serving broader societal objectives. Several researchers stated three general dimensions of performance measurement of public transportation systems - resource efficiency, resource effectiveness, and service effectiveness (Cruz et al., 2012). However, there is evidence of opposing views among several other researchers regarding these aspects . For example, Cook & Lawrie, 2004; Castillo & Benitez, 2012 in Cruz et al., 2012, added that the measurement and indicators of service quality of the system is also

relevant. This has also been agreed upon in other works (Bellizzi et al., 2020; Bordagaray et al., 2014; Cascetta & Cartenì, 2014; Das & Pandit, 2013; Deb & Ahmed, 2018; Friman et al., 2020; Güner, 2018; Ojo, 2019; Quddus et al., 2019).

Notably, the work of performance evaluation usually varies based on the considered point of view (whose view to consider - user's or agency's). A group of researchers performed their work based on the operator's point of view, while others counted the passengers or communities, while several others considered both (Eboli & Mazzulla, 2012). Performance evaluation can, therefore, provide information on the level of service of the system, the service quality (from the passenger's point of view) along with the cost-efficiency of the system, and system efficiency and utilization efficiency (agency's point of view) at the same time. However, it was evident in past works that transit service performance depends significantly upon perspective. From one perspective, some indicators could be considered a performance measure that may not reflect all the system's stakeholders. Hence, it is important to consider the viewpoints of all the involved actors and past studies used this frequently (Eboli & Mazzulla, 2012; Ojo, 2019; Friman et al., 2020). Researchers consider the customer's view as the most relevant for evaluating transit performance (Cruz et al., 2012; Friman et al., 2020).

On the other hand, to evaluate the operator's perspective, past studies reported the use of productivity measures. These measures focus on evaluating the effectiveness of the system using a set of efficiency indicators. It usually considers cost-effectiveness and cost-efficiency. Studies differentiated among efficiency and effectiveness measures based on the input, for example, studies defined cost efficiency - the measure of service output compared to the unit of input; cost-effectiveness - the measure of outcome compared to the unit of input in terms of cost, and service effectiveness - a measure of outcome compared to a unit of input in terms of service. Indicators can help achieve involvement of all stakeholders. The importance of considering the infrastructure (i.e.road network) and vehicle modes (i.e. cost efficiency) was also prevalent in the literature. However, we also found that overlaps between different indicators and individual

indicators could represent multiple perspectives. This overlap, and the importance of considering all perspectives in the evaluation process are visible in the framework that we developed based on our findings (Figure 3.1). We incorporated the final set of indicators and the related description in the following section (section 3.1.).
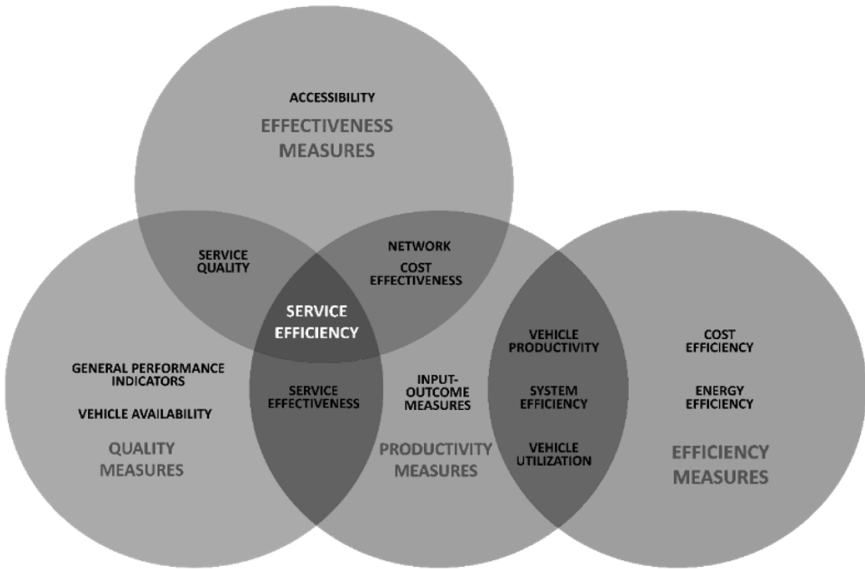

Figure 3.1: Major public transportation performance measurement indicator categories identified from the literature

3. Methodology

We followed a two-step approach for this research, including a review part and a data collection part. We reviewed past studies to identify a set of performance measurement indicators. After the review, we finalized the indicators in consultation with professionals and experts working with the city's transportation system. Following the indicator selection, we conducted a field survey to collect data from operators and users. We also collected transportation route and network-related data from DTCA. Both the field survey data and secondary data from the institutions were then analyzed using the selected indicators.

3.1 Performance Measurement Indicator Identification

Based on the literature review, we selected indicators to evaluate the transportation service's performance in Dhaka city considering their contextualization to the location. We also considered both passengers' and operators' perspectives. Hence, there are five categories: analyzing system efficiency, service efficiency, network efficiency, cost efficiency, and utilization efficiency of the existing transit system (Table 3.1).

Table 3.1: Indicators used to evaluate the public transport performance in Dhaka city

Category	Description	Indicators	
System Efficiency	System efficiency measures the input-output ratio of consumption in the transportation process.	Mobility	
		Productivity	Passenger
			Vehicle-km
		Quality	
		Affordability	
		Infrastructure quality	Availability
			Location
		Safety	
Network Efficiency	Network efficiency measures the ability and capacity of the network to support direct services between areas, coverage of the total route, short distance flexibility	Continuity between roads	
		Balancing of routes	
		Spatial coverage of the network	
		Route Overlapping	
		Network density	
		Average bus stop spacing	
		Service Coverage	
Service Efficiency	Service efficiency indicators are used to measure the performance of the service delivered from the passenger's perspective	Reliability	
		Availability	
		Service capacity	
		Accessibility	Distance
			Vehicle availability
		Service coverage	
Utilization Efficiency	Utilization efficiency measures the rate of resource utilization by the existing system	Fuel consumption per km	
		Vehicle capacity utilization	
		Vehicle utilization and break down	
		Vehicle per km	
		Passenger per km	
Cost Efficiency	Cost efficiency measures and compares the amount of investment required/gained to/from the service	Operating cost/vehicle-km	
		Operating cost/passenger-trip	
		Revenue/vehicle-km	
		Revenue/passenger-trip	
		Total revenue/total operating cost	

Adapted from: Abreha, 2007; Niyonsenga, 2012; Eboli & Mazzulla, 2012; Ojo, 2019; Das & Pandit, 2013

3.2 Data Collection

In this study, we collected data through a questionnaire survey and

institutional survey between June 2015 and July 2017. We designed the user survey questionnaire to capture the quality of service, average travel time, accessibility, comfort, and other service and system-related issues. On the other hand, we collected operating costs, revenue, and resource utilization data from the operators. The institutional survey provided network data, bus stop locations, and other relevant data on public transport operations.

3.3 Data Analysis
To evaluate the performance of the system, we applied calculations using the collected data. The following section reports the equations and techniques we employed in performing the analysis.

System Efficiency
For this research, we calculated system efficiency by appraising the travel time, walking distance and time, waiting time to board on the bus, and travel cost. We also calculated the transportation affordability index to measure system efficiency. In this study, we defined transportation affordability as the percentage of income spent for travel purposes (equation 1).

$$\text{Affordability, } Aff_1 = \frac{\sum_{i=1}^{N} x_i.P}{y} \tag{1}$$

where x_i is the number of trips per month, P is the expense per trip, y is the monthly income.

Service Efficiency
We used service efficiency indicators to capture the users' perspective and measure the performance of the system. Past studies reported the use of weighted delay index and schedule reliability index for this purpose (Camus et al., 2005). In this study, we defined the weighted delay index based on the comparison between transit-trip delay and the number of late trips due to transit service failure (equation 2). We used a scheduled headway to measure transit trip delay. In contrast, we calculated schedule reliability based on the user's waiting times

$$\text{Weighted Delay Index, } R = \frac{\sum_{k=1}^{H} k.p(k)}{H} \tag{2}$$

before boarding on the transit (equation 3).

where H is the scheduled headway, k is the universal delay value in minutes (0 ≤ k ≤H), and p (k) is the observed probability of delay k. R is expected to take a value between 0 and 1, with a higher value indicating lower reliability.

$$\text{Schedule Reliability, R} = \frac{\text{Number of arrivals 0-5 mins late}}{\text{Total arrivals}} \tag{3}$$

Utilization Efficiency

We used average vehicle utilization, passenger per vehicle per day (PPVPD), passenger-kilometer, and vehicle availability to measure how the system is utilizing available resources for measuring utilization efficiency. We calculated vehicle utilization efficiency using the ratio of average working hours to total working hours (equation 4).

$$\text{Average vehicle utilization (\%)} = \frac{\text{Average working hours}}{\text{Daily working hour}} \tag{4}$$

Vehicle availability indicates the percentage of the operational vehicles in revenue-generating works (equation 5). It reflects the effectiveness of the system's maintenance arrangements.

$$\text{Vehicle availability} = \frac{\text{Number of operational vehicles}}{\text{Total no. of vehicles in the fleet}} \tag{5}$$

Passenger per vehicle per day (PPVPD) is the number of passengers carried by a vehicle divided by the total number of vehicles and the number of operating days (Iles, 2005) (equation 6). It is influenced by the vehicle capacity, average occupancy, route length, no. of trips, average distance traveled by the passenger, headways, and average travel time.

$$\text{PPVPD} = \frac{\text{Total numbers of passengers carried}}{\text{(Total fleet size*No. of days of operations)}} \tag{6}$$

Network Efficiency

We used the distance between bus stops and average network speed to measure the existing system's network efficiency (equation 7).

$$\text{Average network speed} = \frac{\sum_{i=1}^{k} V_i S_i}{\sum_{i=1}^{k} V_i} \tag{7}$$

Cost Efficiency

We found that one of the most frequently used cost-efficiency measuring techniques is to calculate the profitability index (equation 8). This helps to examine the operating cost and how well the system is returning the investment.

$$\text{Profitability} = \frac{\text{Total revenue}}{\text{Total operating cost}} \quad\quad\quad (8)$$

4. Results

4.1 Existing Public Transportation Condition

In public transit, bus services are the second most used mode (4.2% share) for vehicular transportation in Dhaka city after non-mechanized rickshaws (21.8% share) (DTCA, 2015). Private bus operators provide local bus service within the city and in the vicinity alongside the state-owned Bangladesh Road Transport Corporation (BRTC). A total of 304 Buses and 1,194 Minibusses were in operation on 8 Bus Routes and 19 Minibus routes, respectively, in Dhaka in 1992 (DTCA, 2015). In 1994, bus and minibus routes were merged, and the bus routes were restructured, which reduced the ceiling height of the vehicle allowed to operate on specific routes. Since the Dhaka Bus Route Regulatory Reform Implementation Study by DTCA in 2011, there have been no new route permits for minibus and human haulers. Only existing permit-holders for minibus and human haulers can renew.

As per the Motor Vehicle Ordinance 1983, all motor vehicles need to be registered with the Bangladesh Road Transport Authority (BRTA). Additionally, vehicles to be used as public transportation need a permit issued for a fixed route with an origin and destination, and a fixed area or zone. Until 2000, there were 1,155 buses and 3,654 minibuses, which increased to 15,552 and 9,341 in 2009, respectively (Table 2). In recent years, the number of operating buses and minibuses has been increasing steadily. At present, the total number of buses operating on Dhaka's roads is around 22,550, and the number of minibuses is 9,983 (BRTA, 2015). The number of buses under BRTC is not incorporated in the BRTA database as BRTC does not require route permits to conduct its operations. At

present, BRTC has a fleet of 974 buses, out of which 125 are double-deckers, and these buses run through 11 routes in and around Dhaka city (BRTC, 2015).

Table 3.2: Number of registered buses and Minibusses in Dhaka (Yearly)

Year	Up to 2009	2010	2011	2012	2013	2014	Up to May 2015	Total
Bus	15552	1,101	1501	1218	971	1364	843	22,550
Minibus	9341	149	136	103	83	135	36	9983
Total	24,893	1,250	1,637	1,321	1,054	1,499	879	32,533

Source: BRTA, 2016

There is currently a minimum fare (for a distance less than 1 kilometers) of 7 Bangladeshi Taka (BDT) (~0.09 USD). An additional expense added per km is 0.36 BDT with this minimum fare. By offering a higher quality service, some operators charge higher fares in practice. Most bus companies follow the off-board ticketing process, which later transformed into onboard ticketing to prevent revenue loss and reduce the number of intermediaries. DMRTC, with representatives from bus operators, is responsible for determining the fares of the buses in Dhaka. Capital investments, salvage value, operation, maintenance cost, and profits are considered to fix fare. Additionally, some streets are suitable for smooth operation. According to the latest study by the transportation authority, 12.5% of the entire road network in the Dhaka Metropolitan Area (DMP) area is suitable for bus services (DTCA & JICA, 2015).

4.2 Performance Evaluation of the Existing Public Transportation System

4.2.1 System Efficiency
It is difficult to identify uniform measures to evaluate a public transportation system's service quality due to the variation of perception from person to person. However, past studies found that service quality depends on average travel time, average waiting time, distances to the bus stops, travel speed, waiting time, and reliability. The majority of the respondents (56%) selected "moderate" as their opinion on the quality of the service (Figure 3.2a). In Dhaka, people do not prefer to walk when the walking distance is more than one

kilometer or if the time taken exceeds 10-15 minutes. The average walking time to reach the bus stops is between 5 to10 minutes, and in most cases, walking distance is below 500 meters (around 70% of the responses). Still, one-third of the people have to make an ingress trip to use public transportation. Usually, the time taken during an ingress trip is between 10 to 30 minutes, with an average fare of BDT 10 to 15 (~0.14-0.20 USD). Almost two-thirds of the passengers (75%) have to wait at the bus stops before boarding the bus (Figure 3.2b). Waiting time varies between 2 to 10 minutes, with an average of 7-8 minutes. It may cross over 20 minutes during peak hours and under certain weather conditions. For Dhaka, the affordability index (equation 1) value has been found to be at 4.3% (assuming the average number of trips per month per person is 40 and the average fare per trip is BDT 22 (~0.23 USD). This value is within the standard accepted range and also within the affordable limit in comparison to other similar cities (e.g., South Africa 10%, India 10.2%, Pakistan 12%, Brazil 7%, Nigeria 15-20%, Cameroon 18%) (Carruthers et al., 2005). However, there are other modes like auto-rickshaws and taxi cabs in Dhaka. These modes cost more than buses (e.g., for a CNG trip, one has to pay BDT 40 for the first 2 kilometers and BDT 10 for subsequent kilometers). Nevertheless, that expense and cost are beyond the scope of this study. That is why the value found is probably not a representation of the real world.

4.2.2 Service Efficiency

For a trip with a 6 km length, it should usually take less than 30 minutes (Armstrong-Wright & Thiriez, 1987). However, most trips exceed an hour of travel time in Dhaka. Almost half of the trips (43.75%) take more than an hour for a 6 km distance, and around one-third (31.25%) take 50 to 60 minutes (Figure 3.2c). For this research, the average speed of the vehicle and volume-capacity ratio were considered to measure reliability parameters. In the weighted delay index (equation 2), only one out of twenty-three operators showed a perfect score, whereas eight others scored less than 0.2, indicating seamless operation and maintenance. In the case of schedule reliability (equation 3), only four operators have a 50% reliability, whereas most operators have no reliability in maintaining the schedule. This indicates how disorderly the operation and maintenance of the

public transport system is. Accidents and casualties caused by buses and minibuses have been lower compared to the total number. These modes accounted for only 72 out of 1,279 casualties and 432 out of 1,401 accidents between 2014 and 2017. In contrast, private vehicles, i.e., motorcycles, private cars/jeep, etc., are responsible for 150 casualties and 345 accidents, referring to the fact that public transport modes are comparatively less accident-prone and safer (Accident Research Institute, 2015). The average travel speed of buses fluctuates with the change in route, route length, the number of trips per day, and also the number of operators operating on that route. Dhaka's average travel speed has been found to be around 10 Kmph, with a minimum value of 5 Kmph to a maximum of 22 Kmph (Figure 3.2d). The average speed varies based on the origin and destination of the routes. It is found to be higher during long routes which connect areas outside the city. Inside the city, traffic congestion is high, which reduces the vehicles' speed on the routes that originate and end inside the city.

4.2.3 Utilization Efficiency

Vehicle-kilometer depends on traffic congestion on the streets, operating speeds, hours of operations per day, and hours while the bus is in operation but not on the streets. For well-operated bus services, the average should be between 210 km to 270 km (Niyonsenga, 2012), although, in reality, the range lies between 150 km to 300 km (Abreha, 2007). In Dhaka city, the value is smaller for routes having both the origin and destination within the city, and high for the routes connecting areas outside the city. The maximum value has been found to be 195 kilometers per day, and the lowest is 53 kilometers resulting in an average of 79 kilometers. Using equation 4, the average utilization rate was found at 88.8%. On the other hand, vehicle availability is the ratio of the number of operational vehicles to the total vehicles, which for Dhaka was 84.85% (equation 5). A higher vehicle availability rate does not actually mean that all of the vehicles are operational. It can be higher due to the improper and overuse of available vehicles and falsified information provided to the regulatory authority. The problem with calculating vehicle availability and utilization in Dhaka is that the number of vehicles operating on the streets is much higher than listed on paper. Operators usually do

not want their vehicles to be out of the streets for maintenance or stay idle, no matter whether they are fit for operations or not. There are also questions regarding the actual fleet size.

Assuming 85% of the fleet are in operation (availability), the range for a bus with a capacity of 80-100 passengers on city services is between 1,000 and 2,000 PPVPD (equation 6). In Dhaka, the average capacity of vehicles is around 60, and PPVPD varies from route to route, with a minimum of 240 to a maximum of 775. Some of these values are close to the standards, but mostly the scenario is of underutilized extremes. Passenger kilometer in the case of Dhaka has been found to be 109,703 per day, the average trip length was found 10.1 km from the field survey, and the average total passenger volume was used for this calculation, which is 2155 passengers per day.

4.2.4 Network Efficiency
In practice, buses stop everywhere they see passengers, though some defined bus stops are on every route. Average bus stops spacing should not cross 300-400 meters (Niyonsenga, 2012) for an efficient service operation. In the case of Dhaka,the stop spacing is around 1,200 meters (based on the stops recorded in the DMRTC database). On the other hand, the average network speed should be approximately 14-15 Kmph for an efficient operating transportation system, which is below 10 kilometers for Dhaka (equation 7). Both of these parameters indicate a low network quality on the available routes in the city.

4.2.5 Cost Efficiency
Operating Cost per Vehicle-Km and Revenue per Vehicle-Km were used to calculate profitability, which refers to cost-efficiency. Though both the revenue and profitability data were found too small and inadequate in amount, it should be mentioned here that the data from the operators regarding cost and revenue is not reliable in the transportation business. Using equation 8, the profitability was found to be around 17%. However, transportation business associates stated that there is always a more substantial profit in transportation services. Otherwise, the owner does not run their buses on the

streets.

In this study, Dhaka's public transportation system's overall performance was measured, including network, service, system, utilization, and network efficiency. In service efficiency, apart from vehicle availability and vehicle utilization rate, the rest of the parameters show that the performance is a poor one. Reliability,
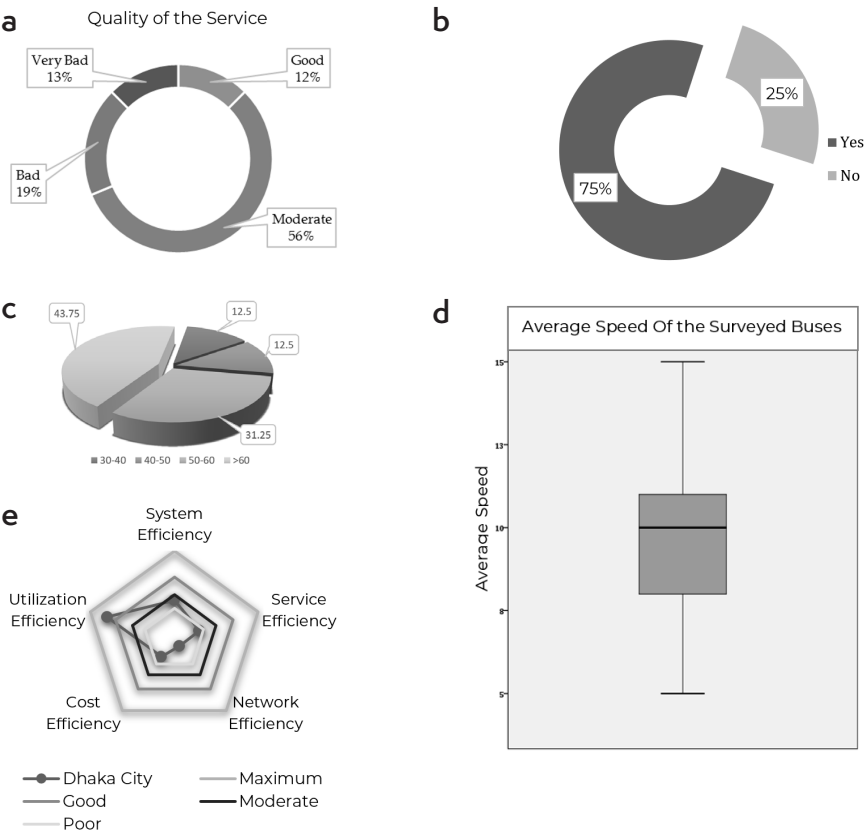

Figure 3.2

a displays the distribution of each category of quality of service od the transportation system from the field survey; **b** response of the passengers regarding whether they have to wait to get into a public bus; **c** distribution of average travel time (on-board time for each group); **d** average operating speed of the surveyed buses, the mean is somewhere around 9 kmph; **e** overall distribution of performance evaluation indicators in comparison to each other. Figure e showing both the performance for Dhaka city and what is standard in the radar graph.

average bus stop spacing, and profitability also fall within the poor performance zone (Figure 3.2e). In system efficiency, the scenario is slightly better in Dhaka city with excellent performance regarding affordability and safety. However, what is essential to note here is the poor performance in travel time as it influences the overall performance of the system and other aspects of the measurement to a significant level as well. Low scores of vehicle-km and travel time represent the underutilization of a system's capacity. Moreover, this causes the overall system efficiency to collapse from moderate to below moderate level.

5. Discussion and Conclusion

This paper aims to evaluate the efficiency of the public transportation system of Dhaka city. Overall, the performance is lagging in components considered in this study. System efficiency showed a below-average score. Only utilization efficiency represents a good performance score. There are three indicators that fall well between the poor performance zone and the moderate performance zone (Figure 3.2e). Thus, a conclusion can be drawn that the existing system is not operating efficiently with bottlenecks in all components. The system is operating with severe problems in management (system and cost efficiency), operations (service and cost efficiency), and network-level (network efficiency). That is why an educated initiative can be taken for the planned development of Dhaka city's public transportation. The initiative can vary from the implementation of different forms of mass transit modes, i.e., Bus Rapid Transit (BRT), Mass Rapid Transit (MRT) suggested in the STP and RSTP, or it can be at the management level by introducing a separate policy for public transportation operations (Ahasan et al., 2020; Ahasan et al., 2020).

Problems with the existing system can be categorized as infrastructure and management-related in general. Infrastructure-related issues include routes not being well distributed and connected. The absence of passenger shade, improper signaling also reinforces the problem. In the case of management factors, the legal and regulatory institutions are not aware of what is happening in practice. The operators reduce and modify the route lengths to suit their

operations and for-profit maximization. For example, in the case of Route A-114, which on paper connects Mirpur Zoo to Sayedabaad, it does not operate beyond Motijheel. The operators do not cover the rest of the 3 km distance to avoid competition and congestion in that segment or serve passengers from the Motijheel commercial area (Figure 3.3).
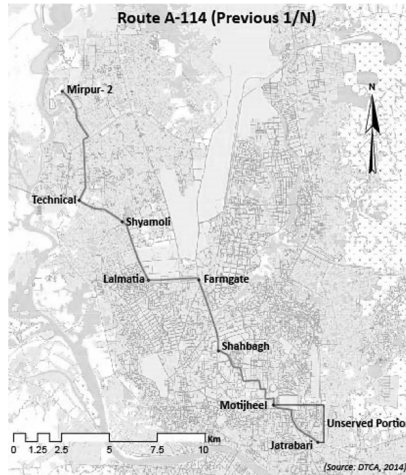
Figure 3.3: Example of issues in the public transportation management (Route A-114 (Mirpur-Sayedabad)

The empirical data analysis based on the identified criteria brings forward deficiencies within the existing system. Inadequate vehicles and infrastructure quality, as well as disintegrated enforcement authorities, are a few of the major issues. These are some of the most prominent deficient areas in the transportation sector of Bangladesh. All the problems with service efficiency were somehow related to traffic congestion on the streets. If this can be addressed, then the whole system's efficiency might increase to a different level. The number of public transportation routes is high, but it is not well distributed; instead, the density is high in the central areas. The present scenario of Dhaka city's transportation situation is not remarkable compared to other similar cities, Delhi (India), for example. Factors like vehicle utilization (84% in Delhi compared to Dhaka's 88%), passenger trips, lower number of accidents indicated a better state in the case of Dhaka. However, what makes them different is the use of public transportation as the primary mode of transportation (80%

in Kolkata, 60% in Mumbai, and around 40% in Delhi compared to 23% in Dhaka). Initiatives like the introduction of Metro rail and BRT, and the average fleet age (4.5 years in Delhi compared to around 15 years in Dhaka) also contributed to the differences in public transportation performance in these cities (Pucher et al. 2004, Dave, 2014).

The assessment of the efficiency of the public transportation system of Dhaka city gives some unique information regarding how well the system is operating and the hindrances of the existing system. The current system is operating somewhat below the moderate service quality. Only a few indicators were found to be moderate, but the rest of the indicators appeared to be underperforming. To improve the existing performance, initiatives need to be enforced in these underperforming sectors specifically. Past studies reported that congestion does not have a significant relationship with economic growth. Instead, it has a positive correlation with per capita income (Marshall & Dumbaugh, 2020). However, these studies are yet to be replicated and tested in the context of the global south. Mobility is highly dependent on public transport in Dhaka, and single-occupancy vehicles are still less than five percent of total trips. That is why it requires further studies and evaluations, which will lead to a sustainable solution for congestion issues and other underperforming areas of the existing system. This can help the public transportation system of Dhaka to become an efficient one which would be worth using and sustainable in meeting the demand of the city's present and future residents (Ahasan et al., 2020). The data used in this research is around two years old. However, the network and other institutional information did not change in the past years. At the same time, additional information is still representative of the city's situation, given that no significant changes and initiatives were undertaken in this period. Future studies could also incorporate other modes of transportation to compare public transit and how different modes of transportation complement this system. Also, the operator's and users' survey was selective and limited due to the public's time constraints and availability to respond to an extensive questionnaire and sensitive topic. Future studies could be better addressed by narrowing down the routes and using more strategic approaches with the survey.

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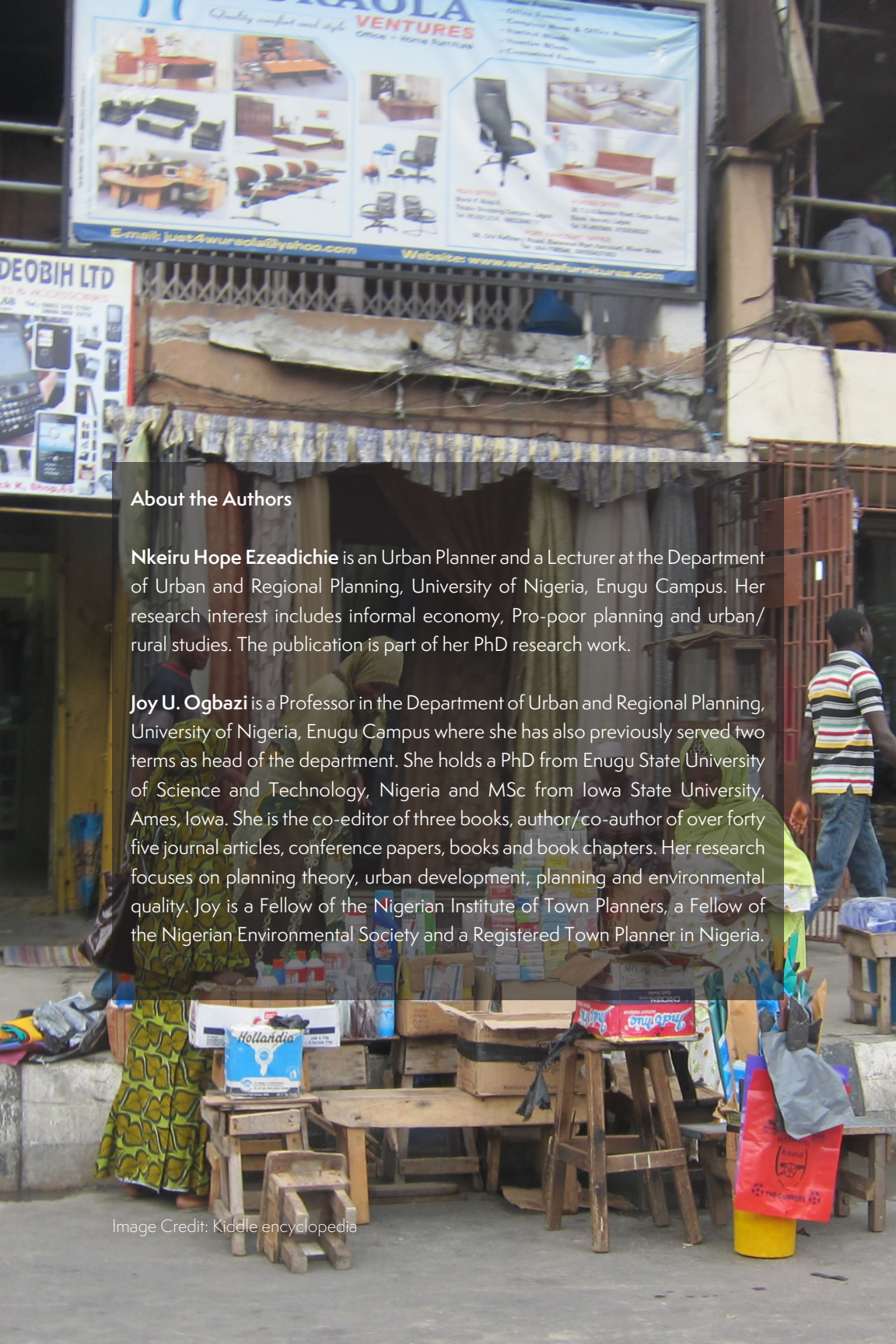
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Image Credit: Kiddle encyclopedia

Starring the Treasures and Trauma in Home-Based Enterprises: Towards a Rethink by Urban Planners

Nkeiru Hope Ezeadichie, Joy U. Ogbazi

Abstract

Rapid urbanization in the Global South, and its accompanying challenges have heightened in African cities. One consequence of Africa's urbanization that cuts across most of its nations is the high rate of urban unemployment which has led many urban poor residents to resort to seeking solace in informal employment opportunities. Africa's most populous nation, Nigeria, has an escalated case of unemployment leading to the proliferation of informal economic activities in its cities, which are also predominantly home-based. The operation of informal economic activities in residential buildings is known as home-based enterprises (HBEs), which are attributed to low start-up capital, work-life balance and land use changes. This study focuses on the objective and empirical investigation of the effects of HBEs in cities of global South, using Enugu, a colonial, medium-sized administrative city in Nigeria as case study. The study projects the reasons why urban planners should acknowledge and maximize the potentials of this urbanization-driven phenomenon to meet some SDGs, while also controlling the negative impacts such as land use alterations to ensure sustainable cities. The objectives of the study are; i). To examine the dynamics of HBEs ii). to identify the Treasure in HBEs iii). to determine the Trauma of HBEs. iv). to recommend effective measures for managing HBEs for Sustainable development. It concludes by advocating that urban planners should consider the integration of HBEs into neighbourhood schemes to maximize the potentials and effectively control the negative impacts thereby ensuring sustainable global South cities.

Keywords

Treasure; Trauma; Informal; Home-Based Enterprises; Land use

1. Introduction

There is substantial consideration of home-based enterprises (HBEs) by researchers in urban planning. This consideration has been attributed to the expansion of HBEs across developing countries generally, and especially in sub-Saharan Africa, ranging from its normal domain in informal settlements to formal high, medium and even low-density residential neighborhoods (Strassmann, 1986; Onyebueke, 2001; Okosun and Ezeadichie, 2006). Consequently, it has become a veritable source of livelihood for a considerable number of residents that urban planning cannot afford to ignore. Second, as an income generating exercise, HBEs come with benefits as well as drawbacks. Political economists argue that HBEs absorb people who would otherwise lack the requisite skills and capacity to gain employment in the formal public and private sector, contribute to gross domestic products and when properly monitored, can contribute to internally generated revenue (Olufemi, 2010). Some traditional urban planners see the growth in the preponderance of HBEs as a distortion of public space with increased waste and criminal activities in neighborhoods (Okeke, 2000).

Many rural-urban migrants in African cities lack the requisite qualification for scarce formal employment and are trapped in the only alternative; informal employment. This has led to the rise in home-based enterprises as the fastest growing economic sub-sector of the informal economy, particularly in Nigeria - the seventh and most populous nation - globally, and in Africa, respectively. The growth of home-based enterprises (HBEs) is also attributed to low start-up capital, work-life balance (opting for and maintaining employment that is compatible with family values and responsibilities), neoliberalism, and a reduction of production cost by casualization of labor force (Walker, Wang and Redmond, 2008). Notwithstanding the positive effects of HBEs in African cities, urban planners still view these activities as land use distortion and are not favorably disposed towards them. According to Tomei (2000:1), "This situation is due to a large extent, to a lack of understanding and to confusion regarding what exactly constitutes homework." A gap that this study attempts to fill.

Therefore, this study investigates the nature and impacts of home-based enterprises to understand and present this phenomenon more comprehensively. Enugu, a colonial, medium-sized administrative city in Nigeria is used as a case study. The objectives of the study are: i). to examine the dynamics of HBEs ii). to identify the positive impacts of HBEs and iii). to determine the negative impacts of HBEs. The study answers two basic research questions: what are the dynamics of HBEs?; what are the positive and negative impacts of HBEs in the study area? The hypothesis (H0) advanced here is that the positive impacts of HBEs are not more significant than the negative impacts. In this study, the positive impacts are the treasures that are the benefits and advantages, and the negative impacts are the traumas, the adverse effects and disadvantages.

The methodology entails the sampling of four neighborhoods; Obed Camp (informal settlement), Uwani (high density), New Haven (medium density) and Independence layout (low density) selected through stratified random sampling. Data was collected using two sets of structured questionnaires. 10% of the dwelling units; Obed camp 241, Uwani 750, New Haven 1,132 and Independence layout 2,360 are sampled. The residents' rating of the impacts of HBEs are obtained and analyzed using principal component analysis (PCA) to reduce the components and ascertain the principal factors. Based on Eigenvalues of 36 selected variables identified as impacts from literature, the PCA extracted five major factors. Employment benefit is the major factor contributing 44.8% of the 66.4% total factors while the only negative factor (neighborhood distortion) contributed only 3.8% to the total factors. Implying that the negative impact has less significance to the residents than the positive impacts. The study is significant as it presents an objective rating of the impacts of HBEs by operators and non-operator residents using a high statistical tool (PCA). It concludes by advocating that urban planners integrate HBEs into neighborhood schemes to maximize the treasures and minimize the traumas thereby ensuring sustainable global South cities. The next section entails the review of literature on HBEs.

2. Literature Review

The shift of urbanization-focused research from global North to South is expedient given the rapid urbanization in the global South, especially African cities (Watson, 2009; Blanco, Alberti.....Watson, 2009). Urban population growth sources are mainly rural-urban migration and natural increases (Lucci, 2014). The growth of the world population has been from 2.6 Billion (1950) to 7.8 Billion (September, 2020). The world urbanization figures have been increasing; 0.75 Billion (1950) to 4.22 Billion (2018) and projected to 5.17 Billion (2030) and 6.68 Billion (2050) (UNDESA, 2018) with wide regional disparity and possible lower figures due to the 2019/2020 COVID-19 global pandemic. Africa remains the least urbanized continent with 43% urban residents (UNDESA, 2018). These population and urbanization figures have far reaching implications for the development of global South cities and even in the North.

The challenges of global South urbanization are intensified in African cities because of their rapid rate and by the unpreparedness of African governments to meet the challenges of this process, exhibited in tackling the informal economy. The broad nature of the informal economic sector as it affects unemployment, demands sector-specific research to appropriately address definite peculiarities (Onyebueke, 2001). Unemployment is a continent-wide consequence of Africa's urbanization that has resulted in many settling for informal employment. Africa's most populous nation, Nigeria, has a high rate of unemployment and consequently an informal economy, which is predominantly home-based. Nigeria's unemployment rate grew from 23.1% in the third quarter of 2018 to 27.1% in the second quarter of 2020 and then to 33.3% in the fourth quarter of 2020 (National Bureau of Statistics, 2020). The increase in unemployment results in an increase in the number of people in the informal economy. Nigeria's informal economy is estimated at 80% of the workforce (Robert, 2011) and the main source of employment for rural-urban migrants (Onodugo et al, 2016). The categories of the Nigerian informal economy are the survivalist enterprise dominated by urban poor women and micro enterprises (Rogerson, 1996). Urban planners in Nigeria generally view the informal sector as "a

public nuisance and misuse of public space" because of their use of temporary structures (Onodugo, et al, 2016:96; Okeke, 2000). Also, urban planners in Nigeria have been opined to practice with colonially bequeathed exclusionist-orientation (Ogbazi and Ezeadichie, 2014). The neighborhoods are predominantly low-income with recent expansions to medium and even high-income neighborhoods (Ezeadichie, 2012).

Home-based enterprise is a trending global phenomenon; however, its nature of operation differs as seen in USA and UK regions. In the global North, many businesses are HBEs. In a recent study on the assessment of jobs that can be performed completely at home, it was found that 37% of jobs in the USA can be performed at home because of their high level of technological advancement (Dingel and Neiman, 2020) in contrast with the global South. This shows the distinction between HBEs in the two regions. Home-based enterprises in the global South are predominantly informal and survival-based (Lindell, 2010). The details of impacts of HBEs discussed in the next section also portray its characteristics in global South cities.

2.1 Economic Impacts

The economic value of HBEs has its greatest positive impacts for urban residents. Strassmann in his study of Lima, Peru (1985) and Peru, Sri Lanka and Zambia (1986) noted that HBEs usually provide approximately 40% of household income for operators. He continued that HBEs save time, travel-cost, and production cost. This is because HBEs operate within the homes and neighborhood. Similarly, Gough, et al. (2003) affirmed the convenience for customers in purchase, proximity, extended service duration, opportunity to make purchases of small quantities of goods, and even purchasing goods on credit as more merits of HBEs. The fungibility of money, time and space as treasures of HBEs was emphasized by Kellet and Tipple (2000). The fungibility of money implies that available funds in the household can be used for both HBE (productive) and domestic (reproductive) activities. This interchange of resources is applicable to time and space in HBE-operating homes. This matters, especially to urban poor households, as they can utilize available resources to generate income (however small) which sustains them daily so as not to slip

into absolute poverty or destitution. Again, the valid, irreplaceable contribution of HBEs in the textile industry during the industrial revolution despite the technological progress was emphasized by Tomei (2000). Also, HBEs fill the gap created by planning where some necessary amenities like shops are not adequately provided within the neighborhood (Abolade, et al, 2013). The far-reaching range of HBE output was acknowledged by Chen and Sinha (2016) noting that the products transcend domestic purpose to national and global markets especially in Asia. The renting of space for HBEs provides household savings. Although the low income from HBEs is a general characteristic, Tipple (2005) confirmed that it is an important contribution for poverty alleviation while Ezeadichie et al. (2018) corroborate this, stating that the income from HBEs saves many households from despondency.

On the contrary, Strassmann (1986) emphasized that the low HBE income is problematic given the unfavorable work conditions such as inadequate workspace and lack of privacy in the home. In the same vein, the repression of women in HBEs during major decision-making by male partners is a notable trauma (Gondwe and Ayenagbo, 2013). Another area of HBE impact is the social realm, which is discussed in the next section.

2 .2 Social Impacts
The social impacts of HBEs, Strassmann (1985) noted include, the flexibility of work schedule, adequate time for childcare, sociability, dignity, and fulfillment of self-employment, as well as security. HBEs are valued as locations where 'informal networks and bonds are developed' (Onyebueke, 1997 c.f Onyebueke, 2001:420). HBEs have become an honorable income source for vulnerable women. (Walker and Webster, 2004; Walker, Wang, and Redmond, 2008; Ezeadichie, et al, 2018). In addition, HBEs are particularly important to women in Africa because it is believed that it is the woman's responsibility to take care of the children, elderly, and sick members of the family. Hence, for women not to be totally dependent on the husband for income, opt for HBEs that enable them to fulfill both reproductive and productive responsibilities. The role of HBEs in the development of human capital and opportunities for training at

much reduced cost was discussed by Omuta (1986). A better work-life balance has been mentioned as another positive impact of HBEs (Reuschke and Mason, 2020).

Contrastingly, Gough et al. (2003) described the sale of alcoholic beverages by HBE operators within neighborhoods as a major cause of noise and social vices. The health hazards caused by HBEs are criticized (Onyebueke, 2001). Marginalization in contractual agreements is another negative impact of HBEs (Tomei, 2000). The challenge for including HBE operators in national statistics as workers is noted by Chen and Sinha (2016). Another negative impact of HBEs is inconsistency in business, since it is dependent on the operators' convenience (Ezeadichie, et al, 2018). In the global South, and especially African and Asian context, women face many socio-cultural challenges. One common example is the belief that "the place of the woman is in the kitchen", "women should only be seen and not heard", etc. These statements about women depict the belief that women are not to be engaged in formal employment. With many formal job opportunities, preference is given to men, even when some women are more qualified than men are. Therefore, many women, rather than continue to search for formal jobs after multiple rejections based on their gender, opt to engage in HBEs. Some HBE operators, particularly those that are engaged in it due to constraints, feel that they are socially isolated and trapped and desire to opt out of it (Unni and Rani, 2004). The environmental/spatial impacts of HBEs is another area worth discussing, as noted below.

2.3 Environmental/Spatial Impacts
HBEs have been opined to provide necessary income for better living standards and sizes of dwelling units (Strassmann, 1985). Urban poor households that operate HBEs are more likely to improve the standard and size of their unit to ensure improved business and comfort of the members of the home. Residential space alteration by urban poor for HBEs was viewed as a positive process, described as 'invented spaces', as they exhibit resourcefulness and creativity (Gondwe and Ayenagbo, 2013).

In terms of the negative impacts, HBEs lead to sub-standard housing

and environmental effects as well as reduce the residential quality (Okeke, 2000). However, this situation has been attributed to the government's inability to provide any physical location for informally trained urban residents (Ezeadichie, 2012). The employment-creation characteristic of the sector has engendered many land use challenges such as incompatible land uses, building alterations, proliferation of temporary structures in planned residential areas, and open space changes (Okeke, 2000). In an assessment of waste-generation by HBE operators, it was discovered that the majority generate higher volumes of household waste while a minority generate hazardous waste (Tipple, 2005a). The indiscriminate use of any accessible space for HBEs has resulted in the defacing of planned residential neighborhoods in African cities (Abolade, Adigun, and Akande, 2013). However, this challenge has persisted because many urban planners in African cities refuse to acknowledge and plan in accordance with current urban realities. The next section examines the relationship between home-based enterprises and urban planning.

2.4 Home-Based Enterprises and Urban Planning

The role of urban planners in supporting or suppressing HBE operators is an important issue. Many governments in global South nations consult urban planners when policies affecting home-based enterprises need to be made. Unfortunately, as Strassmann (1985), Simon, (1998) and Kamete, (2002) noted the policy makers usually work against urban designs that support HBEs. These oppositions are attributed to dogmatic land use theories that are discordant with current realities in the rapidly urbanizing global South cities. For instance, Strassman (1986) noted that HBE operators experience hostility from urban planners because of their philosophy that there should always be a clear separation of home and workplace. Potts (2007) reiterated the views of Strassman by stating that policies of government portray discouragement for the informal economy, (HBE inclusive). She affirmed that planners rarely approve of anything that concerns the informal economy as they distinctly alter the planned land uses. The non-consideration and inclusion of the working poor in urban planning has been noted to have an adverse effect on the survival of the urban poor in cities of the global South (Watson, 2011). Conclusively, the spread of HBEs from informal

settlements to all densities of formal residential neighborhoods (Okosun and Ezeadichie, 2006) should send a critical signal to urban planners in the global South. Similarly, Watson and Agbola (2013) opined that a different approach needs to be adopted by African planners and professionals if rapid urban transformation is to be managed effectively. Therefore, basic, comprehensive knowledge on the dynamics and impacts of this urbanization-led phenomenon is indispensable.

3. Methodology

The selected area used for this case study is the colonial Enugu city, the capital of Enugu State and the oldest capital city in the Southeast geopolitical zone of Nigeria. The choice of Enugu as the case study is due to the researchers' knowledge and experience gained from numerous works done in the city during the past three decades. The Enugu State population is 3,267,837; the State and city unemployment rate, 9.6% and 14.5% respectively, and the city unemployment rate was 22.3% (NPC, 2006). These figures account for the proliferation of the informal economy and particularly home-based enterprises in the study area, hence the choice of Enugu city for the study.

The data for the study were accessed through primary and secondary sources. The total number of buildings within the neighborhood constitute the study population. The study employed a descriptive survey method. The boundary coordinate points were input into Google Earth to define the location map of the study extent with a Google Earth satellite image as a backdrop. A Garmin GPSMAP 64 Handheld GPS device was used to pick the coordinates of the sampled buildings located within the neighborhoods during fieldwork, while ArcMap and ArcGIS 10.3 software were used for analysis. The data collection instrument was two sets of questionnaires. The first set was systematically administered among residents consisting of both HBE operators and non-operators in the residential buildings, who rated the positive and negative impacts of HBEs on a five-point Likert scale. The second set of questionnaires was administered among urban planners in planning authorities in charge of the selected

neighborhoods. The 32 residential neighborhoods in Enugu were categorized into low, medium, high and informal densities and then one was randomly selected from each category to ensure a comprehensive, representative, and inclusive analysis (Kazimbaya-Senkwe, 2004). The selected neighborhoods based on the stratified random sampling are shown in Table 1.   The total number of building footprints (sample frame) in the study neighborhoods was 4,483 from which 10% sample size involved 452 residents' questionnaire administration in the study. Also, the second set of questionnaires were administered among seven Town Planners since there were not many registered town planners in each planning authority. The 10% sample among the residents was determined by systematic sampling of the 10th building in each street within each neighborhood. The key research question is: what are the positive and negative impacts of HBEs? The hypothesis (H0) states that the positive impacts of HBEs are not more significant than the negative impacts.

Table 4.1: Selected study neighbourhoods in Enugu and Questionnaire administration
Source: Researchers' compilation

Neighbourhoods	Total No of Building Footprints	Actual No to be Sampled using Questionnaire	No of Returned Questionnaire	% of returned Questionnaire (%)
Obed Camp	241	24	20	83.3
Uwani	750	76	74	97.4
New Haven West	1,132	114	109	95.6
Independence	2,360	238	219	92
TOTAL	4483	452	422	93.4

4. Findings and Discussions

4.1 The Dynamics of Home-based enterprises
The returned residents' questionnaire was analyzed using descriptive statistics while the hypothesis was tested using principal component analysis (PCA) to reduce the factors. The set of collated questionnaires completed by the residents disclose that in terms of the dynamics of HBEs, there are more female than male respondents in the four neighborhoods. Also, most HBE operators are between 16 and 45 years, corroborating the facts in existing HBE literature (Onyebueke, 2013). The household size of most HBE operators has the highest

frequency for 3-5 and 6-10. In terms of educational qualification of household heads for HBE operators, Senior Secondary School Certificate had the highest frequency in the four sampled neighborhoods (Obed Camp-55%, Uwani-50%, New Haven-31.7%, and Independence Layout-37.6%). This also agrees with existing literature (Onyebueke, 2013), indicating the relevance of HBEs for the educated as well. Data on the presence of HBEs in the study area indicate the following: Obed Camp-45%, Uwani-78.4%, New Haven-75.2%, and Independence Layout- 60.7%. Obed Camp, the informal settlement had the least figure due to the demolition of structures at the time of this survey in August 2018. The other three formal neighborhoods have HBEs of over 60%, reiterating the 'informalization of formal settlements' observed by Myers (2011: 73).
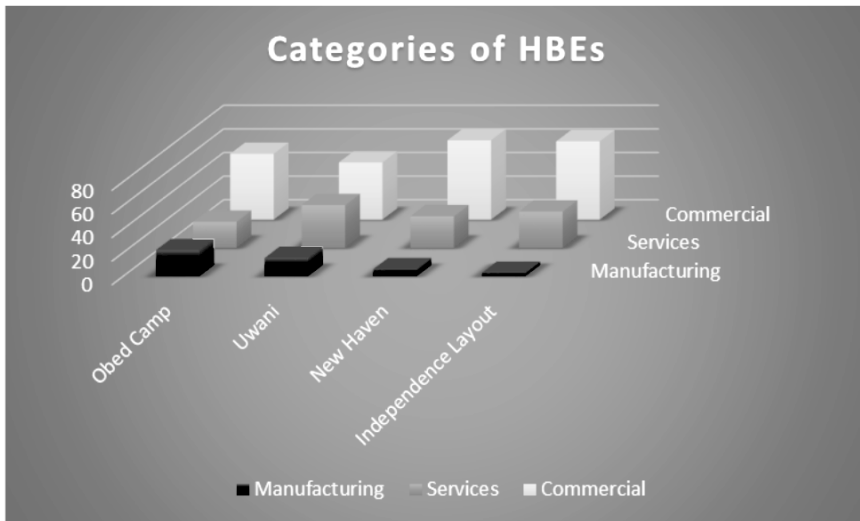

Figure 4.1: Categories of HBEs

Source: Researchers' compilation

Another important characteristic of HBEs is the categorization, this study revealed that the three main categories of HBEs; manufacturing, services, and commercial are present in the study area. The data from the study shows that in Enugu, there is 7.1% manufacturing, 30.5% services, and 62.4% commercial HBEs. In the four sampled neighborhoods, manufacturing remained the least significant, while commercial remains the highest frequency as shown in Figure 4.1 and is typical of African cities' HBEs (Tipple, 2005). One of the dynamics

of HBEs which urban planners regard as the major negative impact is the alteration of residential buildings to accommodate HBEs. This is evident in the sampled neighborhoods. The data shows that the front of the buildings was the choice location with the highest frequency for the three formal neighborhoods. However, the street, right in front of the house was the chosen location for Obed Camp (informal settlement) HBEs. The front of the house is usually chosen for easy access to customers and to avoid interference with domestic activities. Other parts of the building used for HBE including the whole room and part of a room were observed in other studies. Figure 4.2 shows the photograph of a typical home-based enterprise in Enugu city.

Figure 4.2: Home-Based Enterprise in Uwani, Enugu
Source: Researchers' fieldwork (August, 2018)

The data on residents' rating of the impacts of HBEs was used to test the hypothesis of this study, H0: the positive impacts of HBEs are not more significant than the negative impacts. Principal Component Analysis (PCA) was used to test this hypothesis using the statistical package for social sciences to ensure an unbiased outcome. The choice of PCA is to employ a highly rated statistical tool for reduction of the impact factors to a manageable size and for a reliable result. The PCA was used to determine the cumulative percentage of the analyzed factors and the major components of

the impacts of HBEs in the study area. Based on Eigenvalues of 36 selected variables from the literature, the PCA extracted five principal factors that had Eigenvalues of more than one, while the extraction loading cumulative is 66.5%. The five principal factors are employment benefits (44.87%), government revenue (10.58%), social improvement (4.35%), neighborhood distortion (3.84%) and economic improvement (2.81%). Out of the five principal factors from the PCA result, four are positive impacts and one is a negative impact. The positive impacts are employment benefits (44.87%), government revenue (10.58%), social improvement (4.35%) and economic improvement (2.81%), while the negative impact is neighborhood distortion (3.84%). These impacts are discussed under treasures and traumas of HBEs in the next section.

4.2 The Treasures of Home-Based Enterprises
The treasures, which are the benefits of HBEs include the following;

4.2.1 Employment Benefits
The result of the data analysis reveals that 75% of sampled household heads are informally employed. The analysis further shows that 76.6% of the respondents are owner-operators, 13.5% are employees in HBEs while 9.9% are family members involved in HBEs. Data on the number of workers in HBEs disclose that 35.1% of the businesses had only one employee, 58.55% had two to four employees, 5.3% had five to seven employees and 1.1% had eight to ten employees. The implication of these figures is that these employees would have probably been unemployed without HBEs. The employment benefit of HBEs is the most significant positive impact for the residents in the study area based on the high rating and the high factor loading of 44.87%.

4.2.2 Revenue Benefits
The provision of revenue to the government through HBEs implies that its positive impacts are not just for the operators and neighborhood residents but also extends to the government of the cities, yet these governments rarely have any plan or support programs for the operators. In Enugu, 50.7% of HBE operators that were sampled indicated that they pay the state waste management

levy, while 49.3% indicated that they pay their local government levy for small businesses. The levies they pay range from a minimum of one hundred naira (N100, $0.27) to a maximum of twenty-five thousand naira (N 25,000, $69.4). In terms of the frequency of payment, 9.5% of the respondents paid monthly while 89.8% indicated that they paid annually.

4.2.3 Social Improvements

These are major positive impacts of HBEs in the study area with a factor loading of 4.35%. Social improvements include intangible impacts of HBEs such as increase in self-confidence, improvement of skills, development of work culture and flexible work hours. These intangible impacts are highly rated by respondents in this study and are among the 36 variables found in the literature. The data shows that HBE operators usually get some start-up training. The following are the data on start-up skill acquisition; vocational 4.6%, apprentice 33.7%, formal 8.9%, and self-trained 52.8%. HBEs, apart from the provision of employment opportunities, help to increase self-confidence of the operators who were regarded as unemployed prior to their involvement in such an enterprise. This impact is particularly important to women who could not seek formal employment due to their reproductive responsibilities, did not have any source of income to meet some personal needs, and had to depend on their spouses or other family members. The engagement in HBE empowers women to claim that they are employed, while in their homes, and they can independently cater to personal and household needs at the same time. This increases self-confidence in the home and neighborhood.

4.2.4 Economic Improvements

This is the fifth principal factor with a loading of 2.81%. HBEs bring about economic improvement at all levels; for individuals, households, and government agencies. Income generation through HBEs is a measurable way of assessing economic improvement. The data on monthly income from HBEs reveals that 17% of the HBE operators sampled earn less than N9,000 ($25)monthly, 41.5% earn between N9,000 ($25) and N20,000 ($55.5), 14.2% earn between N21,000 ($58.3) and N30,000 ($83.3) (N30,000 {$83.3} is the current minimum wage in Nigeria). Also, 6.7% earn between N31,000 ($86.1)

and N40,000 ($111.1) and 20.6% earn above N40,000 ($111.1). These data vary across the four neighborhood densities that were sampled. This implies that 27.3% of HBE operators in the study area earn above the national minimum wage monthly, although more than half of the operators earn below the current minimum wage. The low income from HBEs is a characteristic of the phenomenon, however many factors contribute to this situation including lack of official acknowledgement and support. Data on other sources of income reveals that 59.6% have no other source of income, while only 9.7% had other sources that yielded income above N30,000 ($83.3) monthly. The remaining 30.7% of the respondents had income from other sources that were less than the minimum wage. With these figures, HBEs are real sources of economic improvement for the operators and their households. The payment of levy by the operators ranging between N100 ($0.27) and N25,000($69.4) is a source of economic improvement for the government. The implication of this finding is that HBEs are the sole source of income for almost 60% of the operators, and as such, any action by government agencies against their operations will render these households destitute. This finding is significant particularly for African urban planners who still insist on opposing HBEs. The negative impact of HBEs is discussed in the next section.

4.3 The Traumas of Home-Based Enterprises
The traumas of HBEs are the adverse effects discussed below:

4.3.1 Neighborhood Distortion
One negative impact of the five principal components from the PCA result is neighborhood distortion at 3.844%. Neighborhood distortion refers to the use of spaces in neighborhoods for purposes that were not originally planned, and which are not compatible with other existing land uses. Most of the negative impacts of HBEs are spatial/environmental-related. The prominent ones in the study area are traffic congestion, air pollution, fire hazards, noise pollution, lack of home security, and overcrowding. Traffic congestion is seen in-front of some buildings with HBEs due to customers who wrongly park vehicles to make purchases - this is more visible in the formal neighborhoods; Uwani, New Haven and Independence layout. Air

pollution is a negative impact of HBEs caused by those that cook for sale in front of their houses. This is particular to informal settlements and high population density neighborhoods. Fire hazards occur in any neighborhood, it is not a common effect of HBEs but usually occurs due to carelessness of the operators. Noise pollution is a predominant impact of HBEs particularly in informal and high-density neighborhoods and are also noted in the study area. Lack of home security is an impact of HBEs and more in cases where a room is designated for the business, or the customers must get to the backyard for purchases. The issue of home security is a major reason why most operators (34%-highest frequency) use the front of the buildings for business so that customers will have no reason to gain access into the residential buildings. Overcrowding is another major impact of HBEs, the use of a complete room or part of a room reduces the space available for domestic purposes in the home. In contrast to the residents' rating of these spatial/environmental impacts, these impacts were very highly rated by urban planners in the second set of questionnaires. This outcome is not surprising as the planners' actions are based on knowledge of the short-and long-term implications of these processes, notwithstanding the highly applauded economic impacts of HBEs. Other negative impacts include poor upbringing of children as they, in HBE households, are unduly exposed to all manner of people who come as customers. HBE locations are also possible meeting points for people of questionable character in the neighborhood which can promote social vices within the area.

Table 4.2: Summary of PCA results for impact of HBE in Enugu City

Component Factor	ENUGU	66.473%
Factor 1	Employment benefits	44.878%
Factor 2	Government Revenue	10.580%
Factor 3	Social Improvement	4.354%
Factor 4	Neighbourhood distortion	3.844%
Factor 5	Economic Improvement	2.816%

Source: Researchers' analysis (August, 2018)

4.4 Summary of Findings

The residential space alteration by urban poor for HBEs was viewed from a positive perspective and described as 'invented spaces', with the argument that some pattern of building alteration for HBEs by urban poor exhibit resourcefulness and creativity (Gondwe and Ayenagbo, 2013). This is an attribute that urban planners should acknowledge and enhance for sustainable development rather than the usual outright condemnation and confrontation. The applauded role of HBEs in reducing the level of unemployment has been described as the bane of the sub-sector as long as urban planners are concerned. The use of spaces in front of the house limits the space for children to play and for sit outs in the evenings by family members, however, the rating by residents both HBE operators and their neighbors who are affected and who also patronize them show that this negative effect is not quite significant. Four out of the five principal factors from the PCA result are positive impacts (94%), while one factor has a negative impact (6%). This result implies that the positive impacts of HBEs in the study area are more significant than the negative impacts. Therefore, the hypothesis (H0) advanced here that the positive impacts of HBEs are not more significant than the negative impacts is rejected.

5. Conclusion and Recommendations

The operation of informal economic activities in residential buildings; home-based enterprises (HBEs) is an important source of income and employment and yet adds to the urbanization challenges faced by urban planners in global South cities. The findings on the impacts of HBEs reveal that 52.8% of HBE operators are self-trained and shows the need for government support in this respect. The government can support operators by organizing formal training for them to further improve their skills and this will lead to harnessing the potential to achieve sustainable local economic development. The trending global recognition and relevance of HBEs (especially because of COVID-19) necessitates context-specific and empirical studies that can be applicable to similar contexts and provide knowledge-based data for informed decisions and management of HBEs. The study is significant in two ways; first the study provides

a novel and digital method for determining the sample population for HBEs which has been a long-term challenge for researchers in this sub-sector especially those from global South cities (Sudarshan and Sinha, 2011:15). Second, the use of principal component analysis (PCA) for data reduction and to ascertain the major impacts is rare in HBE studies. These two unique approaches are the work's contribution to both literature and methodology and are relevant for urban planners in terms of research and practice.

HBEs are a veritable means of employment\livelihood. The traumas\ negative impacts are highlighted for amelioration through various means such as individuals, planners, and governments. A major challenge for HBE operators is the constant conflict with urban planners because of alteration of planned residential buildings for HBEs, this can be resolved by, first, a change of approach by planners from confrontation to collaboration. An example of the confrontational attitude of planners in Enugu is captured in Ezeadichie, et al (2018:85) "Available anecdotal evidence suggests that the non-inclusion of the HBEs in formal urban planning resulted in their operations being largely seen as illegal, and as such, various government actors subject them to multiple levies, outright extortion, occasional harassment, and the pulling down of their structures while denying them government support and security".

Second, participatory and inclusive planning approaches should be adopted by urban planners in order to accommodate HBE operators rather than the current top-down approach. Third, guided adjustment of buildings will ameliorate the negative impacts of alteration. The regulation of all HBE activities that contribute to neighborhood distortion is expedient to ensure reduced negative impacts and promote sustainable local economic development.

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Image Credit: Jason Syvixay, Sean Bohle

Explorations

Missing Middle Math:
Making 'Missing Middle' Housing Work

Jason Syvixay, Sean Bohle

Abstract

The City of Edmonton's Missing Middle Infill Design Competition sparked significant local, national, and international interest in the possibilities for the missing middle or medium-density housing design innovation. In their proposals for five parcels of land within a core Edmonton neighborhood, multidisciplinary teams consisting of architects, builders, and developers considered impacts to residents and the surrounding community, the competition's design objectives, and financial viability. With the incentive for participation being the opportunity to build their winning design, teams prepared pro formas to articulate how they would proceed with their developments. This study seeks to explore the assumptions that applicant teams made when designing their missing middle housing proposals. As cities continue to contemplate the necessity for missing middle in their neighbourhoods, lessons gleaned from this analysis may offer potential opportunities to address financial and regulatory challenges to development; in addition to understanding the industry's perspectives on profit and risk with respect to medium-scale housing forms. Topical policy questions for urban planners and decision-makers might be the various factors hindering development, and the policy and regulatory improvements that may address them.

Keywords

Missing Middle; Infill; Housing; Pro Formas; Design

Cities across Canada are exploring the missing middle as opportunities to welcome more homes and people in their communities. The term missing middle refers to multi-unit housing that falls between single detached homes and tall apartment buildings. It includes row housing, triplexes/fourplexes, courtyard housing, and walk-up apartments. These housing forms are considered "missing" because they have been largely absent from urban streetscapes in Canada. In 2018, the City of Edmonton shifted its focus from low-density infill to medium-density infill, creating an Infill Roadmap to steer regulations, plans, and policies towards these types of developments and investments - even hosting a Missing Middle Infill Design Competition to explore how these housing typologies could be advanced in a well-designed yet financially feasible manner.

1. The Infill Imperative

Over the last forty years, societal and economic challenges have driven people away from core and mature neighbourhoods to settle on suburban fringes. This slow loss of people in central neighbourhoods has cost Canadian cities billions in new infrastructure and servicing. However, this shift in population has also inspired many municipalities, including Edmonton, to develop strategies to curb sprawl and nurture a more compact urban form.

In 2013, the City launched a project called Evolving Infill that engaged more than 3,000 Edmontonians. From this engagement, the City created its first Infill Roadmap (2014), comprising 23 actions that comprised the City's work plan for advancing more infill development within close proximity to quality public transit, amenities and services. This plan undertook significant regulatory and policy changes to help enable and encourage more affordable, diverse, and well-designed housing in Edmonton's older neighbourhoods.

In July 2018, the City adopted Infill Roadmap 2018, which contains a set of 25 more actions to welcome more people and new homes into Edmonton's older neighbourhoods. The Infill Roadmap 2018 takes a more strategic focus on the missing middle, multi-unit, medium-density housing such as row housing, courtyard housing, and low-rise

apartments. The actions are envisioned to create new opportunities for medium-density development by managing population growth in a rational and contextual manner, responding to changing economic and cultural housing needs, reducing the city's ecological footprint, maximizing existing and future infrastructure investments, and maintaining neighbourhood vibrancy. Edmonton's official plan, The City Plan, envisions a growth of an additional one million people, and was recently approved by council in December of 2020. Both the Infill Roadmap and The City Plan demonstrate Edmonton's interest in increasing housing choices, particularly in the 'missing middle' housing range, but whether this development orientation aligns with industry and consumer demand remains a point of contention.

Murtaza Haider and Stephen Moranis (2018) question whether households prefer mid-rise housing, and if builders see these housing typologies as more profitable than single-detached or high-rise residential buildings. If consumer demand does not favor housing within the missing middle range, is it reasonable to expect that builders and developers will build it? Haider and Moranis argue that "land prices are set higher because landowners believe the builders will be able to build at a higher density than what the land is originally zoned for." If this is true, what density is preferred for a parcel of land, and should the land value differ depending on the final densities of the project? They further argue that the "economies of scale favor high-rise construction over mid-rise construction for a given parcel because in addition to fixed land and some construction costs, some ownership costs are also independent of the number of units." With that said, then, if cities are to focus their attention on missing middle housing, challenges around land prices and demographics may need to be addressed.

According to Johnson et al. (2018), infill redevelopment is more expensive than greenfield development because of demolition costs, in addition to construction and property acquisition. How might the public sector and municipalities address these imbalances? These questions were top of mind for the City of Edmonton, and were explored as part of the Missing Middle Infill Design Competition.
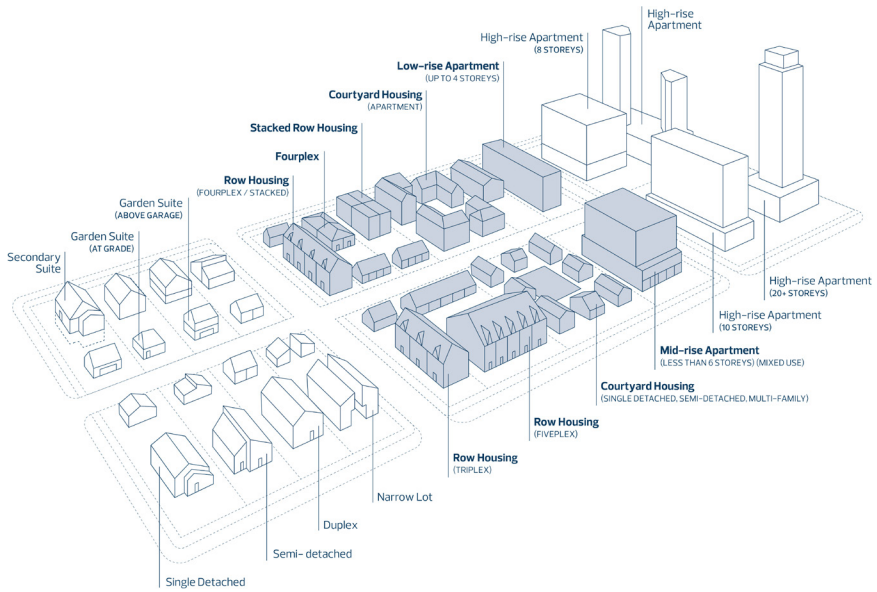
Figure 5.1: Edmonton's missing middle refers to multi-unit housing that falls Between single detached homes and tall apartment buildings. Example : MIDI

2. Finding the Missing Middle

Launched in 2019, Edmonton's Missing Middle Infill Design Competition encouraged conversations around infill and helped the public and development community envision design possibilities. The competition solicited and reviewed design proposals that considered how the missing middle or medium-density housing might work on a site of five lots owned by the City of Edmonton. The winning team, adjudicated by a national jury of architects, would be given the opportunity to purchase the site and build their design - with the City of Edmonton supporting throughout the development processes.

The competition sought to recognize the following:
- Contextual multi-unit, medium-density ('missing middle') designs for mature neighbourhoods in Edmonton
- Innovation and creativity in design
- Financial viability and buildability
- Design for livability for a range of users and abilities, including individuals, couples, single families with or without children, extended family groups and seniors
- Design for environmental, social and economic sustainability
- Climate resilient design

The five lots in Edmonton's Spruce Avenue neighbourhood were chosen due to its sufficient size, location, proximity to transit and other services/amenities and developability - after reviewing and comparing it to thousands of City of Edmonton properties. It was deemed as surplus land by the City of Edmonton, is well-serviced, and was determined to be immediately sellable as-is by the City of Edmonton's Real Estate Advisory Committee. While the market prospects, as predicted by the City of Edmonton, are indeed excellent (e.g. residential condo and townhome median assessed values have increased by more than 4% compared to the city-average, -2.8%), it is the existing community-at-large that have actively endorsed the Missing Middle Infill Design Competition, welcoming positive change and growth in their neighborhood.

Figure 5.2: Open/amenity space was a top priority during design and pro forma deliberations. Example : Bricolage

Nearly 100 renderings and 30 pro formas, representing more than half a million dollars of architectural design work, were received from Edmonton, Calgary, Winnipeg, Vancouver, and Seattle, in addition to preliminary registrations from London (UK), Regina, Hamilton, Toronto, and Oklahoma City.

Applicants to the Missing Middle Infill Design Competition were required to provide a pro forma. Creating a pro forma requires a lot of assumptions about what materials and labour will cost, how people want to live, and what they will pay for real estate.

Pro formas offer a window into the financial assumptions of developers, including relative costs of project elements (e.g. land vs. building vs. permitting). This can help policy makers understand the financial impact of various policies that change costs and project timelines. Insofar as they are accurate and represent a real commitment to a project, they can also inform policy makers of the risks developers perceive with a given project. However, pro formas are seldom used as a tool to inform or test policies. In part, this is because policy makers typically do not have the required skills to produce test pro formas, and developers typically resist sharing the detailed financial information they contain. The pro formas submitted for this project have a number of limitations, discussed later in this report, but still offer some perspective on the financial reality of infill development.

By reviewing the thirty pro formas submitted to our design competition, we sought to answer three questions as part of an analysis on the financial viability of missing middle housing. What do the pro formas from the Missing Middle Infill Design Competition tell us about the most financially-feasible low and medium infill forms? What do the estimated profit margins tell us about the risks applicants see with building infill? What funding sources and financing structures are typical for infill development and how do these differ from greenfield?

Table 5.1: Building Data

	Total Cost	Gross Revenues	Gross Profits	Gross Profit Margin	Gross Building Area	Costs PSF	Dwelling Units	Stories	Tenure	Building Type
A	$15,702,478	$23,549,873	$8,121,943	34%	52,165	$301	49	6	Rental	Apartment
B	$5,184,800	$7,682,909	$2,498,109	33%	26,180	$198	26	2	Rental	Rowhouse
C	$6,436,202	$9,437,284	$3,001,082	32%	28,578	$225	23	5	Condo	Apartment
D	$14,918,250	$20,023,350	$5,105,100	25%	49,204	$303	64	4	Condo	Apartment
E	$7,799,000	$9,252,000	$1853,000	20%	41,040	$190	21	3	Condo	Rowhouse
F	$10,133159	$11,917,269	$2,173,546	18%	25,207	$402	25	3	Condo	Rowhouse
G	$8,344,616	$9,650,000	$1,705,385	18%	27,018	$309	31	4	Condo	Apartment
H	$12,953,962	$14,625,718	$2,122,516	15%	44,175	$293	48	4	Condo	Apartment
I	$10,704,833	$11,883,455	$1,667,126	14%	39,340	$272	50	5	Condo	Apartment
J	$10,689,478	$12,180,300	$1,490,822	12%	40,868	$262	31	3	Condo	Rowhouse
K	$10,566,259	$11,764,525	$1,198,266	10%	32,457	$325	28	3	Condo	Rowhouse
L	$8,045,000	$8,652,000	$607,000	7%	20,000	$402	22	3	Condo	Rowhouse
M	$12,498,664	$13,432,598	$933,933	7%	39,900	$313	56	3	Condo	Rowhouse
N	$5,865,823	$6,100,746	$234,923	4%	16,700	$351	27	2	Condo	Rowhouse
O	$10,016,481	$10,269,375	$252,894	2%	37,123	$270	28	4	Condo	Apartment
P	$19,586,169	$19,997,360	$411,191	2%	52,157	$376	46	5	Condo	Apartment
Q	$7,188,900	$7,327,582	$138,682	2%	24,574	$293	28	4	Rental	Rowhouse
R	$16,064,438	$16,303,309	$238,871	1%	61,805	$260	55	6	Rental	Apartment
S	$14,026,111	$14,211,036	$184,925	1%	37,700	$372	52	6	Rental	Apartment
T	$11,443,196	$11,224,673	$96,203	1%	41,112	$278	51	6	Rental	Apartment
U	$10,912,808	$10,346,873	-$565,935	-5%	45,271	$241	58	4	Rental	Rowhouse
V	$14,100,883	$12,198,273	-$1,902,610	-16%	64,658	$218	40	6	Rental	Apartment

3. What the Numbers Say

With land value held constant across all projects, the average profit margin for an apartment and row house is identical (11% of revenues). To test the impact of land value reductions, the land value was reduced by 25% for row house and stacked row house projects. Cheaper land makes row housing more profitable than apartments (15% vs 11% profit), and typically land that is zoned for smaller scale

development is less expensive. Based on the data available for this study, row housing can be competitive with small apartments. The following graphs shows larger revenues for larger buildings, but a similar range of profit margins across building sizes.
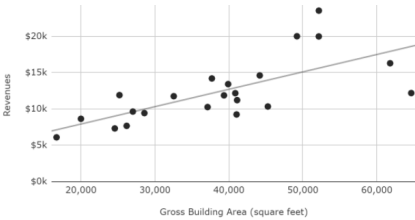

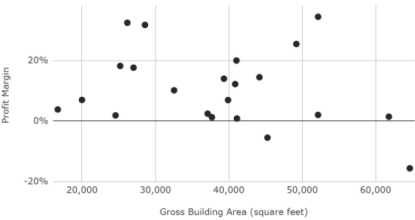Figure 5.3: Revenue by Building Area   Figure 5.4: Profit Margin by Building Area

Nine of the twenty-two projects evaluated proposed rental apartments. Three of these were among the most profitable developments (ranking first, second, and ninth). The remaining six rental projects were the least profitable of all projects. The average profit margin was lower for rental projects than for condominiums (7% vs 13%). However, maximum profit margin for rental projects was comparable to the maximum for condominiums (34% vs 32%). Overall, the financial data suggest that there is not currently a clear advantage for building rental or condominium projects in this market, and that considerations other than pure financial return influence developer's choice.
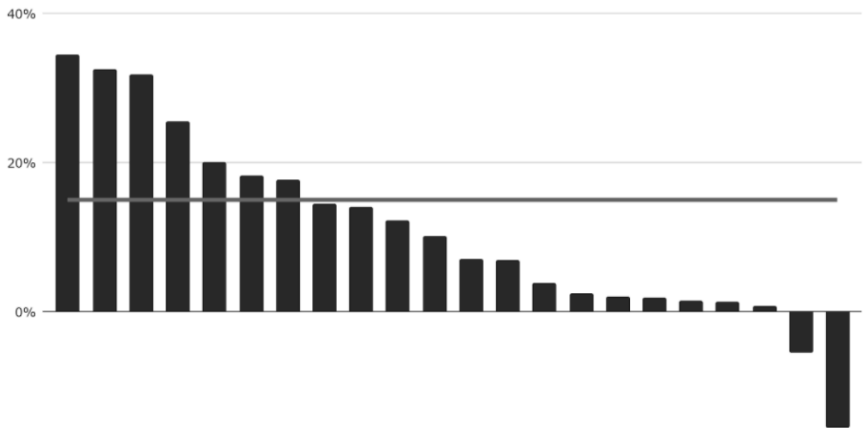

Figure 5.5: Gross Profit Margin for All Projects and Target Minimum Profit Margin

Every developer will set a minimum acceptable margin that depends on what investment options they have and the risks involved. The most common margin used by policy makers, however, is 15%. The average profit margin for this site was only 11%, meaning that for most developers, it is hard to put together a successful project.

With profit margins so low, what can we say about project risk? We might assume it means that developers think infill is a slam dunk, and so they are willing to take a small return. However, when you look closely at project inputs like rent per square foot, construction costs, and condo sales timing in a slow Edmonton market, this does not seem reasonable. In fact, we found more evidence of aggressive targets (or wishful thinking) in the pro formas than conservative estimates. For example, capitalization rates were normalized across submissions for this analysis because a number of rental projects assumed unreasonably low rates or high rents. No condominium project accounted for long sales periods that are characteristic in the current market.

Greenfield development can be done at scale and reproduced over and over, and with little engagement cost or risk. High rise development is large enough to produce its own efficiencies through scale, and attract funds from pension funds. Missing middle infill development never gets the scale, the momentum, or the attention to make it an easy win.

4. What the Industry Says

To accompany our pro forma analysis, we invited architects, builders, and developers to share their perspectives and assumptions around profit and risk for medium-density housing, and associated financial and regulatory barriers.

Applicants to the design competition perceived their participation as a worthwhile venture and investment because of the opportunity to build their proposal. In fact, the ideas that developer-architect teams explored are, in many cases, being explored for other housing projects. The Missing Middle Infill Design Competition helped to

expand our knowledge of what scale of density is preferred and reasonable for the missing middle in Edmonton. Participants noted how the design competition was an opportunity to test new design concepts, and to potentially challenge the City's current regulations with new innovations.

> "But when you're working with the developer, you can develop a proposal on a site like that is feasible. You can push the limits of what is possible, because the architect and developer can equally push each other to make sure the proposal meets technically, economically, and also achieves the design aesthetic." (Developer)

Our interviews also revealed that members of the industry perceive land values as a challenge to making pro formas for medium-density housing viable. Municipal government affects land value primarily through the development rights (zoning) granted to each parcel. We typically expect that adding development rights will also increase the value of land. The land in the competition was priced at for low rise apartments, but some projects proposed lower density development, like row housing. These projects could expect to acquire land with less permitted density for lower cost in an open market, as long as upzoning is not expected.

> "Construction costs could not be changed. Materials cost the same, no matter what you are building. There is no flexibility, too, with architectural/design fees because of provincial recommendations. The only way to wiggle with the pro forma would have been to adjust the land cost. Infill is a niche market. Very few people can afford $800,000 duplexes." (Developer)

Builders, architects, and developers cited how servicing requirements need to be made clear so that these costs can be appropriately factored into their pro formas. Some of these participants made assumptions that since the competition was put forward by the City of Edmonton, that there would be leniency on permitting timelines and additional incentives to support the winning team's advancement through the land development process.

The interviews illuminated how design features like amenity space

and public space are potentially at odds with density requirements for developments to be profitable. While developers strive to include public space so that their housing projects can entice their intended user demographics, their pro formas did not perform well with them included.

> "We wanted more of a green wall. It just didn't work economically. We were constantly reviewing the numbers while we were working with the design." (Architect)

The provision of parking was also seen as a significant expense. The City of Edmonton is exploring the possibility of removing minimum parking requirements, with amendments to the Zoning Bylaw scheduled for public hearing in 2020. If these regulatory changes were factored into the design competition, would the number of parking spaces put forward by architect-developer teams be reduced, and by what measure?

Given the nature of the design competition, all projects expected rezoning fee reductions or waivers, timely permits, and a positive neighbourhood response. While municipal fees were not a major project cost, interviewees indicated that the success of their proposal depended on minimizing delays and project uncertainty. Part of what made the competition desirable was that there was an assembled site, and the City of Edmonton was taking on much of the community engagement work, reducing uncertainty and timelines for proponents.

5. Sharpening Our Pencils

The development of new housing can be complex and costly in the best of circumstances. When it proposes a new form in an old neighbourhood, it can be very difficult to put together a project that can please neighbours, satisfy regulators, attract buyers or renters, and convince banks and investors to put their money in.

So what lessons can we draw from the City of Edmonton's Missing Middle Infill Design Competition?

We learned that developers and architects are creative and interested in innovating when there is support from regulators, like city planners, to do so. We learned that different infill designs are possible, and even competitive — rental apartments, condominium rowhouses, even modular, stacking, expandable co-op housing can be viable on paper. If cities want row housing, they need to zone land for row housing and use those zones as a commitment to communities and developers to prevent price creep from pricing out desirable projects. Cities can use their zoning tools, along with long range planning and engagement to set community expectations and reduce uncertainty for all involved.

The pro formas tells us that most of the factors affecting real estate development are determined by the markets for labour, investment capital, and housing, which are outside of a municipality's hands. However, interviews with developers reveal that supportive policies, regulations and proactive engagement can make the difference between a successful infill project, and a failure to launch. Cities seeking missing middle development will need to work with local developers to understand the challenges facing infill in order to find effective solutions. Cities, now more than ever, are eager to sharpen their pencils, and get moving on this type of work. We are excited for the possibilities.

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About the Author

Mickey Edwards, PhD, is a Visiting Researcher at the University of Illinois Springfield where he studies motor vehicle crashes and their effect on pedestrians, cyclists, and communities. Other research interests include transportation and infrastructure equity. He has worked on policy in the U.S. Senate and taught several courses at the University of Cincinnati. Previous careers include several years in photojournalism and a stint as an engineer for a large consumer goods company.

Image Credit: New York Post

Twelfth Ride:
A Saturday Morning Drive for Uber in Cincinnati

Mickey Edwards

Abstract

This paper examines twelve UberX rides completed over four hours in Cincinnati with the intent of comparing first-person evidence of ridehail travelers to a growing body of quantitative literature. Traveler data are based on observation and casual conversation between the author (driver) and the passenger. A typical Saturday morning was chosen beginning in Cincinnati's Central Business District (CBD), and each subsequent trip was based on the location of the previous trip destination without intervention. This work attempts to tell the narrative of where each traveler was going, infer why they chose ridehailing, and explore the social relationship between riders and drivers. More specifically, it places these twelve travelers in the context of published ridehail literature. From the driver's perspective, $68.32 was grossed after four hours of driving—including one tip, $2 tip on the twelfth ride. This small sample of ridehail passengers, and driver profits, conforms to findings published in the academic literature yet is not intended to be statistically significant. This work has implications for future research by presenting details about trips and passengers not before seen in the literature.

Keywords

1. Introduction

Most of what researchers know about who uses ridehailing and why they use it is based on large, aggregated data sets. These data sets are certainly useful in modeling ridehail use and travel behavior, but the nuances of an individual's options and reasons for transport choices are commonly lost. This paper sets out to explore a qualitative gap in the ridehail literature by presenting first-person, casual, statistically insignificant observations and conversations experienced during twelve UberX rides over 4 hours on a brisk March Saturday morning in Cincinnati, Ohio. The aim here is not to dispute nor support previous ridehail research, but to supplement it with descriptions of human behavior—too messy to quantify or model. Behavioral decisions made by both drivers and passengers are seemingly often influenced by how they perceive it will affect their star rating.

Ridehail companies depend upon user-facing performance ratings not only to monitor the behavior of their drivers, but also to monitor the behavior of their customers. Ratings for drivers and riders alike, though seemingly inconsequential at face value, can negatively affect either party when relatively low. Drivers face the threat of being de-platformed—essentially banned from driving for the company over a low average rating. Riders with a low average rating may face a relatively difficult time catching a ride—since some drivers are reluctant to pick up poorly rated passengers (Campbell, 2015). The social awkwardness that performance ratings sometimes hasten has not been lost on popular culture. Saturday Night Live has produced two sketches titled "Uber for Jen'' and "Five Stars" (links provided in Reference section) with a combined YouTube audience of 14 million views satirizing the effect of star ratings on social behavior—specifically the social relationship between ridehail drivers and passengers. This research takes aim at that social relationship alongside glimpses into motivational factors for choosing ridehailing and the sociodemographic characteristics of riders.

2. Related Literature

Though some researchers have driven for Lyft and Uber in an effort

to collect data, none have published findings collected in the same manner as presented here. Despite this, related literature is reviewed to provide context for passenger encounters described below.

2.1. Commonly Applied Methods and Sources

Ridehail researchers have used a variety of methods and data sources to answer a variety of questions. Rayle et al. (2015) intercepted and surveyed users observed exiting a ridehail vehicle at popular San Francisco destinations in their exploratory and oft-cited study. Henao (2017) drove for Lyft and Uber in Denver to overcome a dearth of available data and directly accessed 311 passengers for surveying. Gehrke et al. (2018) recruited 10 ridehail drivers in Boston to implement a passenger survey, paying them $2 for each of the 944 completed responses. Clewlow and Mishra (2017) emailed surveys to 4,094 respondents in 7 major American metropolitan areas to study ridehail adoption and use. Dillahunt et al. (2017) interviewed 12 low-income Detroit residents to study how they interact with ridehailing technology. Lee et al. (2015) interviewed ridehail drivers to better understand how they use the technology. Leistner and Steiner (2017) studied a Gainesville initiative to subsidize 1,445 ridehailing trips over 9 months for low-income seniors. Brown (2018) used data obtained from Lyft to analyze 6.3 million trips made by 828,616 people in Los Angeles. Brown (2018) also recruited passengers in Los Angeles to audit ridehail service equity there. Ge et al. (2016) deployed passengers in Seattle and Boston to make 1,500 trips to audit ridehail service equity in those cities. Wang and Mu (2018) in Atlanta, Hughes and MacKenzie (2016) in Seattle, and Thebault-Spieker et al. (2017) in Chicago accessed Uber API data to examine variations in the spatial distribution of wait times. Deka and Fei (2019) used the 2017 National Household Travel Survey (NHTS) to draw broad conclusions about the sociodemographics of ridehail adoption. Schaller (2018) also uses NHTS data combined with public utility and other data to study the typical ridehail user in 9 metropolitan areas. Finally, Alemi et al. (2018) used the 2015 California Millennials Dataset to study ridehail adoption and use.

The most statistically robust ridehail research has relied on analyzing large, aggregated, and anonymized data sets typically provided by

the TNC under study. The broadest, most generalizable, ridehail research is based on recently released NHTS findings (Deka and Fei, 2019; Schaller, 2018). Though the NHTS lumped ridehailing use in with taxi and limousine use in its survey questions (FHA, 2016), rendering the disaggregation of implications for ridehail use dubious. Many other researchers have sought to survey and interview people about if and why they use ridehailing, compiling sample sizes from a few hundred to several thousand respondents.

Still, no research has presented findings from casually observing a small sample of individual ridehail passengers while comparing them to published literature. Yet similar observational methods have been applied in similar contexts. For example, Brown (2018) obtained ridehail driver age, gender, and race information as well as their working preferences through casual observation and volunteered information from a passenger's perspective.

2.2. Common Ridehail Trip Types

Alcohol consumption is frequently cited as a strong motivating factor for ridehail use. Rayle et al. (2015) find 21% of ridehail users want to avoid drinking and driving. Henao (2017) finds that among those who drive, alcohol consumption and parking difficulties are top motivating factors; and among non-drivers, not having a car, poor transit, and time savings are top motivating factors for ridehail use. About a third of online survey respondents report to use ridehailing when avoiding drinking and driving, about the same share of those avoiding parking-related issues (Clewlow and Mishra, 2017). Gehrke et al. (2018) report the top 3 reasons for ridehail use are: because it is faster than transit, there is no car available, and to avoid parking hassles—in that order.

Work commuting is also a popular application of ridehail use. Henao (2017) reports that "most" non-drivers use ridehailing to get to work and school; and "most" drivers use ridehailing for social trips, going to the airport, or traveling while out of town. In their online survey Clewlow and Mishra (2017) found that "bars and parties" and "restaurants and cafes" made up 62% of trips. Across 3 studies, between 16% to 30% of respondents have reported using ridehailing

for work commuting in the last 3 months (Henao 2017; Rayle et al. 2015; SUMC 2016). In Boston, Gehrke (2018) reports work trips top all other types, and Schaller (2018) finds 18% of trips in the 9 metros studied were for work commuting.

2.3. Ridehail Access and Equity

As ridehail use proliferates across both geography and socioeconomic status, it fills a transport gap for residents of some communities. In Austin, low-income users are more likely to use ridehailing for "utilitarian" purposes like work or school, and higher-income users are more likely to make social or airport trips (Dias et al., 2018). Low-income Los Angelenos made 25% more ridehail trips than their wealthier regional peers (Brown, 2018). Schaller (2018) found that very low-income households earning under $15,000 made more ridehail trips than middle-income earners. Bostonian ridehail users earning about the regional median income or less account for most weekly ridehail users (Gehrke et al., 2018). And Deka and Fei (2019) conclude that non-Hispanic Whites have a greater adoption rate yet are not likely to use ridehailing very frequently. Clewlow and Mishra (2017) found that White survey respondents had the smallest share of adoption with 21% having tried ridehailing. Black respondents had the greatest share of ridehail adoption with 27% who have tried it, followed by Asians at 23%, and Hispanics at 22%.

Though low-income and minority individuals may use ridehailing more frequently, they may also face barriers to access. Ge et al. (2016) report ridehail users with Black-sounding names have a relatively more difficult time getting a car to show up compared to users with White-sounding names. Brown (2018) also audited ridehail service equity and concluded similar results: Black users faced slightly higher cancellation rates than White users. However, Hughes and MacKenzie (2016) find essentially no relationship between race/ethnicity and wait times in Seattle. Wang and Mu (2018) also find no association between race, income, and unemployment rate and wait times in Atlanta. Yet, Thebault-Spieker et al. (2017) conclude low-income residents in low density areas are forced to wait longer and pay more for a ridehail trip. Still, drivers have been found to turn off the ridehailing app while driving nearby "bad neighborhoods" to

avoid receiving trip requests and "bad situations" (Lee et al., 2015). Surge prices are meant to incent more drivers to go online to meet rider demand, yet higher prices may edge out those low-income riders who depend most on ridehailing (Harding et al. 2016).

Getting Ready to Drive

Prior to the observations documented here, I had been driving for two months across both the Lyft and Uber applications. Saturday morning was selected for its relatively low frequency of trips (Brown, 2018), which provided a lower propensity for surge pricing that may have prohibited some would-be passengers. Based on my experience and research cited above, there is also no obvious trip type dominating Saturday morning ridehail travel, which should render passengers and their trip purposes less uniform. For example, sociodemographic and trip purpose uniformity is likely common among ridehailing trips at 1:00 a.m. on a Saturday morning—younger consumers of alcohol as cited above. Observations for this study were made on a sunny yet mild morning in March of 2019, which likely reduced the influence of weather on mode choice. Indeed, on that morning, there were no clear causes for exogenous shocks in ridehail travel demand or behavior.

Similar to how Servon (2017) researched the alternative banking industry by working as a payday-loan teller, I draw on first-hand casual observations and conversations with passengers from an Uber driver perspective. No other method allows for such a detailed study of how people and communities use and interact with ridehailing.

UberX ride requests were accepted beginning at 6:45 a.m. in Cincinnati's central business district (CBD). Each subsequent trip request, based on the destination of the previous trip, was accepted without interference. For each incoming trip request the image of a generic human bust [1], as seen in Figure 6.1, was prominently displayed on the screen along with a few prospective trip details

1   Presumably an Uber passenger can add a profile picture in place of the generic human-shaped bust to be presented to the driver during a trip request, though the author was never presented one. By the date of observation, the author had given more than 200 prior rides on both the Lyft and UberX platforms. On only a few occasions, all on the Lyft platform, did the requesting passenger have a personalized profile picture.

to aid the driver in deciding whether to accept or decline: driving time to pickup location, distance to pickup in miles, and average star rating of the requesting passenger. Other information sometimes included with applicable trip requests included: surge rates, pickup premium, and scheduled ride information. Trip details were overlaid onto a map containing the user's origin and driver's current location connected by a blue line representing the recommended travel route. The Uber application permitted the driver approximately 5 seconds to view the information and decide whether to accept the ride before the request expired and then presumably moved on to the next closest available driver. Time permitted for driver acceptance was graphically presented as a thin, white, diminishing circle encompassing the would-be passenger's bust (Figure 6.1).
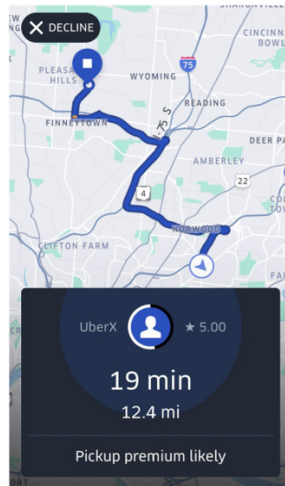

Figure 6.1: Screenshot example of trip request information presented to the driver*
*Passenger pickup location is represented by a blue pin with a white square inside, current driver location is represented by a blue arrow in a white circle. This trip request was 12.4 milesaway - an estimated 19 minute drive, by a passenger with a 5-star rating. Apparently acknowledging the substantial amount of deadheading required, a "pickup premium" is teased as an incentive to accept the request.

The information presented regarding gender, race/ethnicity, and age is based on my observation alone—they may not be correct. Trip purpose, reason for using Uber, and other details are based on observation and information volunteered by the passenger, rather than asking predetermined questions as one would in a survey or

interview. Trip time, distance, and earnings were collected from the Uber driver application after the final ride was completed. Where appropriate and useful, I draw on previous experiences of completing more than 200 ridehail trips in Cincinnati as the driver.

Uber Everywhere

The intent here is to make an interesting addition to the ridehail literature by providing a first-hand driver's account of typical passengers encountered on a typical day. So much of the published research on passengers slices and dices them into social and demographic silos while assuming each is the embodiment of homo economicus—masters of utility maximization. But in reality humans are messy, we make mistakes, we don't know if it's more polite to sit up front with the Uber driver or in the back alone. We sometimes miss the bus and have no choice but to Uber to work—and even though the cost of the ride may exceed an hour's wages, the cost of not showing up is far greater. We are sometimes poor judges of when to talk, and when to be silent. And we are often bad tippers. The following attempts to capture some of that which is not easily sussed out in a survey, or measured in a data set. It is a timeline and narrative of the trips completed on that brisk March morning in Cincinnati, including those messy human details.

6:53 a.m. After eight minutes of waiting for a trip request, the first one is a Black Millennial male waiting on a sidewalk in the CBD. He gets into the passenger side rear seat as most people do. He is in good spirits and explaining how rewarding it feels for him to be awake so early and on the move. It is not obvious whether he is a local—and where he was picked up from offered no clues. Neither does the purpose of his trip: across the CBD to a hotel restaurant to meet a friend for breakfast. He politely says thanks and de-cars. Time: 3 minutes 24 seconds. Distance: 0.62 miles. Driver's take: $3.01.

7:07 a.m. It took another ten minutes or so of waiting before the next trip request came in. It came from a neighborhood colloquially known as uptown—which is up a hill and dominated by students of the University of Cincinnati. A White Millennial male emerges from a single family home and enters the passenger side front seat. This does not happen often, so when it does, it is a bit surprising. A passenger from the previous day once told me that she sits in the front seat because to do otherwise would be

rude. She also hinted that she really likes getting five star ratings and sitting up front may help in that effort. But this particular passenger does not seem concerned about his rating. He smells of alcohol and appears to be dressed in the previous day's clothing, remarking that a first date the night before went pretty well. Dropped off at fraternity house near the university. Time: 2 minutes 30 seconds. Distance: 0.65 miles. Surge of $2.50, driver's take: $5.51.

7:25 a.m. There is often a lot of waiting around as a ridehail driver, well in Cincinnati on Saturday mornings there is anyway. Another fifteen minutes go by before another request comes in, this time from a rider in a neighborhood called Walnut Hills. A Black Millennial male emerges from an apartment building and enters the passenger side rear seat. He inquires about available employment because he dislikes his current job at an online shopping fulfillment center. Though right now he is making this trip to pick up a young girl of maybe 3 years old. After a short drive the first stop is another home in the same neighborhood. The passenger is in the home for about ten minutes while retrieving the child—any relation between the man, child, and this location would be speculation. Eventually, they both get in the car through the rear passenger door. He does not have a carseat for the child and neither does the driver, for the remainder of the trip the passengers do not use their seatbelts. On the drive back to where the ride began the young girl is scolded harshly for wetting herself. Both exit the car through the door they entered without comment. Time: 14 minutes 48 seconds. Distance: 2.34 miles. Driver's take: $4.64.

7:51 a.m. The fourth ride request comes after another ten minutes of waiting, this time it is from a nearby neighborhood named Avondale. A Black female Generation-X'er emerges from a single family home and enters the passenger side rear seat. She is upbeat, in a good mood, and on her way to work at a local nonprofit organization. She reveals through casual conversation that she usually drives her own car to work, but that is no longer possible because of a spell of bad luck. She states that on a recent weekend she had left her car in her employer's parking lot, upon returning on Monday she found her car to be stripped of parts and left on blocks. She sold what remained to a junkyard and is currently carless. Stories of this sort are somewhat regular, sometimes people slip in and out of car-lessness even when they do everything right. She gets dropped off at the employee entrance—just off of the mostly empty parking lot. Time: 4 minutes 53 seconds. Distance: 1.62 miles. Surge of $3.50, driver's take: $6.51.

8:05 a.m. After another ten minute wait comes the fifth ride request, which was back in Uptown—the neighborhood generally surrounding the University of Cincinnati. A male international Millennial graduate student waiting on the sidewalk outside of a single family home enters the passenger side rear seat. Pleasantries are exchanged but the conversation remains somewhat superficial due to a language barrier. He states that

usually he would walk, but today he awoke late and is in a hurry to get to campus. He gets dropped off at the university, and before exiting he shakes the driver's hand. Time: 3 minutes 25 seconds. Distance: 1.03 miles. Driver's take: $3.01.

8:17 a.m. Trip six is also in the general Uptown vicinity, which is nice since no deadheading is required. A female international Millennial college student emerges from an apartment building carved out of a steep hill, she enters the passenger side rear seat. Again, a language barrier prohibited a meaningful discussion, though it was clear she was heading to campus to study. The driver's homebrewed coffee aroma wafting from an insulated mug must have filled the car. She comments how much she enjoys the coffee smell and asks questions about the brewing process. She is dropped off at the university. Time: 5 minutes 2 seconds. Distance: 1.44 miles. Driver's take: $3.19.

8:29 a.m. Trip seven's passenger was a White Millennial male waiting on the sidewalk among single family homes in that same neighborhood near the University of Cincinnati. He enters the car through the passenger side rear seat. He is heading home to the Hyde Park neighborhood on the city's east side. He is quite friendly and talkative so conversation topics change quickly. Finally, one is settled on—he asks for an opinion on how to stop mass shootings. Takes are offered on what is believed to be at the core of the problem. Disagreement ensues. He is dropped off at an apartment building. Time: 11 minutes 30 seconds. Distance: 4.86 miles. Driver's take: $8.36

8:59 a.m. Trip seven ended in the moderately affluent and popular Hyde Park neighborhood, and trip eight's passenger was based there too. A White Millennial male vaping on the sidewalk outside of a long row of beige two story apartment buildings enters my car through the passenger side front seat. He's friendly and easy to talk to, which might help to explain two things: 1) why he sat in the front, and 2) his occupation as a car salesman. As a car salesman he previously sold the type of car in which he was riding—a Subaru Legacy. He offers to reveal a secret that all Subaru salesmen know, that the Legacy is the classiest of all Subarus. The cars he sells now are not as easy to sell. He was dropped off at a car dealership for work. He never vaped in my car, a gesture for which I was thankful. Time: 10 minutes 0 seconds. Distance: 3.45 miles. Surge of $6.25, driver's take: $10.76.

9:10 a.m. Trip nine came quickly after dropping off trip eight. A Black Generation-X female emerges from a single family home in a neighborhood near the car dealership, we are out of Hyde Park now. She enters my car through the passenger side rear seat. Conversation is light but friendly. She is on her way to work as a store manager at an indoor shopping mall— among the largest in the region. We talk about how she has a car and

occasionally drives herself to work, but she has a "phobia" of driving so Uber is her preferred mode. She states that she tries to only treat herself to Uber when she "deserves it," like after a long work week. She was dropped off at the mall entrance. Time: 6 minutes 30 seconds. Distance: 2.98 miles. Driver's take: $3.65.

9:52 a.m. The next request took over 30 minutes to come in. This one was from the Oakley neighborhood—a younger, edgier version of Hyde Park. A White Millennial female walking down a sidewalk in an apartment complex enters the driver side rear seat—an atypical seating arrangement. She is dressed in St. Patrick's Day garb and heading to a friend's apartment before heading out to partake in holiday festivities. She expresses concern nobody else will be similarly dressed and that she will be embarrassed. Ultimately, however, she is not too worried due to a pending move out of town to take over her father's business. She was dropped off at an apartment building. Time: 10 minutes 51 seconds. Distance: 2.87 miles. Surge of $5.25, driver's take: $9.65.

10:07 a.m. Trip eleven is also on the east side of town, this time near the banks of the Ohio River from a newly built rowhouse designed to withstand rising waters. A White Millennial male emerges from a single family home and enters the passenger side rear seat. He is meeting family at a bar before engaging in St. Patrick Day festivities in Cincinnati's CBD. He is friendly and jovial, in fact he even told a few "dad jokes." He was dropped off at a downtown bar. Time: 10 minutes 52 seconds. Distance: 4.21 miles. Driver's take: $5.11.

10:24 a.m. Trip eleven ended downtown, which is where trip twelve was located. A German Generation-X male waiting on the sidewalk outside of a hotel enters the passenger side rear seat. He is talkative and curious about the city he's visiting for business purposes. He is especially curious about the nuances of driving on downtown streets. The motivation behind his curiosity is eventually revealed by his trip purpose— to pick up a rental car. He also reveals that he is quite nervous to drive in the States. He remarks that the driver is not like most "cabbies" he's known. He was dropped off at a car rental office, and left a $2 tip in the app. Time: 7 minutes 18 seconds. Distance: 1.05 miles. In-app tip of $2, driver's take (including tip): $5.01.

Filling a Transport Gap

For some passengers, ridehailing fills a critical gap in transport options, if only temporarily. Clewlow and Mishra (2017) find that 48% of ridehail and transit users do not personally own or lease a car. The example presented above of the woman whose car was stripped of

parts is a particularly dramatic case of car-loss. More commonly, car-loss due to failed mechanics or the inability to afford the full cost of ownership (Chapple 2006) drive the carless to use ridehailing. Klein and Smart (2015) show that some residents of disadvantaged neighborhoods slip in and out of car ownership, affecting their ability to attain and maintain employment.

For other passengers ridehailing is a reprieve from driving. At the end of a long week of working overnight shifts, some ridehail passengers prefer not to drive themselves home—a sort of treat or self-reward. A distaste or even fear of driving, as presented above, is a common motivating factor for passengers to take ridehailing, even though a reliable car is available at home. Indeed, published survey results reflect these motivations (Henao, 2017; Clewlow and Mishra, 2017).

The case of a man picking up a child presented above provides an example of ridehail use that has extended beyond work commuting, to include other essential life tasks. Further, this case also presents a risk commonly borne by ridehail drivers: the decision of whether to terminate a trip (and loss of the fare) with either an unaccompanied minor, or accompanied minor without an appropriate car seat or restraints.

The Influence of Alcohol

Three, and likely more, of the Uber passengers presented above reflect findings that suggest alcohol consumption is a common motivating factor for ridehail use, even during hours not traditionally associated with alcohol consumption. The prevalence of alcohol in influencing ridehail use also conforms to nearly all published research, as cited in the literature review. However, the relationship between alcohol consumption and ridehail use is not monolithic. Actually, in this driver's experience, it can manifest in three distinct trip scenarios made at different hours of the day. 1) This is the scenario commonly associated with alcohol consumption and ridehailing: the passenger who plans ahead to consume alcohol and makes the round trip by ridehailing. 2) The passenger who drove themselves (or arrived by other means) to the location of consumption, who then makes

a return ridehail trip home at the conclusion of over-consumption. 3) This scenario is frequently related to the second: the passenger who makes a return ridehail trip to pick up a vehicle, or to place of residence, previously left at the location of over-consumption.

Driver's Perspective

Demand for rides and the resulting revenue was unpredictable and seemingly random. Only one tip worth $2 on the twelfth and final ride was received, though tips are certainly more common in other service sectors. Additionally, four surge fares were scattered throughout the morning. Surges and the tip combined to make up nearly 30% of the $68.32 grossed over the four hours of driving. Without them less than $50 would have been earned, or a little more than $12 per hour, before deducting taxes and expenses. Many researchers have attempted to calculate the average hourly driver pay after accounting for all applicable costs, including: vehicle maintenance, depreciation, fuel, and insurance. Wildly different findings have been published, and earnings vary by region. Still, two papers studying Seattle driver earnings published just days apart report drivers average $23.52 per hour (Hyman et al. 2020) and $9.73 per hour (Parrott and Reich 2020)—both calculated to be after expenses are paid.

At the time this research was conducted, ridehail drivers in Ohio did not receive additional training and were not required to obtain special license endorsements. Because of this, drivers may unwittingly assume undue risk by not being fully knowledgeable of applicable laws, sometimes between multiple states. The Cincinnati ridehail market covers most of Southwest Ohio, regions of Northern Kentucky, and regions of Southeastern Indiana. It seems reasonable to assume that a significant proportion of ridehail drivers are unfamiliar with the current state of regulatory affairs in each jurisdiction. Indeed, there often seems to be a disconnect between social norms and regulation. For example, many passengers presented failed to fasten their seatbelts for the duration of the trip, whether seated up front or in the back.

Discussion

This work aims to supplement quantitative ridehail research by presenting qualitative findings obtained through observation and casual conversation. The intent is to place examples of ridehail passengers and the transport decisions they make within the context of current academic knowledge. A fine point is added to each ride account by presenting small and sometimes quirky details about the trip. This is done to provide additional insights into the character of ridehail passengers, their reasons for using ridehailing, and the unique social relationship between ridehail drivers and passengers.
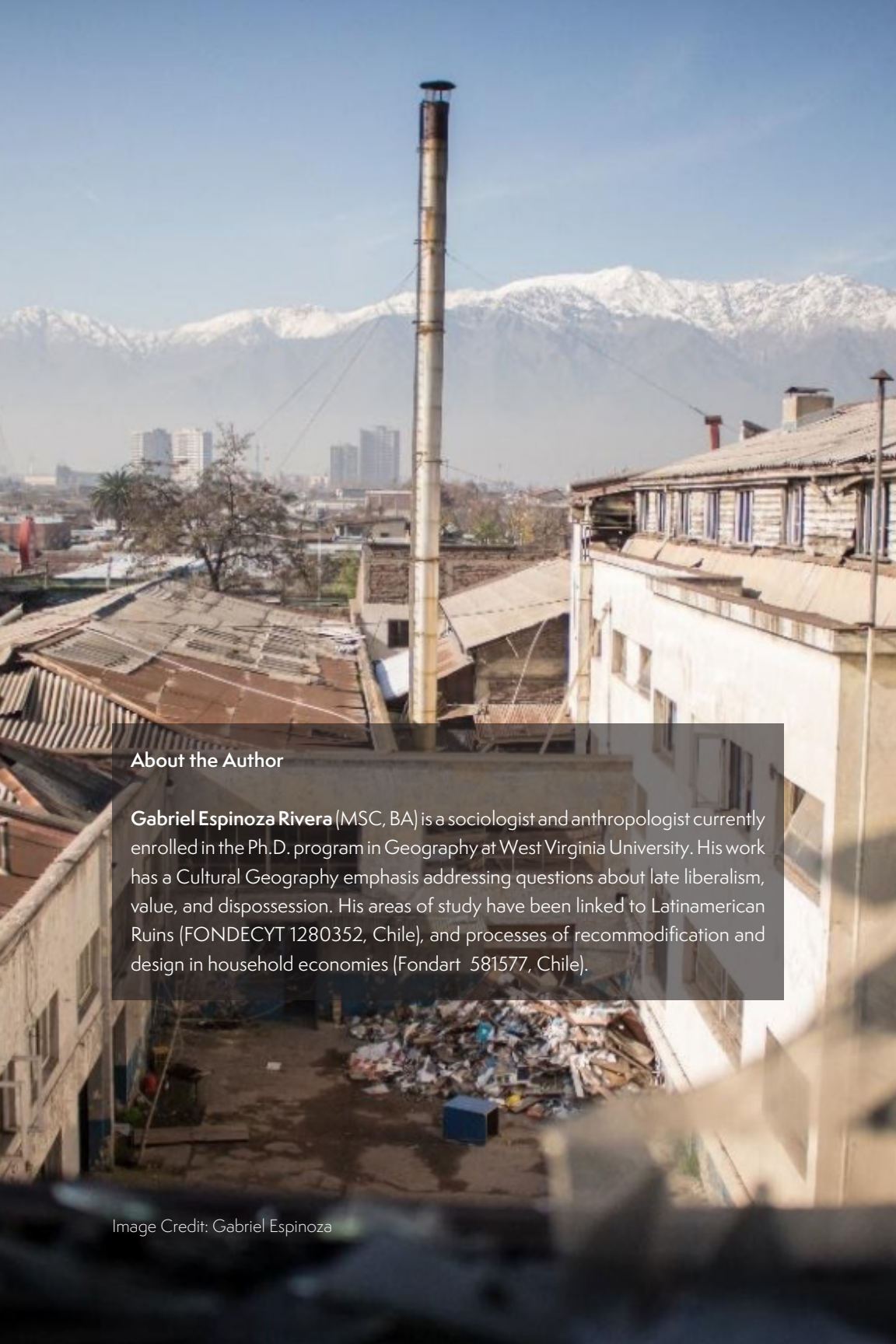
Interestingly, the two passengers who sat up front with the driver were White Millennial males. This could be because I, too, am a White Millennial male. For female passengers, sitting within easy reach of the driver may be a safety concern leading them to sit directly behind the driver. It could also be a reflection of the varying role ridehailing plays in the lives of passengers.

This work has implications for researchers and policymakers alike by presenting details about trips and passengers not seen before in the literature. For example, international college students have few options for commuting to school and may depend on ridehailing. For some, ridehailing may provide a preferred work commute experience over transit and driving while adding a layer of transport reliability. For social trips, alcohol consumption manifests in several different types of ridehail trips. For drivers, dependence on the extra revenue from tips and surges is unreliable and unpredictable yet necessary. Also, as the driver is presented trip origin, suggested route, star rating, and sometimes a photo of the passenger before accepting a ride, would-be riders remain vulnerable to biases and discrimination.

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About the Author

Gabriel Espinoza Rivera (MSC, BA) is a sociologist and anthropologist currently enrolled in the Ph.D. program in Geography at West Virginia University. His work has a Cultural Geography emphasis addressing questions about late liberalism, value, and dispossession. His areas of study have been linked to Latinamerican Ruins (FONDECYT 1280352, Chile), and processes of recommodification and design in household economies (Fondart 581577, Chile).

Image Credit: Gabriel Espinoza

The Invention of Abandonment and the Rescue of a Neighborhood: A Tiny Glance to Franklin's Sanitas Building, in Santiago de Chile

Gabriel Espinoza Rivera

Abstract

This ethnographic research focuses on the trajectory of abandonment of a factory in the Franklin neighborhood of Santiago, Chile. It establishes a chronology of the post-industrial applications of the building, from informal to formal. Buildings can be understood as the object of processes; despite their immobility, their uses and meanings are in constant reconfiguration. This article analyses two dimensions to understand the trajectory of the property; time frames of occupation and recognition of the formality of these periods. This illustrates how the use of buildings, conceptualized here as 'interim spaces,' functions as a process of urban renewal.

Keywords

Sanitas Building Façade, May 2019.

Introduction

Franklin is known for being a working-class, commercial neighborhood in Santiago de Chile. I have been visiting this place since I was a child. However, my first interaction with the building occurred back in Spring 2015. I started visiting the Instituto Sánitas (the building's name) my first interaction with the place on a lovely sunny and windy spring day in Santiago as my friend, an Airsoft enthusiast, invited me to see him play, harboring the hope that I would eventually engage with the game and develop a similar interest to be able to team up with him in upcoming matches. While I didn't quite develop a passion for Airsoft, we did come back quite often in order to take photos of the place and to hang out with the building's caretaker.

In 2018, while doing my master's in Anthropology, I was granted research funds for my dissertation in the subject of Urban Ruins and my first instinct was to study this abandoned factory. Built in the 1940s, in the midst of a modernization process led by the Chilean State under the Radical[1] Governments, the Sanitas Institute had hopes of development by means of industrialization for Chile's political elite. It was not only a place to produce drugs and medicine, but to enhance and deepen the national pharmaceutical discipline and knowledge. In the late 1990s, the building was left behind by the company and sold to a real estate agency. Today, 70 years later, this architectural body has been detached from its industrial genesis and uses, and left behind as a factory. However, to categorize it as a ruin or abandoned place would be a much too reductive take.

The Construction of Abandonment

The first impression I had of the building was an overwhelming atmosphere of abandonment. Andersson (2014) proposed that there might be some sort of abandonment ontology, hence a particular epistemology that helps understand the perception of emptiness. Although, the more time I spent in the place, the more my hypothesis of abandonment was challenged. I then completely eradicated the idea that this building was abandoned, and this was particularly

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1   The "Radical Governments" is a political period in Chilean History that goes from 1938 to 1952. Led by the Radical Party, with the support of the left wing coalition, the Popular Front, this period introduced a large number of social policies which helped to define a stronger middle class, reinforce the production of a national industry through the creation of CORFO, as well as addressing housing, health and education issues not seen in the republican Chile before.

Figure 7.1: Abandonded room with decaying furniture in the Sanitas Building

because of the following three concepts:

1. The first one is a reading on a relational environmental understanding (Ingold, 2002, 2013, 2018; DeSilvey, 2017). This theoretical proposal identifies abandonment as a mere concept that obliterates other ways of life and actions that shape, in an ongoing process, the surrounding environment. It also acknowledges that the world and the worldly experience are made by different beings and forces that produce, reproduce and allow life to happen. Thus, the environment, as well as the built environment, is understood as a set of agencies constantly becoming and producing place, space, materialities and providing life. This theoretical perspective eventually excludes abandonment as a total phenomenon and enlightens the anthropic biased perspective of such a concept.

2. At the same time, this is not merely a biased approach only because of human action, but also because with categorizing spaces into occupied and abandoned, there is a ruinophobic gaze that imposes what should and should not dwell in the place. As Bennet

(2017) puts it, there's a certain way in which the idea of property defines territories and cities. This sets a particular scope of attributes that a building should have, which include both dwellers and their activities. Some sort of moralization takes place regarding what type of dwellers should use these places based on their moral values. Following Cresswel'sl (1996) and Matless's (1994) approaches, there are some dwellers, material, materialities and practices allowed to be present at this building and in its public surroundings while others are not.

3. The mere presence of the building implies multiple possibilities of use. A building is as much an idea as a material architectural body. The presence of the building in a particular territory, as Guggenheim (2009) describes, enacts a set of symbolic and practical relationships. Buildings are contested bodies that are never fully closed in their possibilities of use. Harman (2017), opposing Latour and Yaneva's (2008) discussion, says that there might be moments when a building is an object rather than a process. The open possibilities of the building as something that is constantly mutating, remains. Guggenheim (2009) calls buildings mutable immobile, because their emplacement is constant but what they are, referring to their social production as an object, depends on the uses, material conditions and relationships with the surrounding environment. This includes human direct/indirect actions, as well as economic, material, or other types of emergent or stable relationships.

Hence, my research shifted from abandonment and ruins to building as procedural objects; flexible architectural bodies and spatialities. My main question then became: for whom was the building abandoned or empty? While doing my field work, every single space inside the building was under occupation. These occupations were there, waiting, latent, but out of sync from each other. Every single occupation brought life and produced space by means of their specific activity. All of them worked and took place in different moments in time, but in a shared topographic space and place. While the building's facade has been occupied for the last 20 years with different stores from barbershops, to restaurants or kitchen appliances stores, the interior was filled with activities that were more

Figure 7.2: Another look at one of the offices of the Sanitas Industry, 16 years after abandonment, June 2016

heterotopic. With a particular permit, to work inside the building for a limited time, a Ghost tour, an Airsoft-Field and a training spot for Lucha Libre, gave life to the building's interior. But these activities did not last long.

Boutiqization

By the end of 2018, I was told by the building's caretaker that the property would eventually be turned into a Boutique that would host a café, a shoemaker's shop, a deli counter and others stores producing and offering handcrafts, as well as an Art gallery. The renovation of the building started in early 2019, and all the activities sheltered in the interior of the property were dismissed. This helped to accelerate a process of commercial gentrification, starting in 2012, with the inclusion of gourmet restaurants and stores oriented to middle and upper middle class consumers in the midst of Franklin, a traditional working class neighborhood (Espinoza, forthcoming). Also known as what Hubbard (2017) or Zukin et al. (2009) define as

Figure 7.3: A glance at the Fiambreria (Deli shop) in the Interior of Sanitas Building, December 2020.

"boutiquization": changes in the commercial scape of an urban area, that either discourages and shrinks the presence of lower income users to the area, or removes both the users and stores that buy and sell cheaper products than the newcomers. This then produces a symbolic and economic boundary that attracts a particular set of customers while excluding those that cannot afford neither the taste or the money to participate in these places.

On August 5, 2019, the municipality of Santiago shared the following statement on its social network and website:

> "The future of the #Franklin neighborhood is in the hands of the productive and industrial soul that forms its history. Rescuing that spirit, the group "Franklin CoFactoring Arts and Crafts" is developing an innovative project in the old building of the Sanitas Institute, which was empty for 20 years. Now it will receive businesses of crafts, delicatessen, shoes, distillates, restaurants, furniture, etc. Mayor Felipe Alessandri visited the space, in Franklin 741. "This is a meeting point for what we are promoting in the municipality: to recover the life

of the neighborhoods and their identity, together with the neighbors'' (Ilustre Municipalidad de Santiago, 2019)

The idea of abandonment is constructed as a factual public reality through devices of political communication. There was mostly void, an absence of humanity, some sort of Terra Nullius[2] in the middle of one of the most crowded cities in South America. Or, at least, that's how the city council introduced and explained this renewal process. The building, in its procedural nature, is also the tragic present and the bright future that will inherit the neighborhood's history, framed as a discursive device that will romanticize the past, not necessarily authentically embrace it.

In 2019, the building was "recovered" by the Municipality and private investors who wanted to bring back the old-new life to Franklin. However, the civil unrest in Chile that took place from October 2019 to March 2020 followed by the Covid pandemic, delayed the inauguration of this Boutique-Art center until further notice. The new shops have been using and holding production activities rather than giving services to customers since 2019. In December 2020, the building opened for the first time to the public, but it was just for a couple of days. Then, Covid cases rose in the region and, once again, the building was closed to the public. Since January 2021, this situation has been similarly disruptive. All of the above seems like a bad joke. However, the destiny of the building seems to be in eternal waiting, even if the tale of recuperation from abandonment has already taken place in the property.

Final Thoughts

My initial approach to the building was led by curiosity and the will of understanding what a building is in anthropological terms, and if abandonment is a universal category, or just something mediated and biased by a series of limited perspectives of things and the environment. In spite of this, my early theoretical concerns allowed

2   Inhabited land allowed to be owned by settlement. This concept is rooted in the Roman Law along with Res nullius, which are the basis of the right of property. To explore a more extended debate about these terms in the Australian Law and Colonial context, see Borch, M. (2001). Rethinking the origins of terra nullius. Australian Historical Studies, 32(117) and Fitzmaurice, A. (2007). The genealogy of Terra Nullius. Australian Historical Studies, 38(129), 1-15.

Figure 7.4: Inside of the Sanitas Building, Circa August 2016 (Above) compared to December 2020 (Below)

me to understand how buildings, and the conceptualization of abandonment, play a key role in the production of city value and the management of the voids. As Colomb (2017) and Andres (2013) explain, the idea of interim spaces has been deployed since the '90s - at least in Central Europe - in order to manage abandoned buildings left by processes of deindustrialization and the end of the Socialist Era. To manage the void implies to welcome a particular set of uses and users - desirable ones - that will keep on adding value through freezing urban spaces, and maybe deploying some cultural activities in order to produce value under the gaze of creative cities. The property owners are, therefore, waiting for a real estate project that will turn the abandoned into occupied, while avoiding squatting and undesirable occupations (See Martínez, 2020).

In this case, the management of the abandonment, addressed in the building by the owners of the property and the Local Government, was proven useful in keeping the property un-squatted and allowing to replace with ease, those temporary users and uses for official ones. However, nothing can assure that temporality and abandonment will not come back sooner than expected to the building. Paraphrasing Marx, what once was thought as solid will melt into air. There is no guarantee that this new stability that covers and frames a building will overcome substantial or radical changes, financial issues, or some new urban political definition. There is not a thing in the world that can escape entropy - this includes the social life of a building as well as its material and materialities. Hence, the surest thing regarding the built environment is to wait for changes to come. As DeSilvey points out: "Our minds have a tendency to consolidate these [buildings] things as cultural objects, and it takes an extra effort to see them as provisional gatherings of matter, on their way to becoming something else" (DeSilvey, 2017, p. 19).

Figure 7.5: Franklin neighborhood stores, closed due to Covid Pandemic. May 2021.

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List of Dissertations by 2020-2021 Community and Regional Planning PhD Graduates

Becoming Urban: A Historical Ethnography Of Puerto Rico's Development/planning Ensemble And Its Spatial Production In Santurce (1940-1960)

Encarnacion Burgos
Spring 2021

Abstract:

This study analyzes how historical political forces and development/planning processes that occurred in the 1940s and 1960s laid the foundation fo r the uneven landscape that persists today in Santurce, one of the oldest barrios of the capital of Puerto Rico (San Juan), and how these processes contributed to the emergence of Hato Rey as the core business center. Through an historical ethnography, this study reveals the relationships between political struggles and development/planning ideologies, and illuminates the spatial implications of these struggles. In doing so, I describe the key institutions, political actors and practices that have molded the distinctive development/planning institutional ensemble of Puerto Rico over time. I also consider how certain spatial strategies and colonial political interventions in San Juan have been deeply tied to economic growth policies designed to attract US investors and to uphold US hegemony and the Colonial state. My study traces how pivotal political changes, including the expansion of federal regulations, new funding opportunities, and the appearance of new institutional forms and agents have structured San Juan's urban space under the shifting, often contradictory conditions of capitalism and colonialism. Different from previous studies on Puerto Rico's development and industrialization experiences, I developed the analytical concept of the Puerto Rico's development/planning ensemble to better explore the pivotal engagements of a wide array of colonial and metropolitan agents, at multiple scales, without obscuring their individual or collective roles in the production of space. The study aims to provide additional insight on how a critical framework can be arranged to account for the historical experiences (colonial and neocolonial) of communities in the Global South when

forecasts and traditional models fail. More broadly, this study aims to contribute to new ways of engaging in planning praxis. Furthermore, I propose to explore the urban as a social construction, shedding light on what the "urban" means in the case of Puerto Rico (especially in San Juan) and how this idea has been constructed by multiple pivotal development and planning state-led maneuvers (i.e., the Colonial state and the Metropolitan state) that produce uneven geographies and contestation

List of Project Reports and Theses by 2020-2021 Community and Regional Planning Graduates

Music Culture in America's Southern Music Cities: Memphis, Tennessee and Austin, Texas
Abbey Judd
Spring 2021

The State of Evictions in Memphis, Tennessee
Alexander Martin Uhlmann
Fall 2020

Evaluating the Impacts of Smart Growth: A Quantitative Analysis of State-Level Smart Growth Policies
Andrew Glazener
Spring 2021

Chasing the Milky Way: A Proposal for Ecological Light Pollution Controls for the City of Austin, Texas
Anita Machiavello
Spring 2021

The Creeping Disaster: Sea Level Rise and Environmental Justice in Miami
Cameron Christie
Spring 2021

Seguro, Humano, Conectado: Narratives of Displaceability in Santo Domingo, Dominican Republic
Jorge Antonio Losoya
Spring 2021

The Impacts of New Town Development: Considering the Case of Jinju Innovation City, South Korea
Jongmoon Lee
Spring 2021

Examining Intersections in Austin, Texas with High Rates of Pedestrian Crashes from a Social Equity Perspective
Maxwell Bernhardt
Spring 2021

A Home for All of Us: A Blue-Green Infrastructure Network for Hays County, Texas
Mitchell Ford
Spring 2021

Challenging the Paradigm: A Case Study of the Grassroots Creative District Branding of the RiNo Art District
Monika Gehl
Spring 2021

Opportunities of Low Impact Development for Water Infrastructure in Jakarta, Indonesia
Nafisa Iskandar
Spring 2021

The Power of Plan Integration to Promote Disaster Resilience: An Evaluation of the City of Rockport's Plan Network in Relation to the Revival of the City's Downtown District
Patrick Bauer
Spring 2021

Politicizing Necessities: The Fight for Affordable Housing in the Southern United States
Tatum Troutt
Spring 2021

Revenue, Ridership, and Social Responsibility: Using Joint Development to Balance Competing Priorities for Transit Agencies
Timothy Welch McCarthy
Fall 2020

Finding the Suburban "Missing Middle": Case Study Analysis of Housing Supply Trends and Needs in Buda, Kyle and San Marcos, Texas
Todd Podbielski
Spring 2021

Do Millennials Prefer Urban Living? Evidence from Census Migration Flows in U.S. Megaregions and the State of Texas
Ziyue Su
Spring 2021

Best Project Report of the Year 2020-2021

Food in the Floodplain? Exploring the Potential to Grow Food and Racial Equity on Austin's Floodplain Buyout Lands
Sara (Sari) Belén Albornoz
Spring 2021

Abstract:
As climate change unfolds, municipal governments like the City of Austin, Texas are using voluntary floodplain buyouts—a form of planned retreat—as a strategy to move residents out of hazard-prone areas. As a result of buyouts, city governments become stewards of vacant, publicly owned lands that cannot be developed, and face decisions about how to use them. Governments have the opportunity to repurpose buyout lands into community amenities, such as sustainable agriculture projects, that can generate an array of social and ecological benefits. In deciding how to repurpose buyout lands, however, governments have a responsibility to pay special attention to the implications of their actions for racial equity. Racial equity matters in this context because communities of color are being disproportionately impacted by both climate change impacts and planned retreat, and because the creation of green amenities in historically disinvested neighborhoods has the potential to spur gentrification and displacement. This professional report explores the questions: 1) Are sustainable agriculture projects a viable use for public, urban floodplain buyout lands? and 2) How can municipal governments pursue such projects in a way that prioritizes racial equity? I address these questions through a case study of a specific prospective agriculture site on City of Austin-owned floodplain buyout land in the Lower Onion Creek buyout area, which is located in the historically Latinx, climate impacted Southeast Austin neighborhood of Dove Springs. Using an environmental justice framework and a mixed- methods approach, I evaluate the likelihood that the conditions that sustainable agriculture projects require for success can be met at the prospective site, in light of the site's physical characteristics and propensity for flooding; safety considerations; and regulatory and environmental constraints. Drawing insights from Dove Springs community leaders and subject matter experts,

I discuss how the planning and implementation of a sustainable agriculture project at the prospective site could be carried out in a way that advances racial equity and environmental justice. Finally, I present recommendations for concrete next steps the City of Austin can take to move this project forward while prioritizing equity and justice.

About the Author:
Sari Albornoz completed her Master's of Science in Community and Regional Planning from UT Austin in 2021. A native Austinite, Sari is dedicated to realizing a vision of a socially just, ecologically regenerative, and radically democratic Austin, and she believes that community-driven agriculture projects can move us closer to that goal. Sari dedicated a decade to supporting community agriculture projects at a local food nonprofit and now works as a Community Engagement Planner with the City of Austin's Watershed Protection Department. In 2020, Sari co-founded Fruitful Commons, an organization that strives to support a vibrant network of food-producing projects across Austin.

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