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WHO GETS WHAT?

MAPPING RIGHTS, ACCESS, AND THE FUTURE OF JAMAICA'S CITIES

A CAPRI Consortium Project

Who Gets What?

Mapping Rights, Access, and the Future of Jamaica's Cities

Caribbean Policy Research Institute (CAPRI)
OneCity
Kingston, Jamaica

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Acronyms

AOI	Atlas of Informality
CEI	Civic Integration Index
EVI	Environmental Vulnerability Index
FII	Financial Inclusion Index
FREI	Flood Risk Exposure Index
GDP	Gross Domestic Product
GIS	Geographic Information Services
GKMA	Greater Kingston Metropolitan Area
GMB	Greater Montego Bay
HDX	Humanitarian Data Exchange
HOTOSM	Humanitarian Open Street Map
ISIS	Integrated Spatial Information System
ITI	Irregular Tenure Index
JCC	Jamaica Chamber of Commerce
JUTC	Jamaican Urban Transit Company
KSAMC	Kingston and St. Andre Municipal Corporation
LAC	Latin America and the Caribbean
MGI	Mona Geoinformatics Institute
NSWMA	National Solid Waste Management Authority
OSM	Open Street Map
PCA	Principal Component Analysis
RTTC	Right to the City
SDGs	Sustainable Development Goals
SMEs	Small and Medium-sized Enterprises
UDC	Urban Development Corporation
UII	Urban Integration Index
USF	Universal Service Fund

Figures

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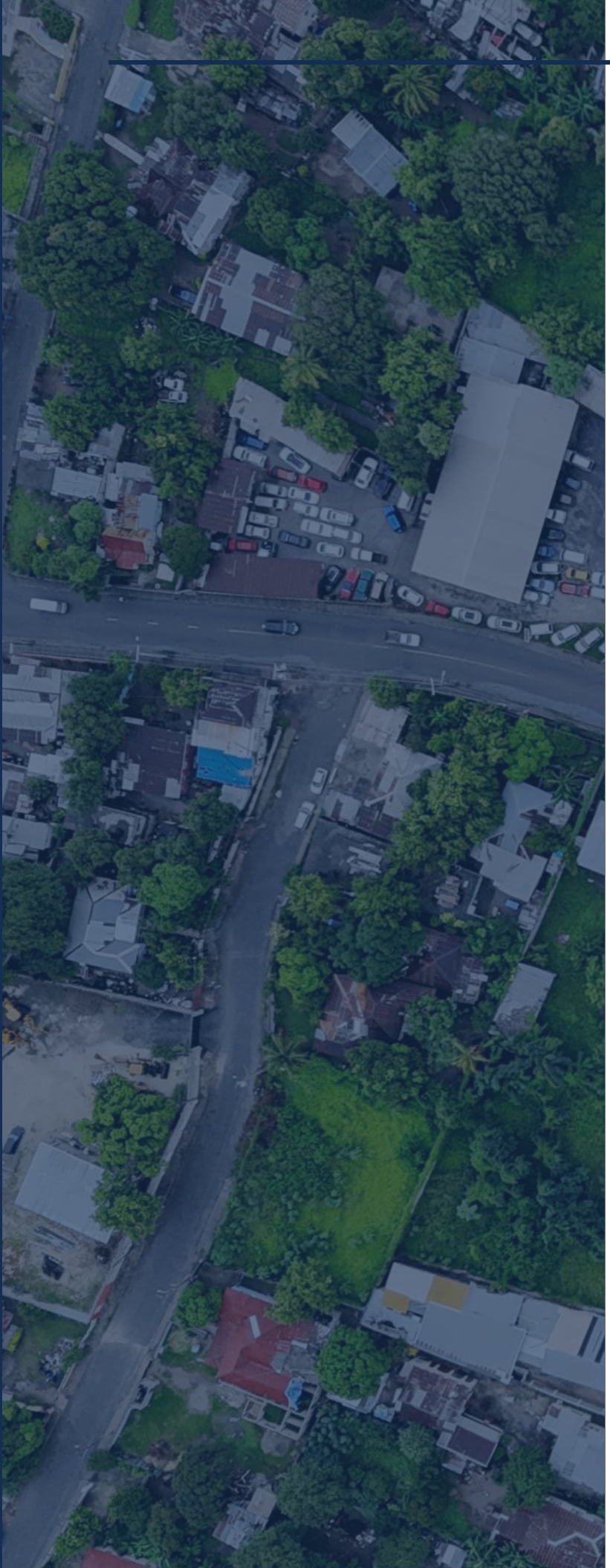
Executive Summary



If **cities** are to be inclusive, safe, and sustainable, policy must start with the places that have been left behind

This study investigates how space, structure, and history shape urban inequality in Jamaica. Using the Urban Integration Index, it maps patterns of access and exclusion across 173 communities in the island's four major urban regions: Kingston, St. Andrew, St. Catherine, and St. James. The Index draws on 14 indicators that measure access to infrastructure, services, and opportunity. These include land tenure, water access, sanitation, electricity, education, healthcare, mobility, safety, digital access, financial inclusion, and civic engagement.

The findings expose a deeply fragmented urban landscape. In some communities, residents enjoy formal land tenure, reliable public utilities, and proximity to schools and clinics. In others, basic services are unreliable or absent. Roads are narrow, irregularly laid out, and unsafe. Residents face high exposure to crime, environmental hazards, and chronic underinvestment. The quality of life in urban Jamaica depends significantly on where one lives.

These disparities are not random. They reflect the legacies of informal urbanisation, political clientelism, weak regulatory enforcement, and uneven development. Informal settlements, which house a large share of the urban population, often remain off-grid and out of sight. These communities tend to be omitted from planning frameworks, underrepresented in official statistics, and deprioritised in state investment. Residents lack not only reliable public services but also visibility and voice.

The Urban Integration Index addresses this gap by making the spatial distribution of exclusion measurable. It combines fragmented datasets into a single tool that can be used to diagnose need, monitor progress, and support more equitable urban policy. The Index gives policymakers and planners a baseline for identifying where the Right to the City is realized and where it is denied.

The Right to the City is a framework that recognises urban inclusion as a matter of justice. It affirms that all urban residents, regardless of tenure status, income, or geography, have the right to inhabit, use, and shape their cities. This study applies that framework to Jamaica's urban landscape, highlighting how spatial inequalities in infrastructure, services, and governance continue to shape life chances.

What emerges is a portrait of urban development marked by disconnection. Government agencies operate in silos. Data is often incomplete or incompatible across institutions. Public consultations are limited and rarely shape policy decisions. Infrastructure upgrades are sporadic and tend to follow political incentives rather than objective needs. The result is a patchwork of provisions, where opportunity clusters in some places and is absent in others.

Addressing this fragmentation requires a shift in how Jamaican cities are planned, governed, and resourced. The Index points the way by identifying not only where deficits exist, but also how they intersect. For example, communities with insecure tenure often lack regular electricity and water services. Places with poor road connectivity also report low school attendance and limited financial access. These overlaps show that spatial inequality is systemic, and issues are interconnected, not incidental.

The OneCity Explorer, an interactive digital dashboard, makes these findings accessible to the public. Users can view indicator scores by community, compare areas, and explore maps that visualize disparities. This tool supports transparency, public engagement, and evidence-based planning. It is part of a broader effort to democratize data and empower residents to advocate for their rights. While this study focuses on measurement, it is not neutral. It makes a case for action. By establishing a baseline and identifying the communities most in need, the Index can help shift urban planning from reactive to proactive, and from piecemeal to integrated.


ThinkPad

RECOMMENDATIONS

1 **Use the Urban Integration Index to guide spatial targeting of public investment**. Resources should be directed toward communities with the most acute deficits, using the Index as a baseline to inform where interventions will have the greatest impact.

2 **Invest in comprehensive infrastructure upgrading**, improving access to basic services identified as inadequate by the urban integration index, to reduce the physical isolation of marginalised communities and foster social inclusion.

3 **Formalize land tenure in informal settlements**. Regularizing tenure strengthens legal protection, encourages household investment, and allows for infrastructure upgrades. Secure tenure also supports integration into formal governance systems and service networks.

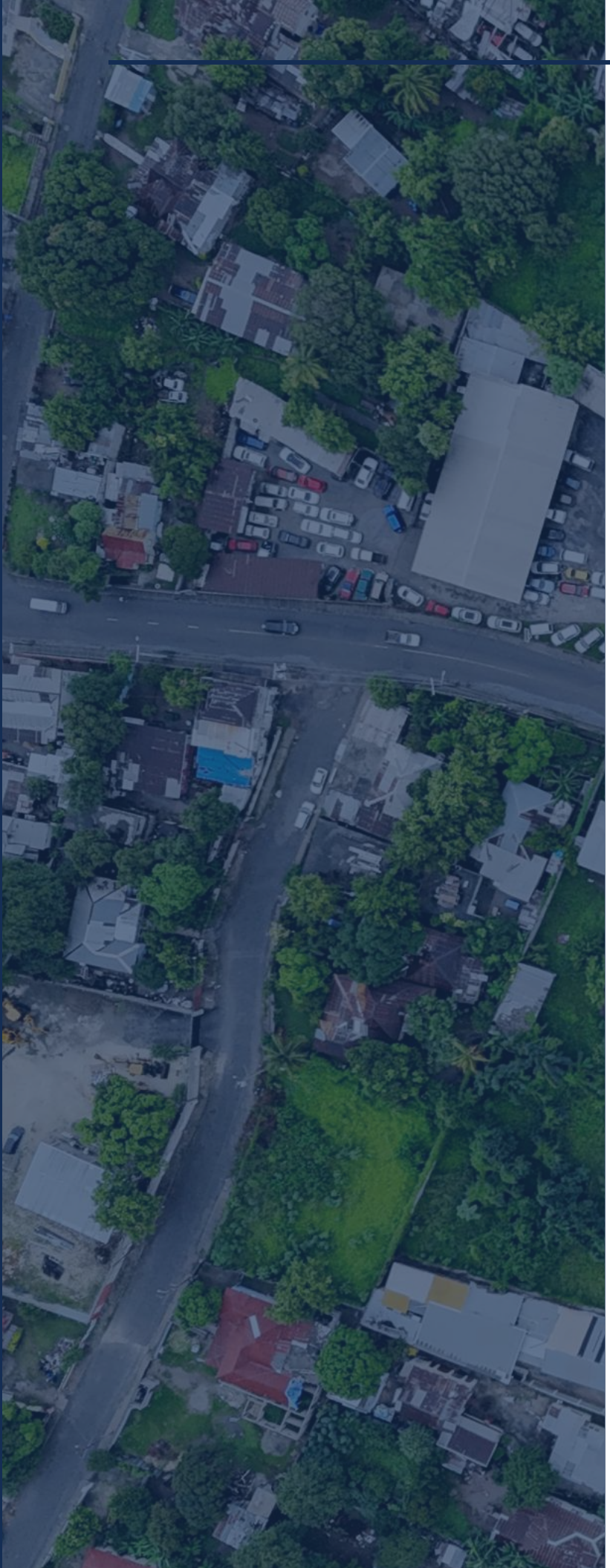
4 **Establish an independent Urban Equity Commission**. This body would oversee resource allocation, monitor disparities, and promote accountability in urban development. It should include representatives from civil society, planning authorities, and academia.

5 **Break down institutional silos through data-sharing and coordination**. Government agencies must collaborate across sectors and use common data frameworks to improve efficiency and reduce duplication. Open data platforms such as the OneCity Explorer can support this.

6 **Engage communities in planning processes**. Public consultations should be meaningful, early, and continuous. Feedback from residents must inform the design, implementation, and evaluation of urban projects.

1

Introduction



Jamaica

has the second highest proportion of its urban residents living in informal communities in the Latin American and Caribbean region

The Right to the City provides a framework for understanding and addressing the spatial inequalities in the urban landscape as a first step towards enhancing the quality of life for all urban citizens. Spatial inequality refers to the uneven distribution of resources, services, infrastructure, and opportunities across different geographic areas. In this context, inequalities are not just about poverty—they are about how space itself is organised, governed, and resourced.

Jamaica has the second highest proportion of its urban residents living in informal communities in the Latin American and Caribbean region, surpassed only by Haiti .[1] (Figure 1). The majority of Jamaica's urban dwellers live in densely populated areas that, for the most part, lack adequate infrastructure, quality housing, and access to essential services, in conditions that generate and further aggravate socio-economic exclusion and marginalisation.

This study conceptualises Jamaica's urban spaces in the context of the Right to the City framework, with a view to examining the spatial inequalities faced by urban residents. By creating an index of urban integration for the island's two cities, Kingston and Montego Bay, the study provides a detailed assessment of the components that comprise urban marginalisation and exclusion, with a view to showcasing the priority issues, and to substantiating the case for policy reform, innovation, and intervention.

Jamaica's History of Urban Development

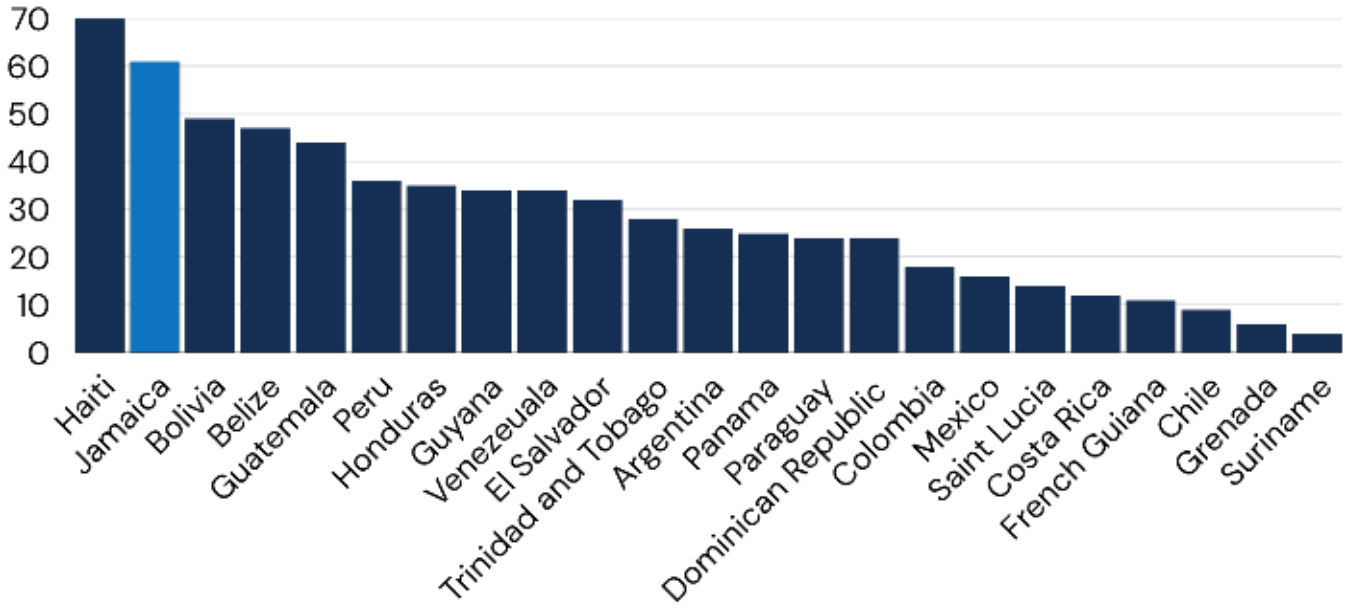
Jamaica's relatively high degree of urbanisation results from a near-century-long trajectory marked by economic precarity, understood here as a condition of persistent insecurity in people's economic lives marked by unstable income, uncertain employment, and limited access to social protection or support systems. This condition was brought about by external shocks and inflamed by domestic political volatility and poor policy choices. Beginning with the displacement, migration, and return of tens of thousands of people from overseas immediately following the 1929 Great Depression, the urbanisation process further accelerated with the decline of export-oriented agriculture in the 1960s and 1970s. As with all large-scale rural-urban movements, people were drawn by the perception of greater economic opportunities and the promise of a better quality of life in cities and towns.[2]

Rather than being driven by the process of mass industrialisation typically experienced in industrialised societies of Europe, the United States and Japan, urbanisation in Jamaica was instead propelled by waves of economic precarity . This meant that urban growth was haphazard and unstructured, and the expansion of local production and economic output expected to accompany the urbanisation process did not materialise. Migrants' expectations were thus not met; indeed, many of them experienced worse living and economic circumstances than what they had left behind.[3]

Rapid and high-volume migration led to overcrowding in towns and urban centres, overwhelming already inadequate infrastructure and service provision.[4] The weak industrial base precluded the state's capacity to address systemic and emerging urban problems, a situation exacerbated by populist policy choices that led to a sharp economic downturn in the 1970s and decades of subsequent economic stagnation from the 1980s into the 2010s. The housing stock was inadequate; few could afford prop-

1 **Share of Population is Urban Slums (%)**

Urban Slum Population by Country in Latin America and the Caribbean



er housing in any case. The result was widespread capturing of land, erection of low-quality shelters, and settling on gully banks and other precarious and environmentally hazardous spaces.
Over the first three decades of political independence, politicians sought to bring a semblance of order to some informal settlements, but these initiatives were often politicised. Political patronage and votes for Jamaica's two dominant parties were exchanged for access to housing units or plots of land, creating what have become known as garrison communities.[5]

Weak state capacity, primarily manifested in poor physical planning and inadequate regulatory oversight, led to and/or made worse urban sprawl, substandard housing, violence, crime, environmental degradation, and negative health impacts. These outcomes were concentrated in the informal communities, but had negative spillover effects on the surrounding urban environment, and to the country and society, including being a push factor for emigration and "brain drain," and ultimately compromising the quality of life and life prospects for all.[6]

Despite attempts over the years to address spatial inequality and its impacts, Jamaica's urban spaces remain characterised by a patchwork of formal, informal, and semi-formal areas. The result is a fragmented urban environment where provision of and access to resources, services, and participation are limited and underdeveloped for all urban citizens, especially the socially excluded.[7] This social and political economy has been and continues to be a constraint on sustainable urban development.

The Right to the City Framework

The concept of the Right to the City (RTTC) is materialised in a framework that addresses fragmented urban spaces with a view to integrating populations of differing socio-economic backgrounds into the overall social fabric. This is well suited for Jamaica given its persistent and embedded spatial inequality. Integration would minimise spatial inequality and improve equity, inclusion, and political participation; and would promote improved living conditions for all urban inhabitants. The RTTC framework provides the basis for systemic, structural, and organisational change.

The governing premise of the RTTC is "the right of all people to inhabit, use, occupy, produce, transform, govern, and benefit from just, inclusive, safe, sustainable, and democratic cities."6 It consists of eight core principles whereby cities and urban spaces: 1) are devoid of discrimination; 2) promote gender equality; 3) foster inclusive citizenship for all; 4) are governed by participatory policies and plans; 5) are equitably accessible and affordable; 6) provide high-quality public spaces and services; 7) enable diverse and inclusive economies; and 8) are incentivised to develop sustainable and strong urban-rural linkages.[8]

Urbanisation in Jamaica was propelled by waves of economic precarity

Applying RTTC principles to Jamaica's urban landscape offers a pathway to addressing spatial inequalities and improving quality of life. By expanding equitable access to services and opportunities, cities can become more socially cohesive, culturally dynamic, and economically productive. Ultimately, this approach supports the development of urban environments that are more just, safe, and welcoming for all residents, regardless of background or socio-economic status.[9]

Objectives

This study examines the spatial dimensions of urban integration by analysing the accessibility of critical socio-economic, socio-political, and socio-environmental resources across Jamaica's urban landscape. The core objective is to identify disparities in access to these resources, and how the disparities influence residents' ability to exercise their Right to the City. By mapping these disparities, the study seeks to highlight patterns of spatial inequality, urban fragmentation, and social exclusion that shape the existence of Jamaica's urban populations.

The study employs a participatory mixed-methods approach, integrating both quantitative spatial analysis and qualitative insights. The quantitative component involves geospatial mapping of key indicators (such as infrastructure provision, service accessibility, civic engagement, and environmental hazard exposure) to determine how these factors contribute to urban exclusion. Qualitative methods, including stakeholder interviews, geospatial validation by subject matter experts, and policy analysis, provide deeper context on the systemic barriers affecting integration.

The study is grounded in the premise that spatial inequality is both a cause and consequence of social exclusion. If critical urban resources are unequally distributed, informal communities remain locked in cycles of deprivation. By systematically identifying and visualising these gaps, this study aims to:

1. Use data-driven insights to reveal where and how urban inequality manifests in Jamaica.
2. Interrogate the structural, institutional, and historical drivers behind these spatial disparities.
3. Provide actionable recommendations to improve urban policies and resource allocation in ways that promote integration and inclusion.

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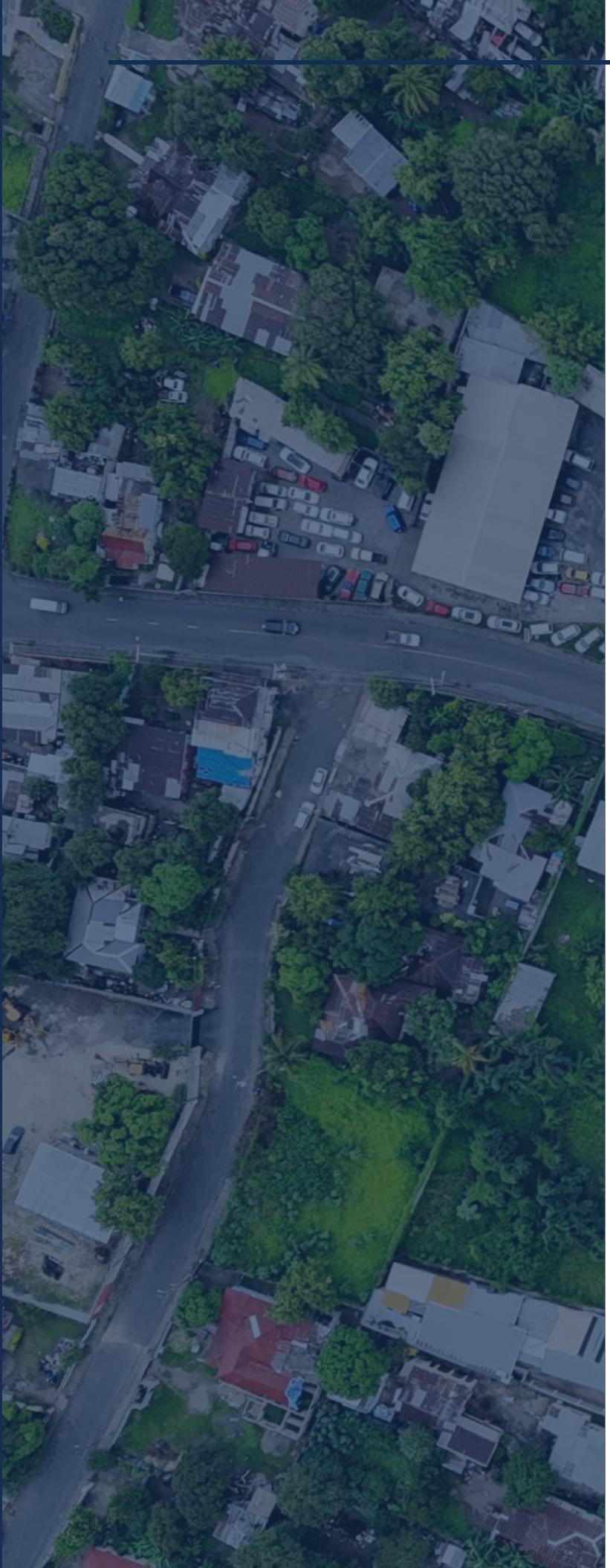
Realising the Right to the City Through Data



Informality

does not stop at housing. It extends to livelihoods, transport, education, waste management, and security

By 2050, over two-thirds of the world's population will live in urban areas, with 90 percent of that growth concentrated in the developing world.[10] Much of this urbanisation is taking place outside of formal planning systems, through the expansion of informal settlements. These communities often lack secure tenure, access to basic services, and inclusion in official planning frameworks, resulting in patterns of exclusion and inequality.[11] These areas remain poorly understood and underrepresented in planning processes, exacerbating spatial inequality and limiting residents' ability to claim the full benefits of urban life.

The Right to the City (RTTC) offers a lens for addressing these challenges. Originally advanced by Henri Lefebvre, the RTTC has been expanded and applied across contexts to reflect a core idea: that all urban residents, regardless of their legal or economic status, have a right to shape the city they live in and to access its services, infrastructure, and opportunities.[12] In the Global South, and in Jamaica in particular, RTTC provides a means of engaging with the urbanisation process not just as a technical challenge, but as a question of equity, inclusion, and justice.

Realising the RTTC requires robust data. Reliable, localised, and disaggregated information is needed to identify patterns of exclusion and to guide policy. Informal settlements are frequently unrecorded on official maps, absent from censuses, and omitted from planning processes.[13] Further, terminologies vary and change—slum, squatter community, informal settlement, shantytown—from one entity to another, and from one time period to another. Moreover, informality does not stop at housing. It extends to livelihoods, transport, education, waste management, and security . These systems may sometimes function outside the state, but are integral to urban life.[14] Yet their informality makes them hard to study and harder still to incorporate into formal planning. Without data on how these systems operate and who they serve, or fail to serve, urban policy cannot respond effectively .

This chapter justifies the development of an Urban Integration Index as a way to measure the extent of integration or exclusion across different communities. This tool allows for more targeted and transparent urban interventions, ensuring that policies and programmes are informed by evidence rather than assumptions.

Measuring Informality and Urban Inequality

Data on informality in many contexts is typically fragmented, unreliable, or may be absent entirely. Informality in cities comprises not only refers to housing but also includes informal economies, social networks, and alternative systems of governance that are present in these areas. Informal settlements often emerge in response to inadequate state services and economic exclusion. Yet, despite their importance in urban life, many informal settlements are excluded from official maps and censuses, complicating efforts to plan and deliver services. This lack of visibility leads to continued neglect and exclusion from investment and governance. The data that does exist is challenging to operationalise. Global-level data from institutions like the World Bank and UN-Habitat provides high-level insight, but lacks the detail needed for community-level planning. Meanwhile, local data collection often faces logistical and resource constraints. As a result, neighbourhood-level realities remain under-documented. Efforts to integrate macro-level data with local knowledge are limited. This disconnection makes it difficult to understand the relationship between national urban trends and the specific vulnerabilities of informal settlements.

Addressing these limitations requires a structured way of gathering and using data. A locally grounded Urban Integration Index can help fill this gap. By measuring dimensions of exclusion—such as access to water, sanitation, safety, mobility, or legal recognition—the index can bring visibility to spatial inequalities and help stakeholders target interventions. Mapping the spatial and temporal evolution of these communities—using tools like Geographic Information Systems (GIS)—can help reveal how they change over time and how they adapt to exclusion.[15] These insights are necessary for effective planning and support. It also provides a mechanism for residents themselves to engage with the data and participate in shaping the responses.

Without data on how these systems operate and who they fail to serve, urban policy cannot respond effectively

The Right to Data

The concept of the Right to Data complements the RTTC by emphasising access to information as a precondition for participation in urban governance. Communities that can access and use data are better equipped to advocate for services, infrastructure, and recognition . Data transparency also allows for greater accountability in policymaking and planning.[16]

Open and accessible data can help marginalised communities document inequalities, build evidence for advocacy, and demand better services.[17] Integrating spatial and socio-economic data makes it possible to identify areas of deprivation and to allocate resources more effectively. Community-based data collection and analysis—supported by civil society and legal protections—can strengthen this process.

Promoting data literacy among residents is key. When people understand and can use data, they are better positioned to participate in decision-making. Partnerships between government, civil society, and community organisations can help maintain open data platforms, ensure accuracy, and support inclusive planning processes.
By linking the Right to Data with the Right to the City, cities can be shaped by the people who live in them—not just those who govern them. Strengthening access to data, and the capacity to use it, helps build more responsive, accountable, and inclusive urban environments.

The RTTC depends not only on abstract rights, but on the ability to exercise them. For that, residents need information about the city they live in, and policymakers need tools to act with precision. A well-designed index can serve both these functions: by identifying exclusion, it helps make it actionable. The creation of an Urban Integration Index is a practical tool for enabling the Right to the City in Jamaica , supporting more equitable urban planning, and helping transform marginalisation into inclusion.

An Index of Urban Integration

Creating an index for urban integration begins by distilling the components of the Right to the City into measurable indicators.[18] These components, essential to urban life, include land tenure security, access to basic services (such as water, sanitation, solid waste management, mobility, electricity, education, and information services), financial inclusion, perceptions of safety, street structure, and exposure to environmental hazards. By quantifying these dimensions, the index provides a structured framework to evaluate the conditions shaping urban living.

Jamaica, like many developing nations, faces a myriad of challenges in urban planning due to the disjointed nature of data collection and management across all sectors. State entities—be they responsible for housing, transportation, utilities, or social services—tend to operate in silos, collecting data in isolation without a comprehensive integration framework. This fragmentation results in data inconsistencies, gaps, and overlaps, forestalling a practical understanding of urban issues.

The Urban Integration Index aims to overcome these challenges by consolidating diverse datasets into a single index (Figure 2). This allows for a comprehensive assessment of urban integration, highlighting areas where residents lack access to essential services, infrastructure, and opportunities, core components of the Right to the City. Secondly, the index serves as a diagnostic tool, identifying specific areas where interventions are most needed. Thirdly, it provides a baseline for monitoring progress over time, enabling the evaluation of policy impacts and subsequent adjustments.

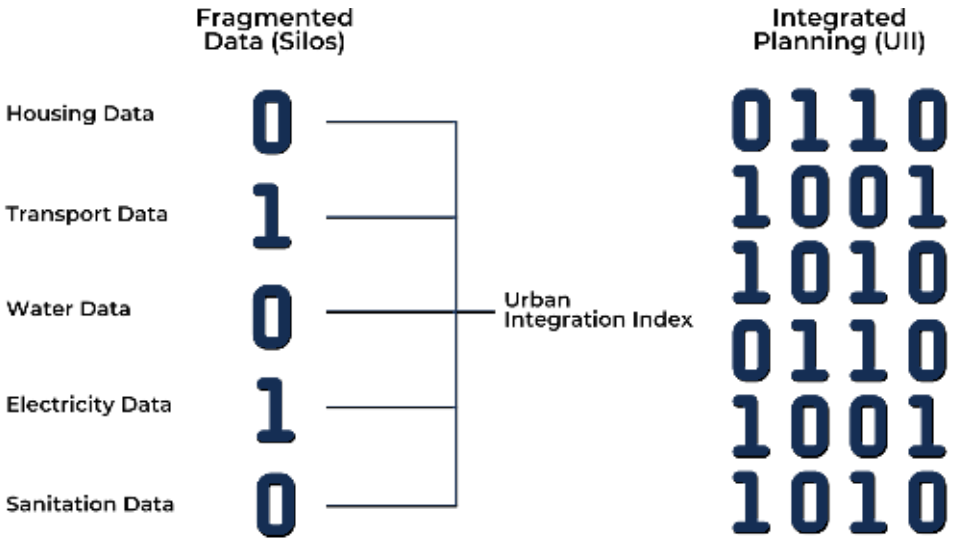
Communities that can access and use data are better equipped to advocate for service

The Urban Integration Index consolidates fragmented sectoral data from housing, transport, water, and other services into a single composite measure. This integration supports more coherent planning and evidence-based interventions.

Furthermore, the creation of the index can help to foster inter-agency collaboration, breaking down traditional silos and promoting a more integrated approach to urban planning. Collaboration of this nature not only enhances data quality and reliability but also ensures that the resulting policies are more comprehensive and inclusive. By providing a clear picture of urban integration, the index aids in prioritising resource allocation, facilitating targeted interventions, and ultimately contributing to more equitable and sustainable urban development.

2 Urban Integration Index Data Consolidation

The Urban Integration Index consolidates fragmented sectoral data from housing, transport, water, and other services into a single composite measure.



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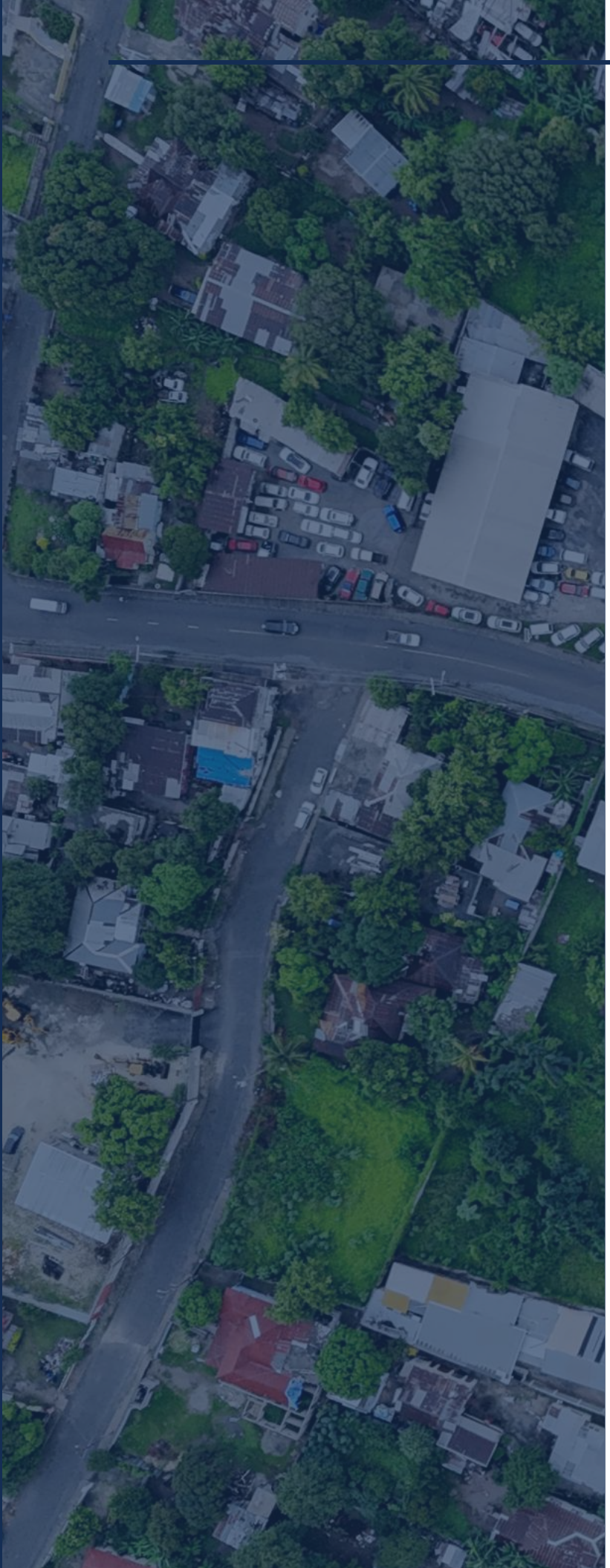
Structural Dimensions of Urban Planning Failure



Urban planning in Jamaica is characterised by **fragmented**, reactive processes

While limited data remains a major constraint on effective urban planning in Jamaica, and developing an accessible, widely used index would be a step forward, deeper structural factors continue to shape the country's urban development outcomes. These broader constraints fall into three interrelated domains: the administrative and governance framework underpinning urban planning; the political economy that drives patterns and systems of urbanisation; and the democratic processes, or lack thereof, that determine who participates and whose interests are represented in shaping the urban environment. This chapter explores how these structural conditions have contributed to the persistent inefficiencies and inequities that characterise Jamaica's urban landscape.

Silos and Fragmentation

Urban planning in Jamaica is characterised by fragmented, reactive processes . A clear example is the redevelopment of downtown Kingston, which has been ongoing in various forms since the 1960s. Now in its sixth decade, the initiative has seen multiple phases led by different public and private entities, yet it continues without a unified, strategic framework. The Jamaica Chamber of Commerce (JCC), for example, itself a key stakeholder, has raised concerns about recent large-scale developments along the Kingston waterfront, noting that these projects appear disconnected from a broader, coordinated vision for the city.[19] This concern reflects deeper structural issues in Jamaica's urban development landscape.

In this instance of the waterfront development but reflective of the broader space, responsibility is dispersed across multiple actors—from municipal authorities like the Kingston and St Andrew Municipal Corporation (KSAMC), to central government agencies such as the Urban Development Corporation (UDC), alongside private sector interests and civil society organisations and actors. With no clear lead authority or shared framework, efforts often operate in isolation . As the JCC has observed, this siloed approach results in key cross-cutting issues being overlooked, undermining the coherence and impact of redevelopment initiatives. As the JCC further pointed out: an incomplete vision could leave Kingston with "little more than a two-block façade adjacent to the waterfront," while nearby areas continue to face long-standing issues such as inadequate waste management, informal vending, and lack of basic services.

The fragmented nature of urban planning has negative consequences. Projects attempting improvements in one part of the city seldom address the deterioration and neglect in neighbouring areas. This patchwork approach reinforces the socio-spatial divides that have long characterised downtown Kingston and other urban centres across the country.

A key contributor to this problem is the siloed nature of policy implementation. Agencies responsible for housing, infrastructure, social services, and land use typically operate with limited coordination. Each plans its own projects, collects its own data, and acts within its own remit, with few mechanisms for collaboration. The result is a disjointed urban landscape where services are unevenly distributed and opportunities for meaningful integration are missed.
This is most visible in the high prevalence of urban informal settlements in Jamaica. These communities often lack reliable access to water, sanitation, and

infrastructure, and remain outside the scope of most formal planning. Without coordinated strategies that reflect the lived realities of these residents, informal settlements continue to exist on the margins: unplanned, under-served, and overlooked.

Comparable experiences elsewhere provide useful insight. In Mumbai, India, fragmented urban governance has resulted in inconsistent services and overlapping mandates, especially in high-density informal areas like Dharavi. There, as in Kingston, uncoordinated interventions have failed to address interconnected challenges, leaving communities exposed to arguably preventable hardship. The parallels suggest that without reform, Jamaican cities will continue to reproduce similar outcomes: long-standing urban exclusion and limited upward social and economic mobility for residents of informal communities.

Addressing this requires stronger coordination and better use of data across government agencies. A shared data framework, such as the urban integration index proposed here, would allow agencies to understand how their mandates intersect and support more coherent planning. Integrating the work of different institutions can help to bring informal communities into the broader urban framework, not only by improving service delivery, but by making these communities visible in the data on which planning decisions are based. An index that captures these dynamics can serve as a practical starting point for that shift.

The Political Economy of Urbanisation

Jamaica's urban development patterns are shaped by a long-standing tension between political patronage and the absence of sustained public investment, particularly in informal settlements and low-income areas . These communities occupy a dual position: they are electorally valuable yet consistently under-served, and as such are economically and socially deprived. While they function as political strongholds, they are rarely incorporated into long-term development plans. This coexistence of political attention and institutional neglect reflects broader features of the country's political economy.

Jamaica's urban development patterns are shaped by a long-standing tension between political patronage and the absence of sustained public investment

A key aspect of this dynamic is competitive clientelism, whereby both major political parties rely on informal settlements as reliable sources of electoral support, or "vote banks." In exchange, residents may receive short-term benefits such as temporary jobs, small infrastructure projects, or connections to basic services. These interventions are not typically embedded within structured or sustainable development strategies. Rather, they reflect transactional politics aimed at securing loyalty without altering the structural conditions that keep these communities and its residents economically and spatially marginal.

This clientelist logic helps explain why there have been few true efforts to formalise informal settlements, despite widespread and longstanding recognition of their vulnerabilities and the political role they play. Further, these areas are where criminal groups are incubated and sustained, and are strongly correlated with violence.[20] Approximately half of all incidents of armed violence in Jamaica occur within 750 metres of the centre point of an informal settlement. The unregulated nature of these areas reduces state control and deters private investment, yet formalisation efforts—including land ti-

tling and infrastructure upgrades—are sporadic, superficial, under-resourced, and insufficient in number.

Such policy inaction aligns with what scholars describe as political forbearance: a deliberate choice by state actors to avoid enforcement or reform in ways that would diminish their political leverage. Bringing informal settlements into the formal regulatory framework could reduce dependence on patronage, increase political autonomy among residents, and shift expectations toward broader policy-based entitlements. This could disrupt the existing balance of political incentives, making reform less attractive to decision-makers.

The disparities this approach produces are evident in the contrasting conditions across urban Jamaica. In high-income neighbourhoods, which are mostly formal and where residents own or legally rent their homes, where property taxes are paid, and utilities are legally sourced, there is functional infrastructure and reliable public services. In informal communities, by contrast, inadequate sanitation, insecure housing, and irregular access to utilities prevail. Those conditions limit residents' prospects for economic advancement and social stability, while leaving them more exposed to criminal influence and ad-hoc political intervention.

Addressing these challenges will require a shift away from patronage-based service delivery and toward policies that prioritise formalisation by way of land tenure regularisation. Policy and financial investments in urban infrastructure, with institutional reforms, would augur well for a transition from dependence on political representatives and to redirect citizen engagement with the state towards transparent, rule-based governance.

The (Performative) Role of Public Consultations

The heart of effective urban planning lies—or ought to lie—in the democratic process, which should facilitate inclusive decision-making that reflects the needs and aspirations of all citizens. The lack of citizen participation in decision making is a concern across all sectors in Jamaica. In the budgetary process, public participation is low, relative to the rest of the world and within the LAC.[21] Similarly, there are gaps that undermine the effectiveness of urban planning, and lead to the formation and continuation of blighted urban communities.

A principal manifestation of this gap is the performative nature of public consultations, (when public consultations actually happen). The ostensible intention of consultations is, whether stated or inferred, to empower communities and integrate their feedback into decision-making. In practice, they serve more as formalities than genuine opportunities for civic engagement. This disconnect reveals a broader, underlying breach in Jamaica's democracy, where decisions are usually made without truly involving the people affected by those decisions.

Public consultations—when they do happen--generally fail to go beyond procedural obligations, leading to outcomes that do not reflect the concerns voiced by community members, and are usually not in their interest. Residents may raise important issues such as housing, public safety, and access to basic services, but these concerns often remain unaddressed. This erodes trust in the system, as people come to view these consultations as mere tokens rather than meaningful opportunities for participation, and consider that their views are not ever going to be heard, nor their interests looked about. Other countries have shown that it is possible to include the public in urban planning in meaningful ways. Through participatory budgeting, residents in Medellín directly influence development priorities, ensuring that public investments align with community needs. This model has built trust, fostered social cohesion, and improved the effec-

tiveness of urban planning.

Addressing these gaps in the democratic process is critical for more effective urban planning in Jamaica. By fostering genuine dialogue and ensuring that community feedback is integrated into decisions, the country can enhance the inclusivity, resilience, and cohesion of its urban communities. This shift would not only strengthen the democratic process but also ensure that urban development reflects the real needs of all residents, particularly those in marginalized and informal settlements. An accessible index of urban integration, and awareness building of its existence and utility among urban residents, could be a tool to improving these processes.

The Potential of Open Data for Integrated Urban Planning

The persistent challenges in urban planning in Jamaica are rooted in three interconnected domains: the administrative and governance framework that underpins urban planning, the political economy that shapes patterns of urbanization, and the democratic processes—or lack thereof—that determine who participates in the shaping of urban environments. These structural constraints have created a fragmented urban landscape where policy implementation is often disconnected from the needs of residents, particularly those in informal settlements.

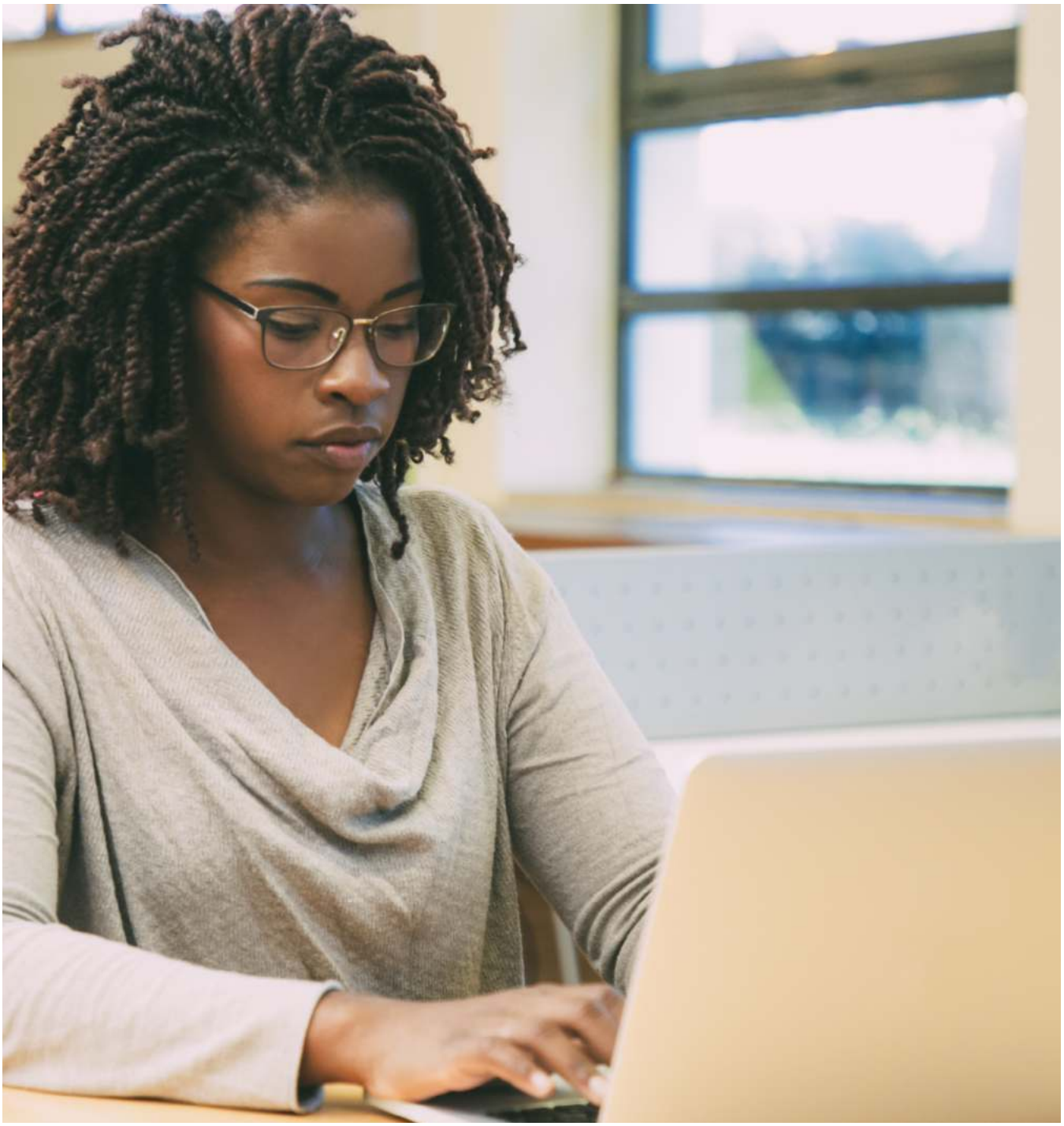
Central to these challenges is the fragmented nature of data collection and sharing among various government agencies and stakeholders. Each agency typically operates independently, with limited data exchange or coordination, resulting in planning efforts that fail to capture the interconnected challenges of urban environments. To address these gaps, open data platforms, such as the OneCity Explorer, offer a solution that can support coordinated, transparent, and inclusive urban planning.

The OneCity Explorer is designed to serve as a centralised, accessible repository of information that various stakeholders can use. Envisioned as a platform that consolidates key urban data, it would enable government agencies, urban planners, researchers, and community organisations to access and share information on housing, infrastructure, public health, and more. Such transparency fosters cross-sector collaboration, enabling comprehensive approaches to urban challenges and facilitating the integration of informal communities into broader urban strategies.

The benefits of open data are not just theoretical; global examples illustrate their practical impact. In Cape Town, South Africa, the city's Integrated Spatial Information System (ISIS) consolidates data on housing, infrastructure, and service delivery to create a comprehensive view of urban needs. This platform supports evidence-based decision-making, ensuring that urban planning is both equitable and effective. The ability to track and analyse service disparities has helped Cape Town direct resources to under-resourced neighbourhoods, reducing spatial inequalities and fostering urban cohesion.

The OneCity Explorer adapts similar models to address Jamaica's unique challenges. By mapping out service disparities such as water access, waste management, and educational facilities, the platform offers planners a clearer picture of where targeted interventions are needed. For instance, visualising data related to sanitation and healthcare access could highlight under-served areas like Riverton City, guiding investments that align with community needs.

A key advantage of an open data platform like the OneCity Explorer is that it democratises information. Community groups and civil society organisations could use this data to hold policymakers accountable, advocate for equitable resource allocation, and participate more effectively in planning processes. This ensures that urban development

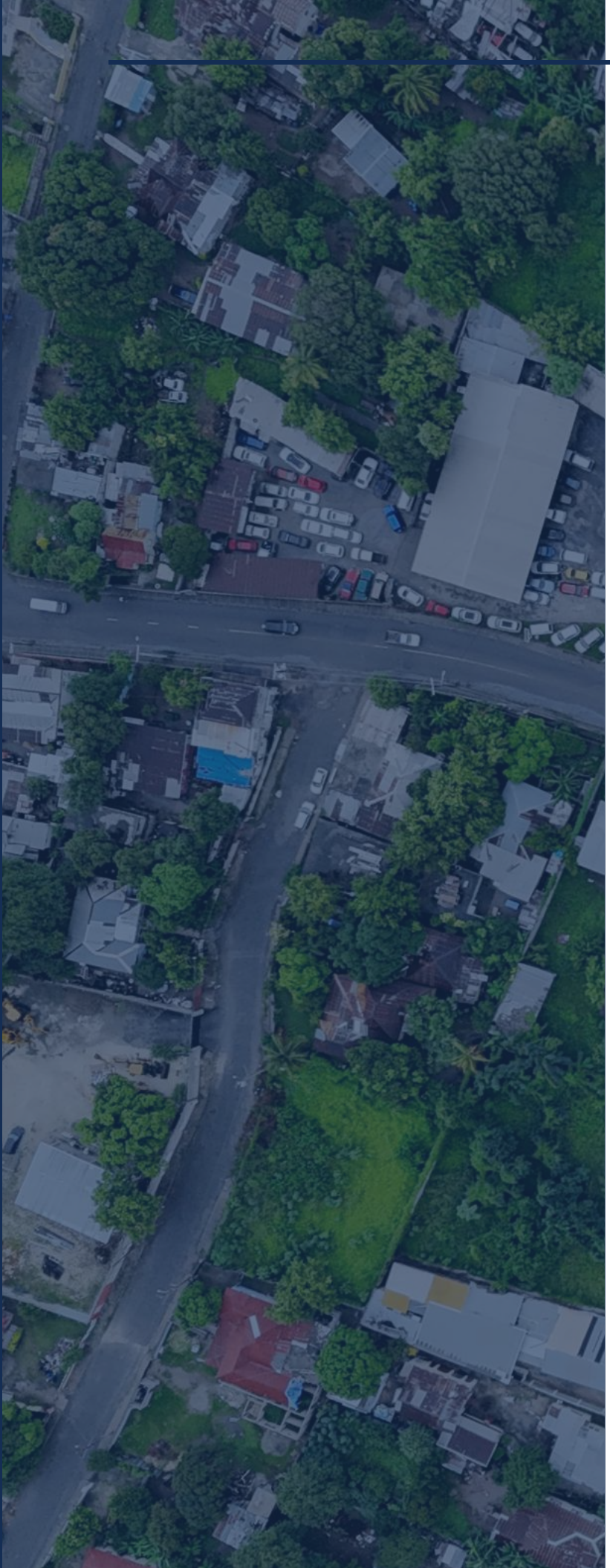


becomes more inclusive, fostering active participation from residents and empowering them to shape their neighbourhoods. Investing in open data infrastructure and promoting transparency aligns with the principles of the Right to the City, fostering an inclusive urban landscape where decision-making reflects the needs and voices of all residents. The OneCity Explorer, as envisioned, could help dismantle the silos that hinder comprehensive urban planning, supporting a more integrated, collaborative, and resilient approach to Jamaica's urban challenges.

The next chapter presents the indicator results in the urban integration index. The index brings together data on various sectors, including housing, infrastructure, public health, and social services, providing a clearer and more comprehensive picture of Jamaica's urban landscape. By capturing disparities and identifying underserved communities, the index offers a powerful tool to inform urban planning decisions that are more inclusive, equitable, and effective.

4

Presentation of Indicator Results



Urban integration is the equitable **access** to services, opportunities, and infrastructure

The OneCity Explorer and the urban integration index are key steps toward breaking down the barriers created by fragmented governance, clientelist political structures, and weak democratic processes. Such an index, operationalised and utilised, could lead to more inclusive, transparent, and effective urban planning, where the needs of all residents—especially those in informal and marginalized communities—are met with policies that are evidence-based, responsive, and reflective of their lived experiences.

The urban landscapes of the Greater Kingston Metropolitan Area (GKMA) and Greater Montego Bay (GMB) are Jamaica's economic, social, and cultural hubs. As the nation's leading urban centres, these regions are not only the primary engines of growth but also microcosms of the broader challenges facing Jamaica. Alongside their vibrant economies and dynamic populations exist deep-seated disparities that reflect and perpetuate the socio-economic divides within the country.

Urban integration—understood as the equitable access to services, opportunities, and infrastructure—serves as a measure of a city's overall health and sustainability. In GKMA and GMB, however, the extent of this integration varies significantly across different communities, as highlighted by a range of key indicators. These include safety, sanitation, land tenure security, access to basic mobility, solid waste services, formal connection to the electricity grid, access to education, basic information services, financial inclusion, and street structure. Together, these indicators provide a comprehensive portrait of the quality of life within these urban regions, revealing where the socio-economic fabric is strong and where it is likely frayed.

This chapter delves into the findings of these urban integration indicators, offering a detailed analysis of the current state of GKMA and GMB. By examining each indicator, we uncover the layers of urban disparities and the interplay between infrastructure, social services, and economic opportunities.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Indicator #1: Land Tenure Security

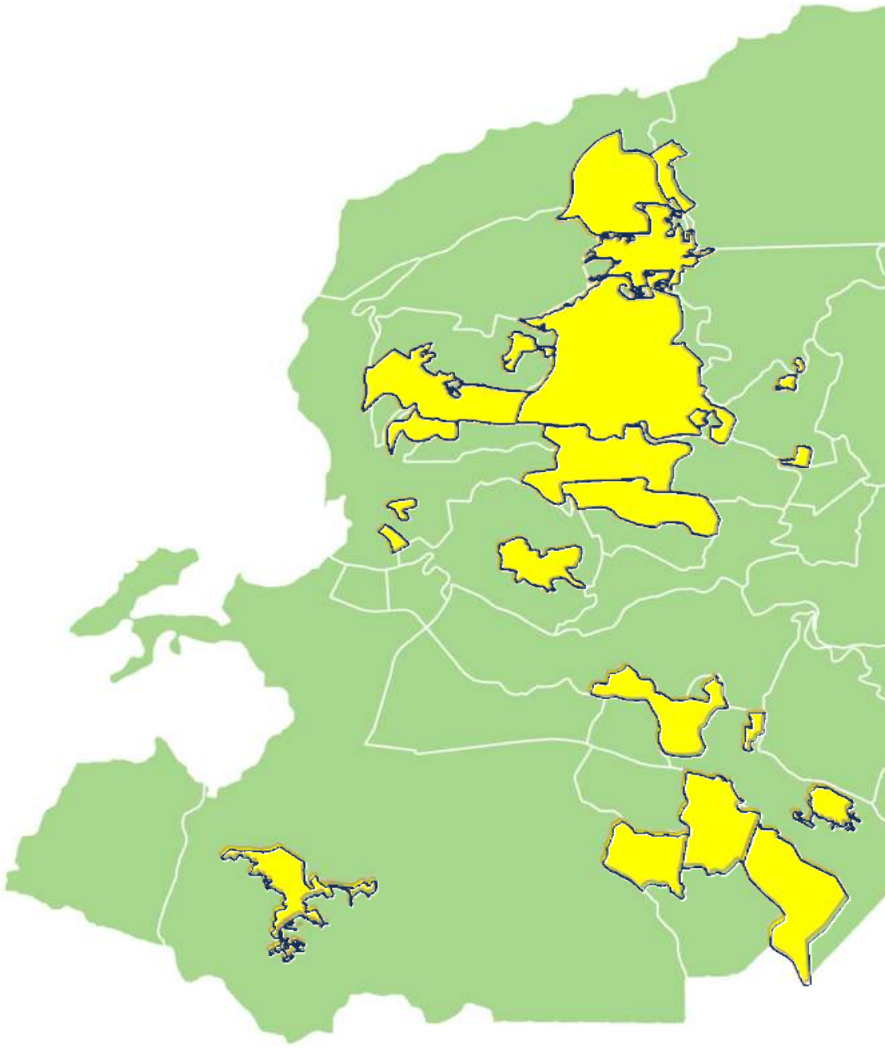
The Land Tenure Indicator assesses the extent of informal settlements and the prevalence of insecure land tenure across urban Jamaica. Secure tenure is central to urban integration, directly shaping residents' sense of stability, their willingness to invest in property, and their engagement in community life. Communities with more informal land tenure received lower scores, while higher scores reflect a greater degree of formality and legal recognition.

Maps show significant tenure insecurity in both the Greater Kingston Metropolitan Area and the Greater Montego Bay Area. In formal, well-established communities such as Mona Heights and Ironshore, most residents hold legal documentation for their homes. These areas tend to have higher property values and better-maintained infrastructure. Legal tenure in such neighbourhoods encouraged long-term investment and a sense of rootedness, with predictable development outcomes, improved service access, and stronger state engagement.

Conversely, communities such as Denham Town in Kingston and Flankers in Montego Bay exhibit widespread informality. In Denham Town, 71 percent of land is informal, making residents vulnerable to eviction and home invasion. Without secure tenure, individuals are less likely to invest in improvements or long-term planning, weakening community cohesion and contributing to chronic instability. Residents such areas often faced limited access to services, which heightened vulnerability, and constrained economic mobility.

These patterns reflect deeper spatial inequalities in Jamaica's urban landscape. As emphasized by economist Hernando de Soto, such inequalities may be addressed by the regularization of formal property rights, enabling economic participation. In Peru, where De Soto's ideas were first piloted, the national titling programme issued

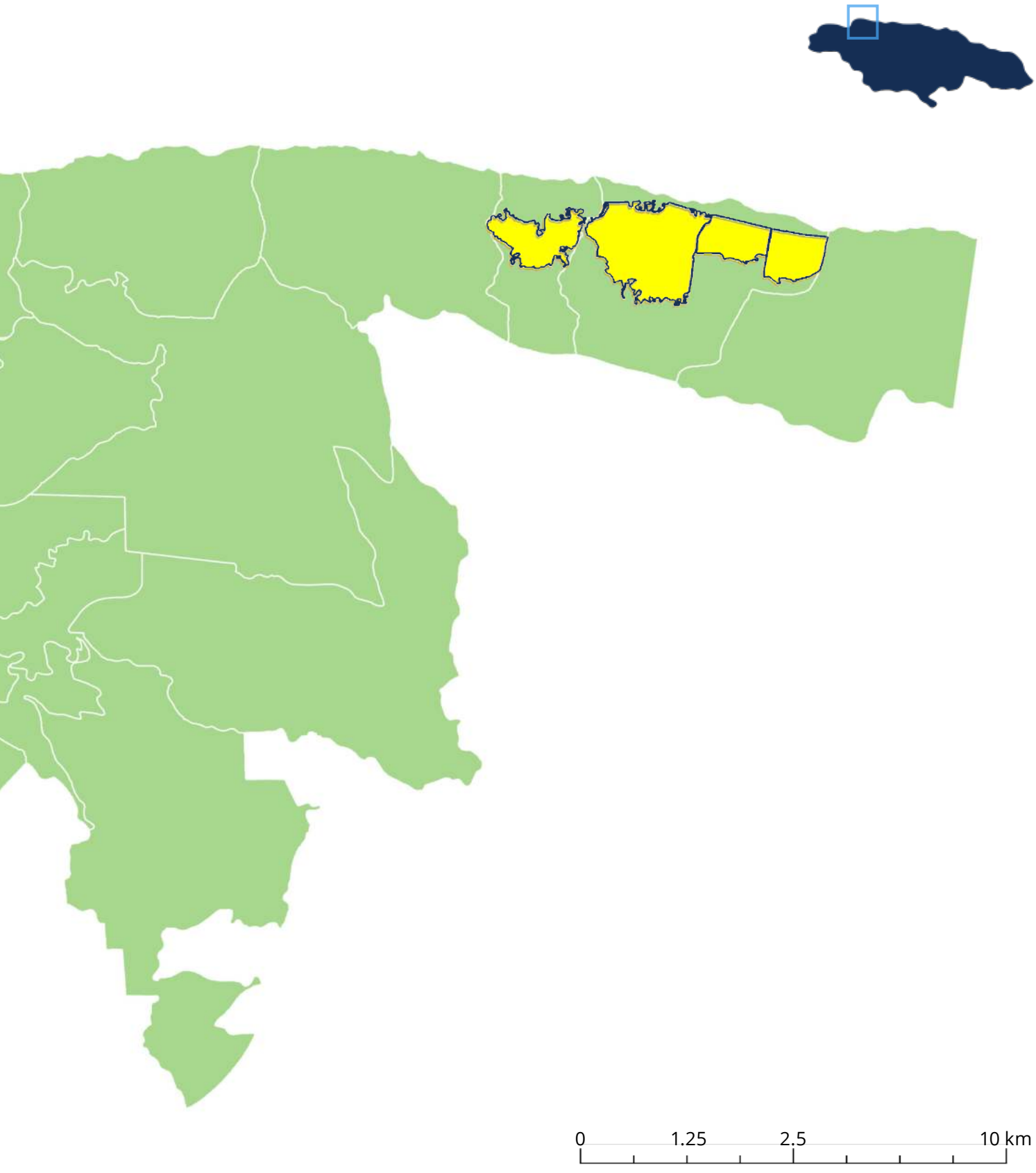
3 **Areas of Greater Montego Bay (GMB) with Irregular Tenure**



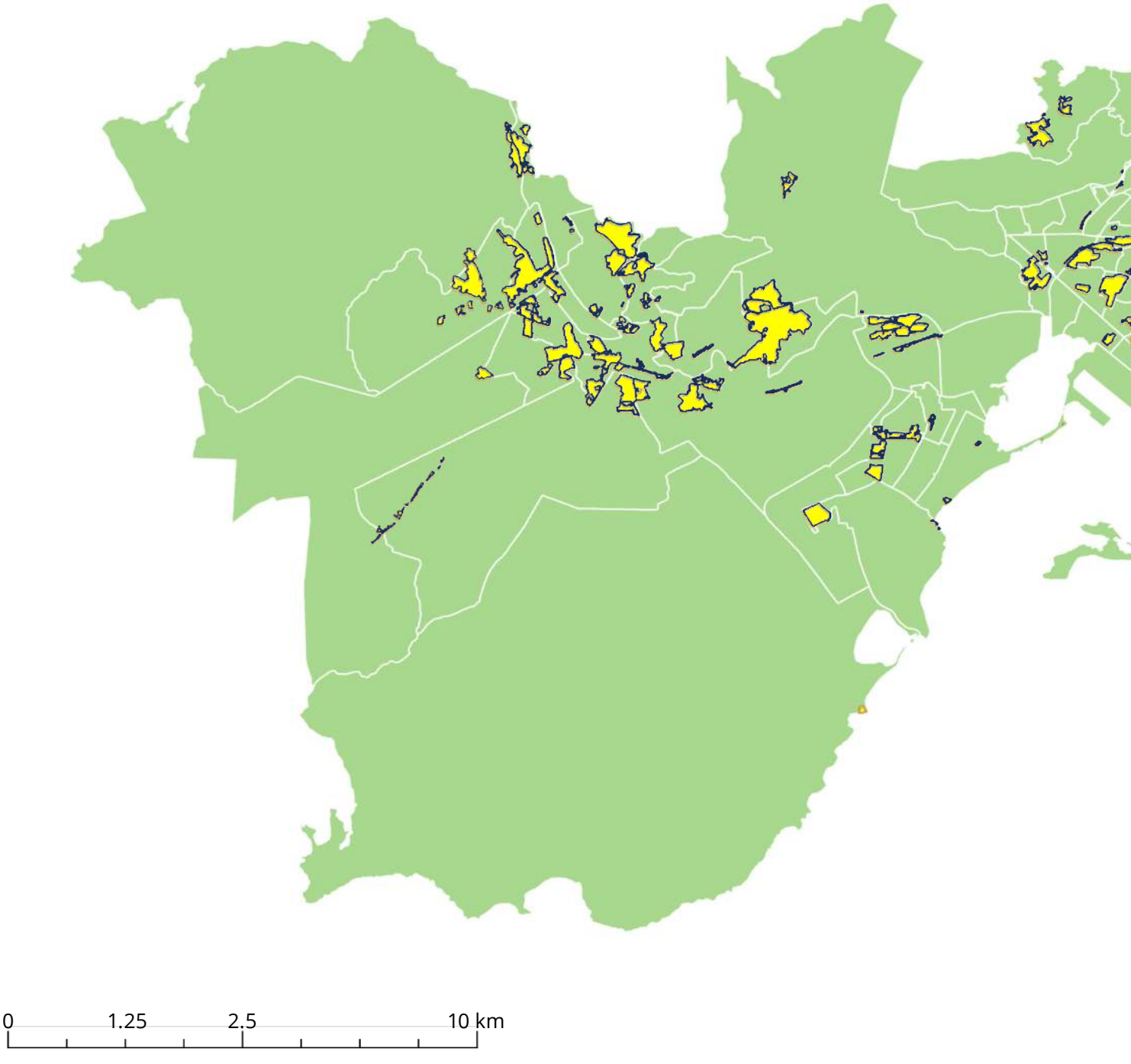
Irregular Tenure Areas

OneCity Communities

Informal Community Border


0
1.25
2.5
10 km

4 Areas of Greater Kingston Metropolitan Area (GKMA) with Irregular Tenure



over 1.4 million titles, raising property values, increasing investment, and improving gender equity in landholding.

In Jamaica, efforts such as Operation PRIDE and the Zones of Special Operations have attempted to address tenure insecurity, though progress has been uneven. The Systematic Land Registration programme offers a more comprehensive framework, but implementation has been slow. Many informal urban communities remain excluded from regularization efforts.

CAPRI's upcoming Land Regularization Report and Study Three of the OneCity Initiative will critically examine these issues. By evaluating existing frameworks and their effectiveness, the aim is to support more accountable, inclusive, and rights-based approaches to land tenure security.

Irregular Tenure Areas

OneCity Communities

Informal Community Border

Indicator #2: Access to Water and Sanitation

Jamaica's reputation as the "land of wood and water" masks stark inequalities in water access across urban communities. Although national statistics suggest that 93 percent of the population has access to drinking water, this figure obscures deep disparities in reliability, quality, and infrastructure coverage, especially in informal or underserved areas.[22]

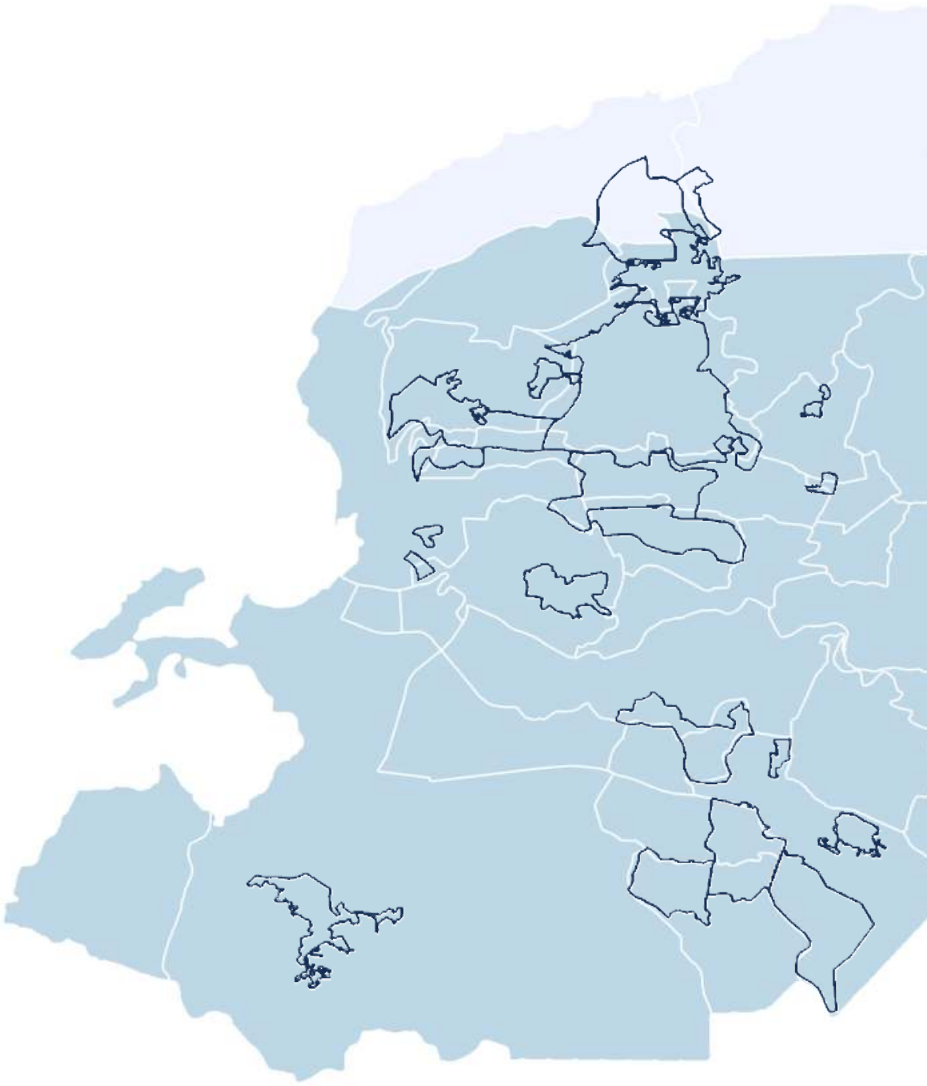
Much of Jamaica's water infrastructure was built during the colonial era to serve urban centres and plantation economies. Following independence, expansion continued but was constrained by limited fiscal resources, fragmented governance, and uneven development. The Water Resources Act of 1995 established the Water Resources Authority (WRA) to coordinate national water management. Despite this, chronic underinvestment and a lack of integration with land use and settlement planning have continued to undermine delivery.[23]

In the Kingston Metropolitan Area, over 104 million cubic meters of groundwater remain unusable due to contamination.[24] Non-revenue water, caused by leakage, theft, and unmetered usage, exceeds 60 percent, one of the highest rates in the Caribbean.[25] These inefficiencies severely restrict the National Water Commission's (NWC) ability to finance expansion, modernize infrastructure, or respond swiftly to localized breakdowns.

High-income communities such as Norbrook, Cherry Gardens, and Ironshore score well on the index due to reliable service and infrastructure. In contrast, Canterbury, Flankers, and Seaview Gardens score poorly, despite being located near better-served areas. Within the Greater Kingston Metropolitan Area, water scarcity is most acute in southern St. Andrew and downtown Kingston, where dense populations, industrial demand, and reduced rainfall converge.

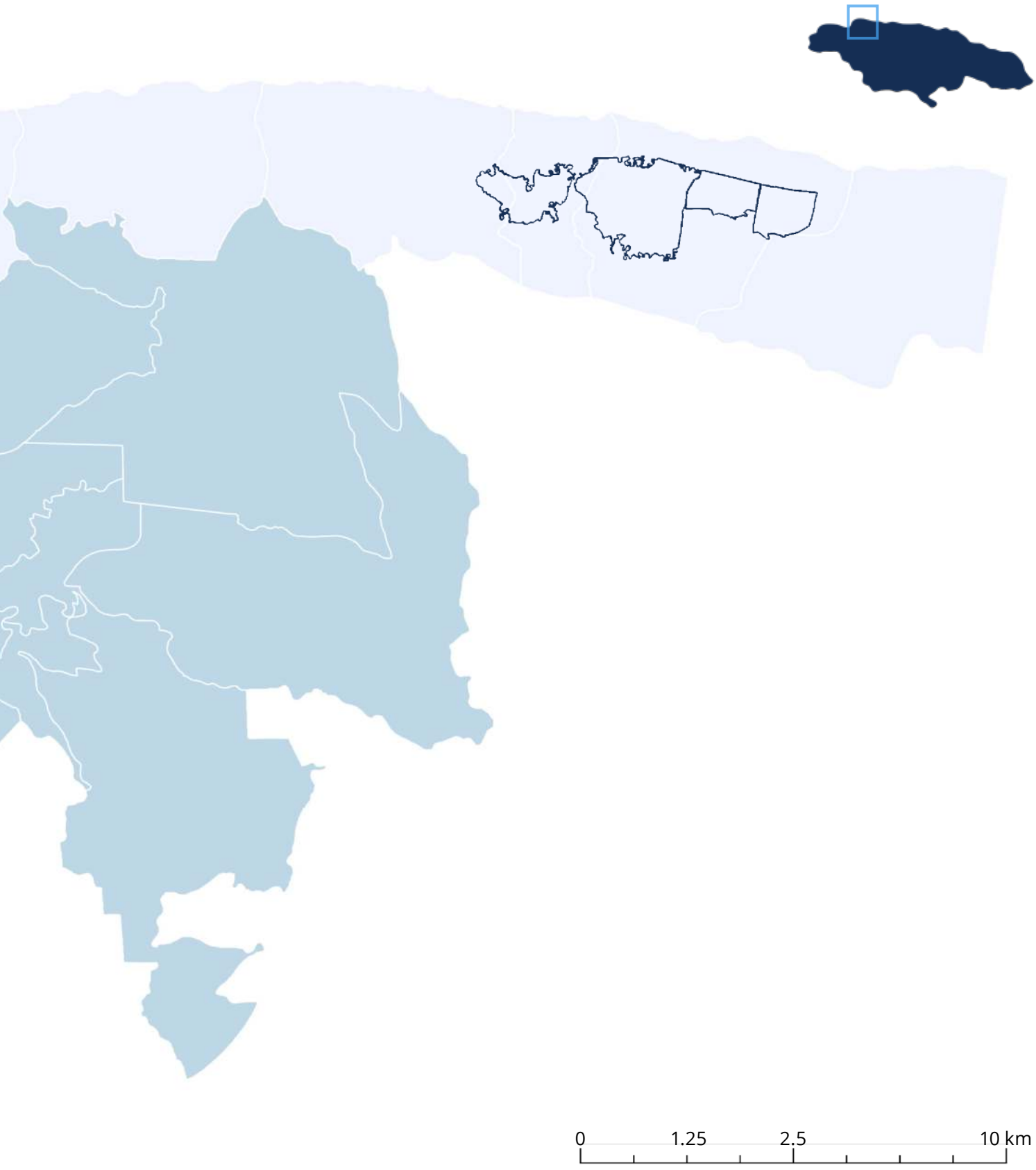
5 **Water Scarcity in the GMB**

There is no disaprity in access to water between formal and informal areas In Montego Bay



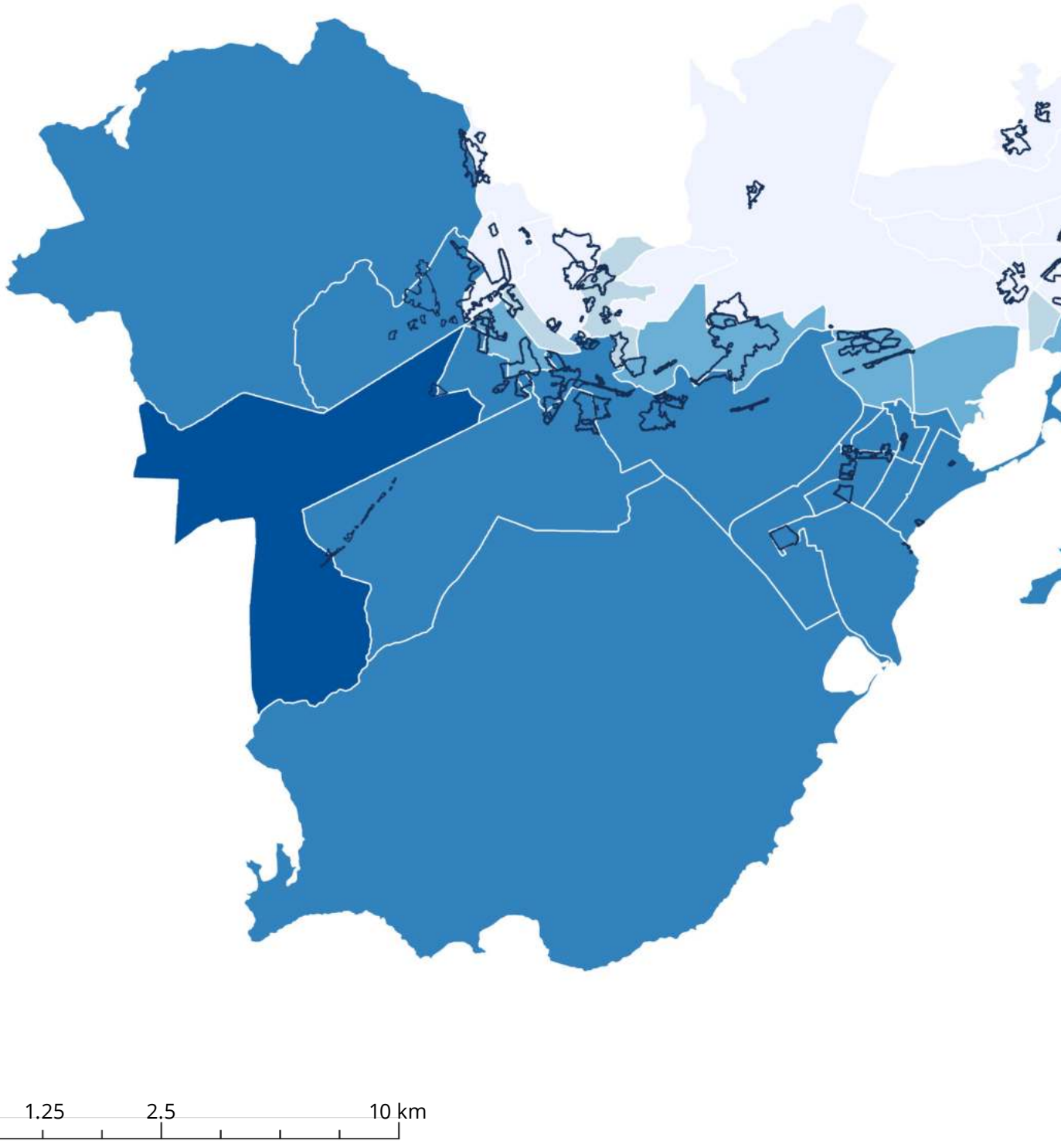
Levels of Water Access

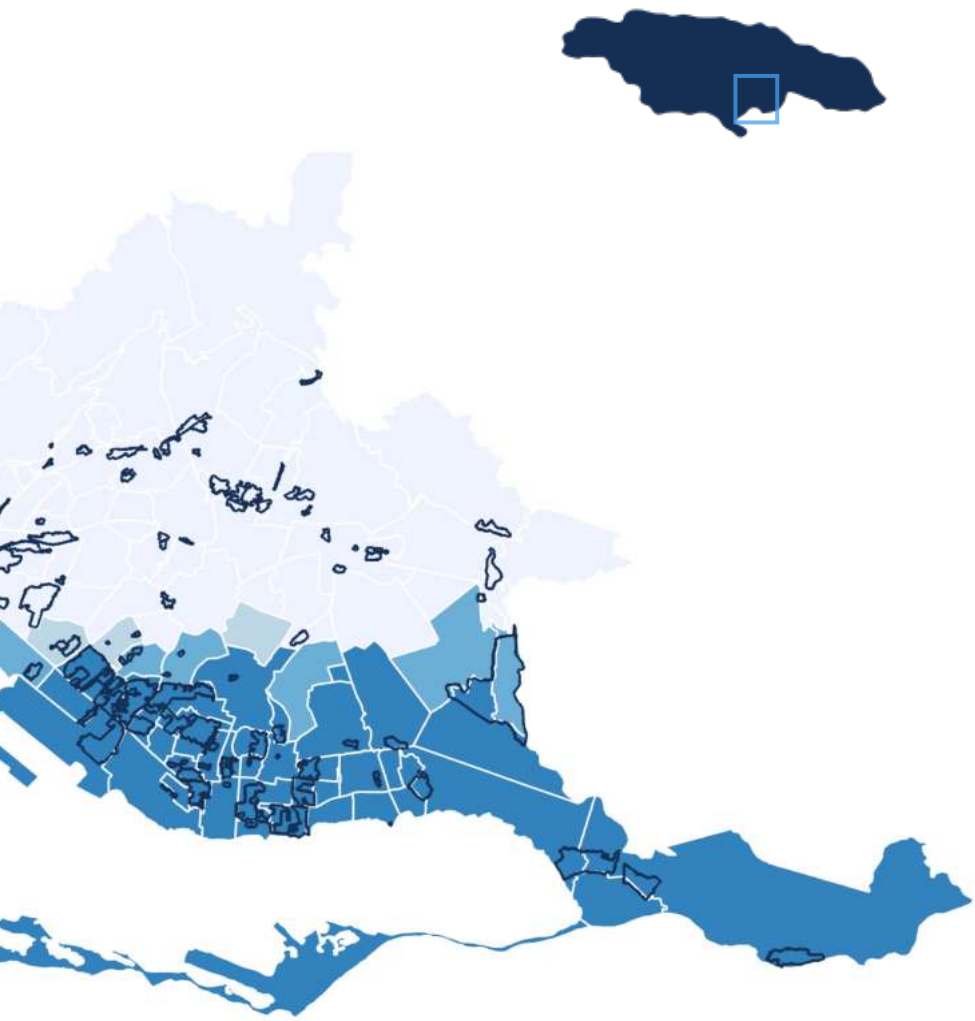
- Very High (>0.39 - 1.00)
- High (>0.08 - 0.39)
- Moderate (>0.02 - 0.08)
- Low (>0.01 - 0.02)
- Very Low (0 - 0.01)
- Informal Community Border


0
1.25
2.5
10 km

6 Water Scarcity Index in the GKMA

There is no clear relationship between informality and access to water In Kingston





Climate change has intensified these disparities. Prolonged drought, erratic rainfall, and rising temperatures have increased dependence on trucking, storage tanks, and informal connections. These options often carry health risks and deepen vulnerability for already underserved communities (see Indicator #13).

Government responses include the K-Factor Capital Investment Fund, which supports major infrastructure works, and the 2019 National Water Sector Policy. However, implementation remains inconsistent and poorly aligned with spatial equity goals.[26]

Global examples offer important lessons. In Peru, COFOPRI combined land titling with water infrastructure upgrades. South Africa's Free Basic Water policy guarantees minimum daily supply. Colombia's community-run aqueducts provide a model for decentralized service delivery in peri-urban areas.[27] Jamaica has many of the institutional foundations needed to pursue similar approaches. Prominent among them is the Systematic Land Registration (SLR) programme. Real progress will require pairing investment with spatial justice and inclusive planning to reach those most in need.

Indicator #3: Access to Solid Waste Services

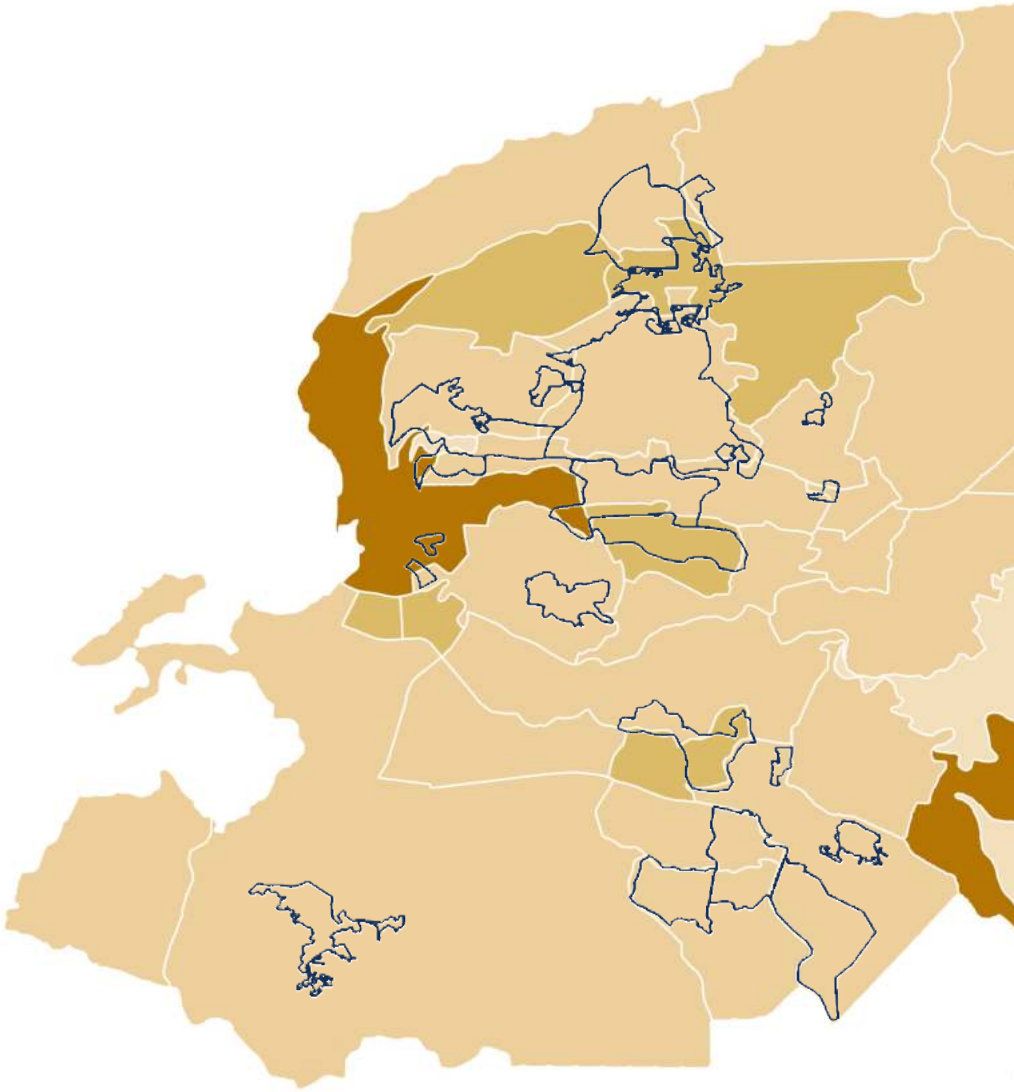
Garbage is a visible marker of inequality. In Jamaica, who gets their trash collected and how often is not simply a logistical question. It reflects long-standing infrastructural, institutional, and spatial disparities. Although the National Solid Waste Management Authority (NSWMA) is mandated to provide island wide service, residents of low-income and informal urban communities often experience infrequent or nonexistent collection.[28]

The NSWMA has long operated under constraints. These include an aging fleet, insufficient staff, and limited resources. In 2022, only 43 of 77 trucks were operational, reducing collection targets and increasing reliance on once-a-week pickups.32 To cope with the shortfall, the Authority reduced its collection schedule from twice weekly to once per week and lowered its national collection target to 70 percent. Despite attempts to contract private haulers to fill service gaps, public complaints have increased, and illegal garbage burning and open dumping appear to have worsened in affected communities.[29] This shortfall is especially pronounced in densely populated areas of Kingston, Montego Bay, and Spanish Town, where waste often accumulates in drains, open lots, or along sidewalks, heightening public health risks.[30]

To assess these disparities, the Access to Solid Waste Services Index was developed using community-level reports from NSWMA service data. Higher scores reflect consistent, scheduled collection and cleaner built environments. Lower scores indicate irregular pickup and structural problems with collection. Formal, higher-income neighbourhoods such as Norbrook, Rose Hall, and Ironshore scored near the top of the index, benefitting from predictable routes, cleaner surroundings, and active community monitoring. At the opposite end, communities like Canterbury, Franklyn Town, and Naggo Head scored lowest. In these

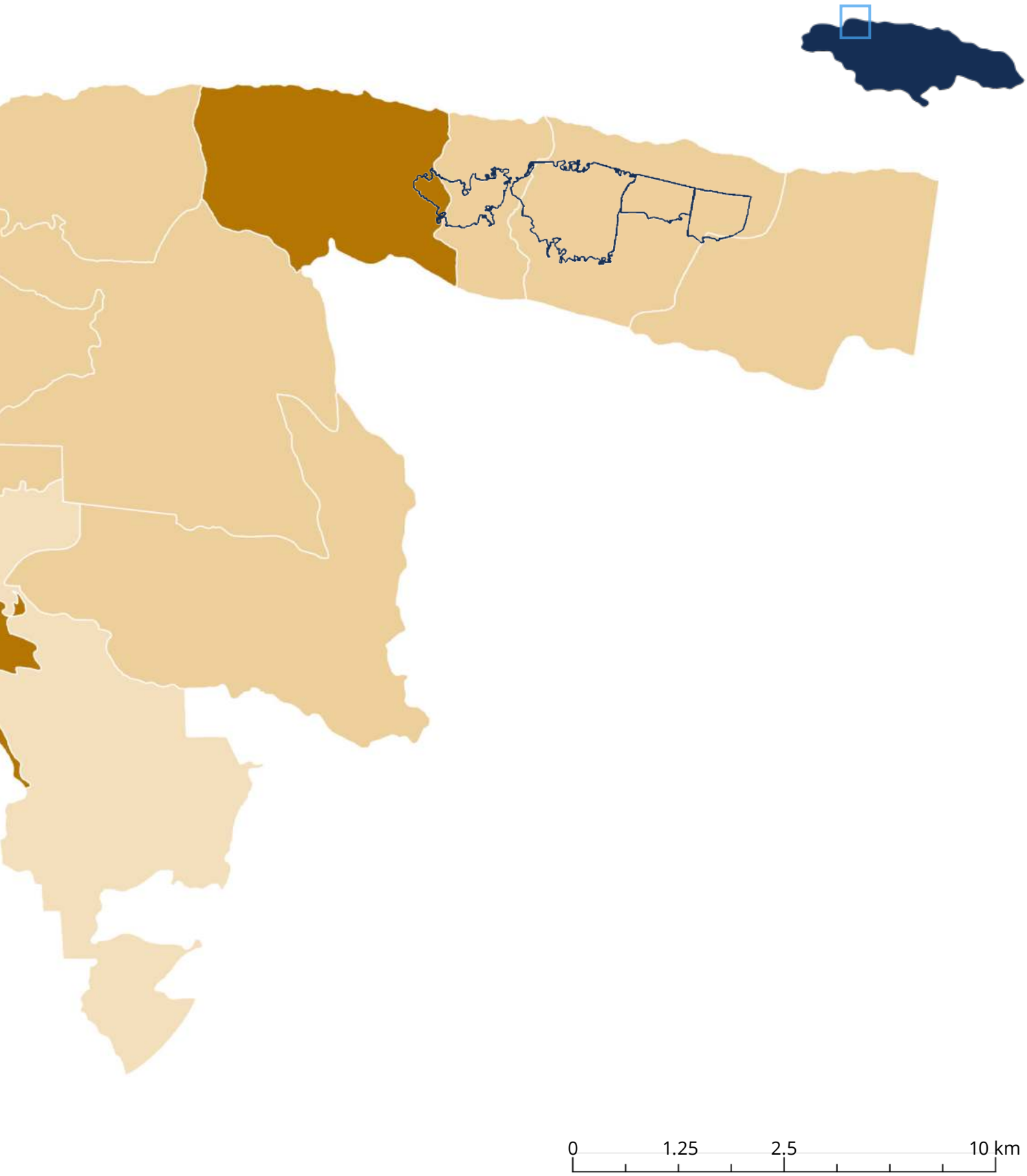
7 **Sanitation Level for the GMB**

Informal communities have poorer access to sanitation services in Montego Bay



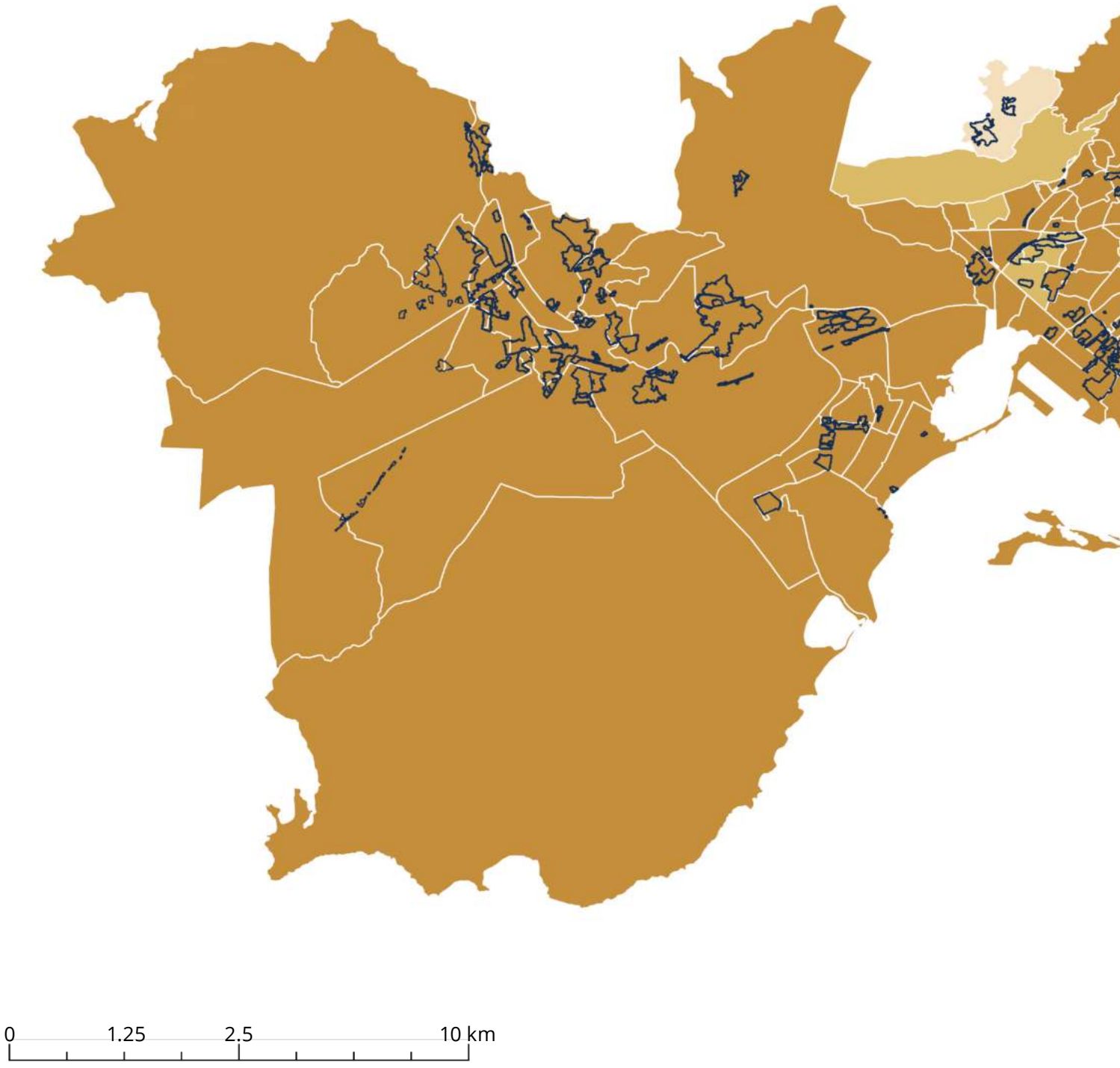
Levels of Sanitation

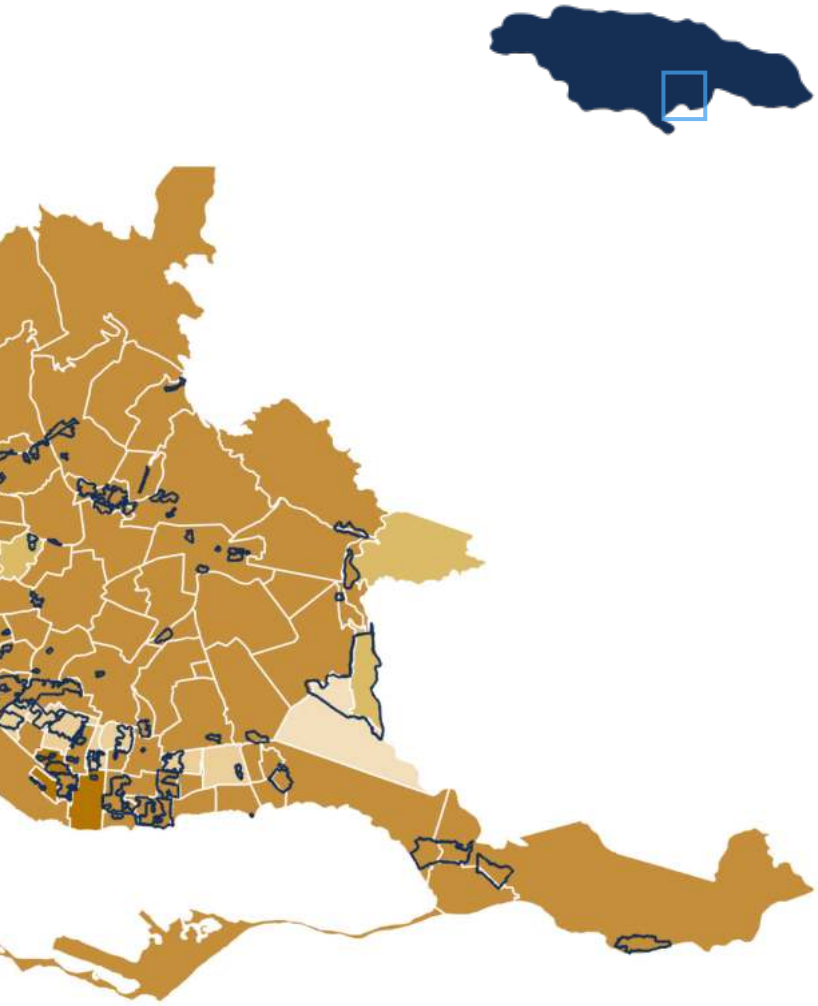
- Very High (>0.83 - 1.00)
- High (>0.75 - 0.83)
- Moderate (>0.58 - 0.75)
- Low (>0.02 - 0.58)
- Very Low (0 - 0.02)
- Informal Community Border


0
1.25
2.5
10 km

8 Sanitation Level for the GKMA

There is no clear relationship between informality and sanitation in Kingston





areas, waste often goes uncollected for weeks, leading to widespread burning, burial, or disposal near gullies.[35] These practices are not only environmental hazards, they also pose serious respiratory and vector-borne health risks, especially during the rainy season.

One major structural constraint is the centralized model of waste governance. While the NSWMA has regional offices, most operational decisions, including route planning and resource allocation, are made at the national level. This limits its responsiveness to local conditions. High-density informal settlements, which generate large volumes of waste and have narrow, unpaved roads, often receive the same collection frequency as lower-density, wealthier communities.[32]

Decentralizing elements of Jamaica's solid waste management could improve responsiveness and equity. Providing local authorities and communities with decision-making power and logistical support would allow them to tailor services to real-time conditions. Spatially targeted investment can also help to target resources more uniformly, prioritizing underserved communities based on need and service gaps. Smaller, more manoeuvrable trucks are often better suited to informal settlements. Additionally, route optimization technologies can be used to match service frequency with waste generation levels.

Lessons from international practice suggest what is possible. In Dandora, Nairobi, informal settlement residents established waste cooperatives using carts and motorcycles. With modest government support such as training and micro-grants, these efforts were absorbed into the formal system. In just two years, Dandora saw a 40 percent increase in collection coverage and a marked reduction in illegal dumping.[31]

Indicator #4: Access to Basic Mobility

Access to basic mobility refers to the ability of urban residents to move safely and efficiently within their communities and across the wider city. In this study, it is measured using three core elements: road connectivity, intersection density, and proximity to public transport infrastructure such as bus stops and transit hubs. Together, these elements form what can be defined as preambulatory infrastructure—the foundational elements that determine whether residents can move freely and access opportunities without undue risk, time, or cost. This infrastructure shapes daily life: where it is strong and inclusive, mobility promotes economic participation and social connection. Where it is weak or absent, movement becomes difficult, dangerous, or unaffordable.

Findings from the Urban Integration Index show wide disparities in basic mobility across Jamaica's urban areas. The national average score for this indicator is 0.259, indicating generally low levels of connectivity. Communities such as Fletchers Land (0.70), Central Downtown Kingston (0.66), and Nannyville (0.62) perform well, with high road density and access to transport corridors.[33] By contrast, areas like Flower Hill (0.001), Orange (0.003), and Kintyre (0.003) are disconnected, lacking paved roads, walkable paths, and transit linkages.[32]

These disparities have both practical and human consequences. In low-mobility areas, residents face increased exposure to unsafe conditions. The absence of sidewalks, crossings, lighting, and drainage creates daily hazards, especially for children, older adults, persons with disabilities, and women. In many communities, fear of harassment or violence limits how and when women travel.34 Inadequate transport also restricts access to employment, healthcare, and schooling, reinforcing cycles of exclusion.

Kingston benefits from the Jamaica Urban Transit Company (JUTC), which provides scheduled public bus service. Yet even within Kingston, informal communities face poor walkability and indirect access to major routes.[33] In Montego Bay, where the JUTC does not operate, residents rely on fragmented systems of taxis, minibuses, and charters that are often irregular and expensive.[34] For low-income households, transportation becomes either a financial burden or a barrier to opportunity.

Despite its foundational importance, investment in preambulatory infrastructure has lagged behind other urban priorities. National efforts have focused heavily on highway expansion and major road corridors, while the local road conditions within many urban communities remain poor. Informal settlements are rarely included in transport master plans or road maintenance schedules, resulting in roads being unpaved or washed out and intersections poorly marked, and with sidewalks often non-existent in these areas. Residents there are left to navigate a daily geography of hazard and disconnection.[35]

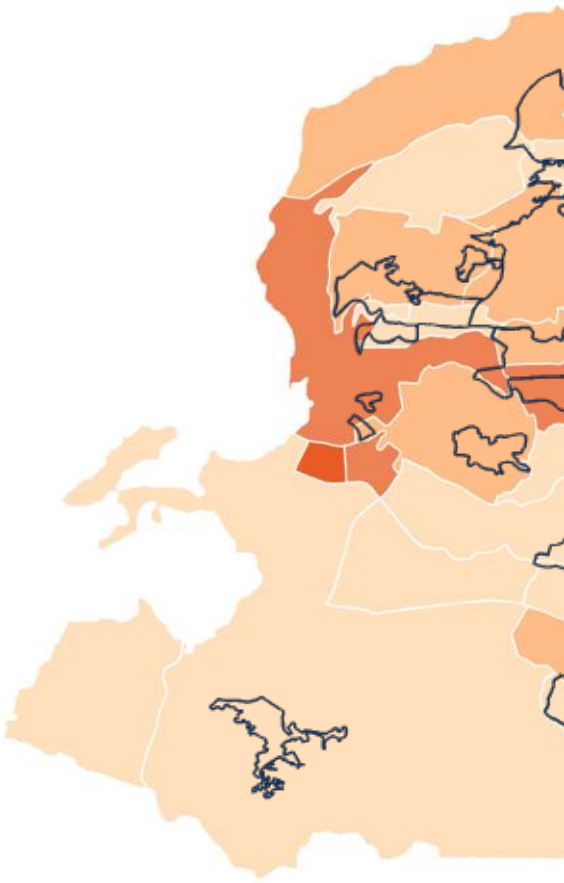
Improving basic mobility will require rethinking infrastructure priorities. Investments should focus on community street networks, sidewalks, drainage, and expanded transit coverage. The Urban Integration Index can guide this by identifying the areas most in need.

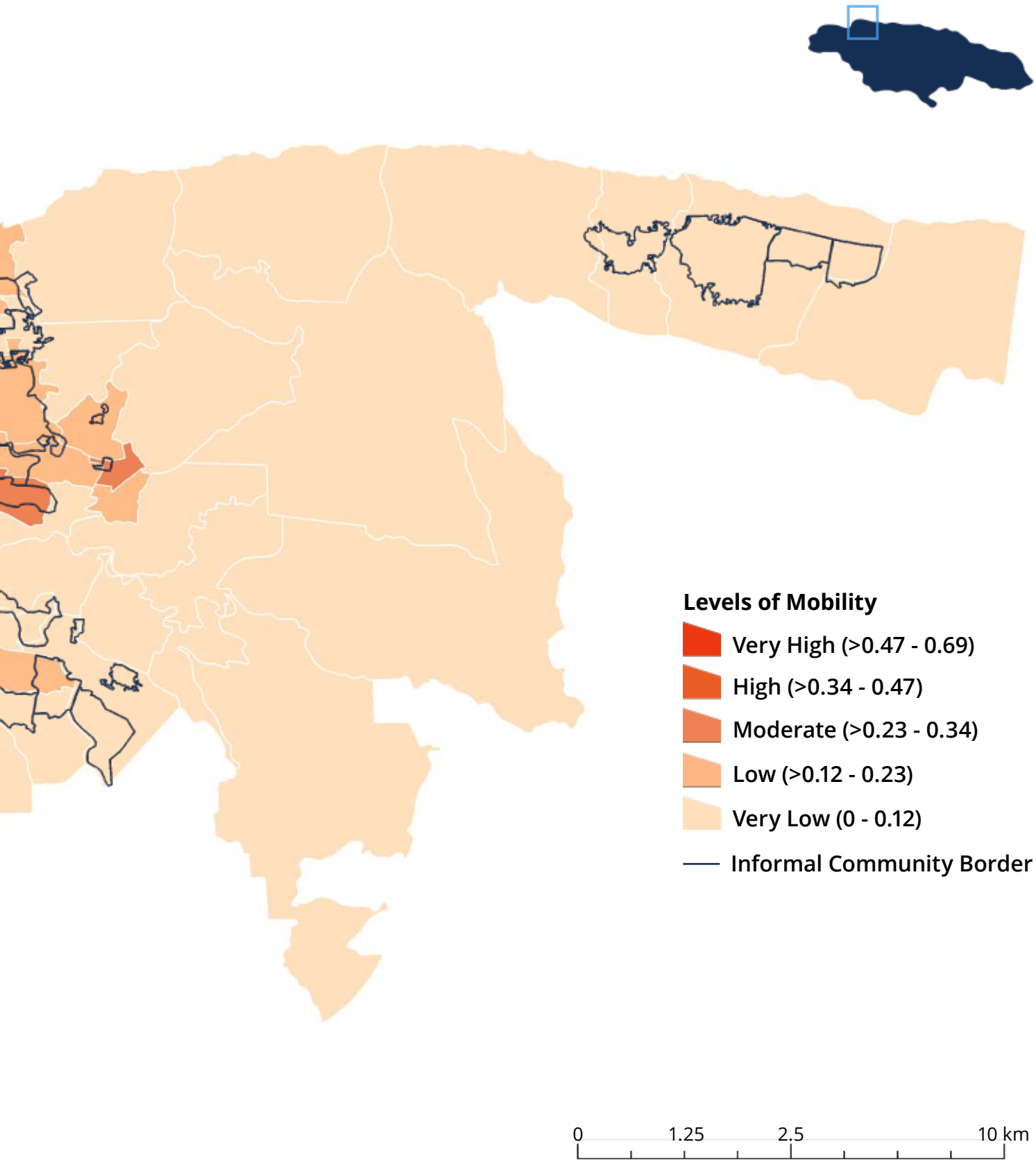
Global examples show what is possible. In Cape Town, South Africa, targeted investments in non-motorized transport infrastructure—including pedestrian bridges, sidewalks, and bike lanes—helped to connect informal settlements to economic and social opportunities. Even modest investments in mobility, when strategically planned, can deliver large equity gains.

In Jamaica, efforts to build a more inclusive urban future must begin with the basics. Safe and navigable streets are a precondition for everything else: edu-

9 **Areas of GMB with Basic Mobility**

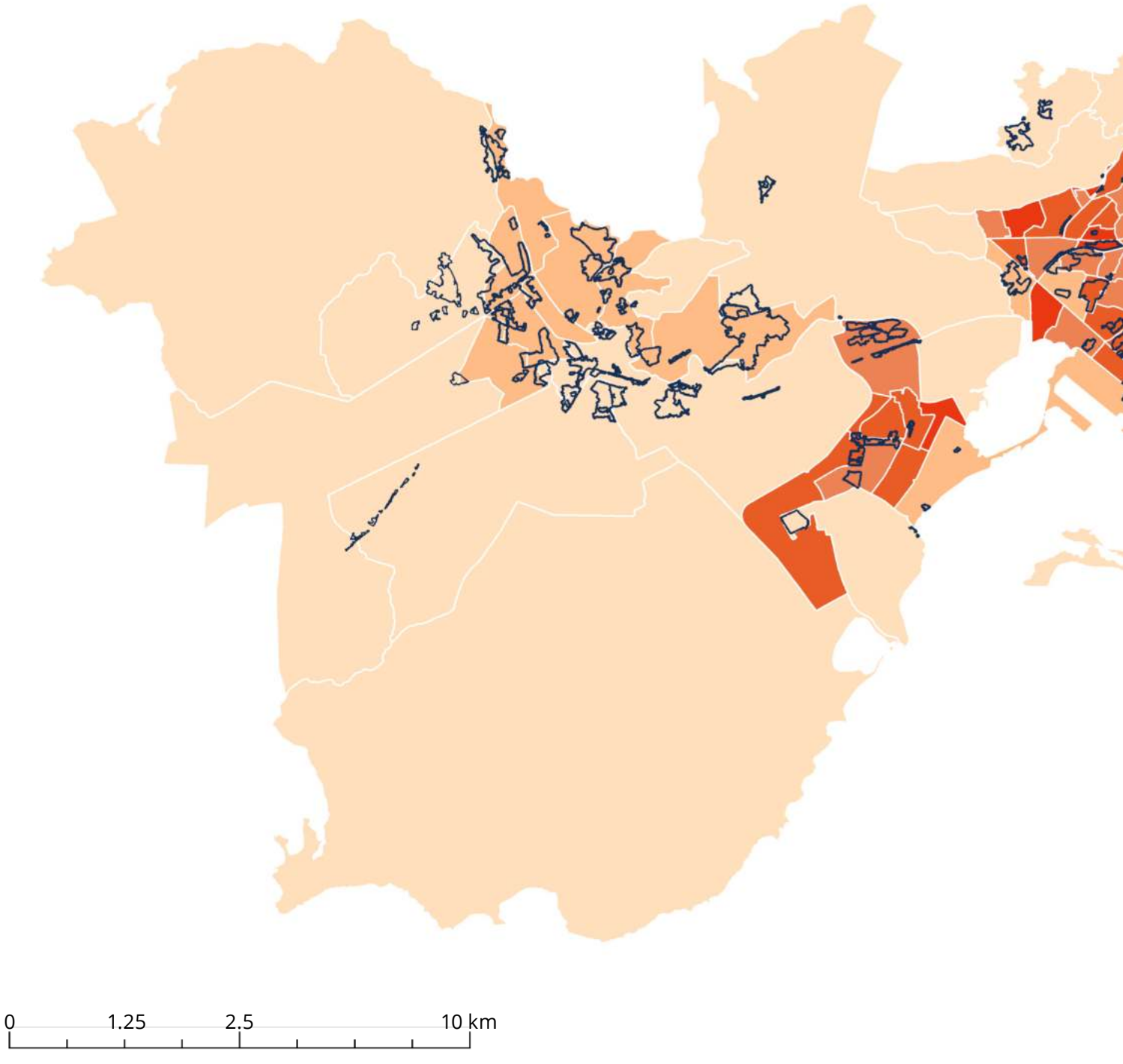
There is no clear relationship between informality and basic mobility in Montego Bay



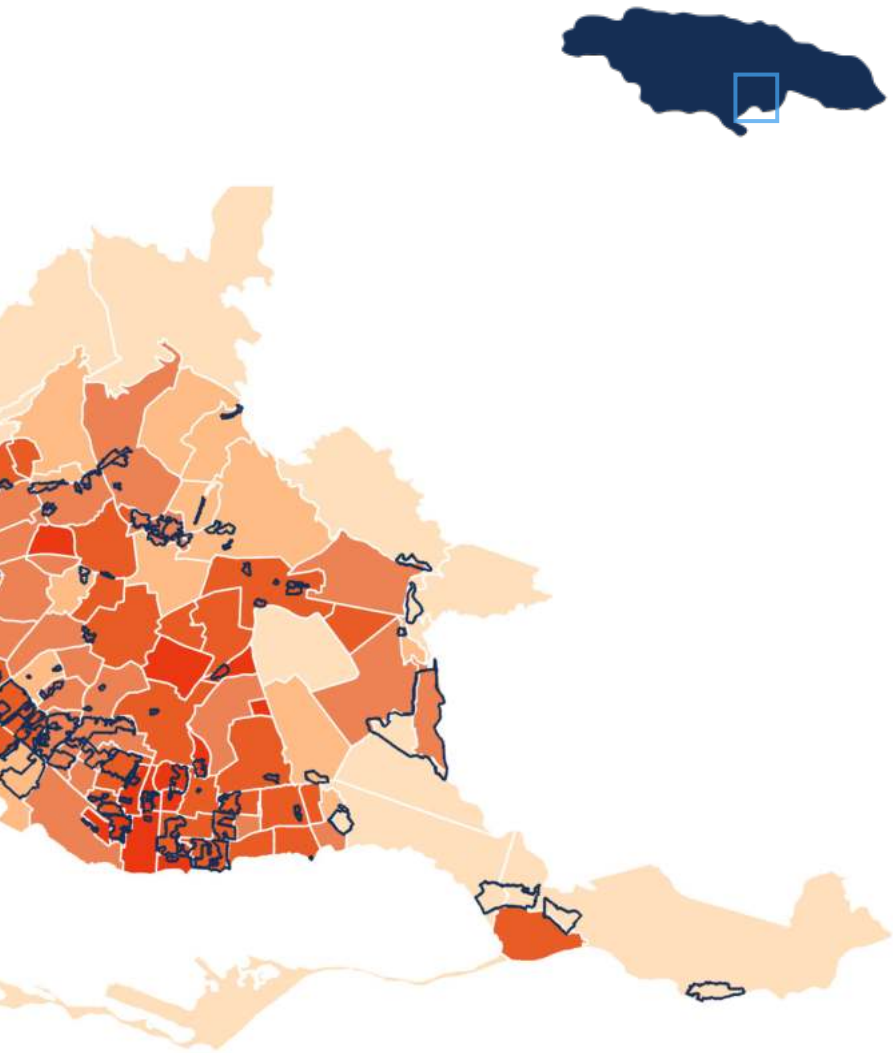

Levels of Mobility
Very High (>0.47 - 0.69)
High (>0.34 - 0.47)
Moderate (>0.23 - 0.34)
Low (>0.12 - 0.23)
Very Low (0 - 0.12)
Informal Community Border
0
1.25
2.5
10 km

10 Areas of GKMA with Basic Mobility

Informal communities in Kingston generally have higher levels of basic mobility



cation, health, livelihood, and community life. Without a functioning mobility backbone, urban development risks worsening rather than overcoming inequality. Where people cannot move freely, they cannot fully participate in the life of the city.



Levels of Mobility

- Very High (>0.47 - 0.69)
- High (>0.34 - 0.47)
- Moderate (>0.23 - 0.34)
- Low (>0.12 - 0.23)
- Very Low (0 - 0.12)
- Informal Community Border

Indicator #5: Formal Access to Electricity

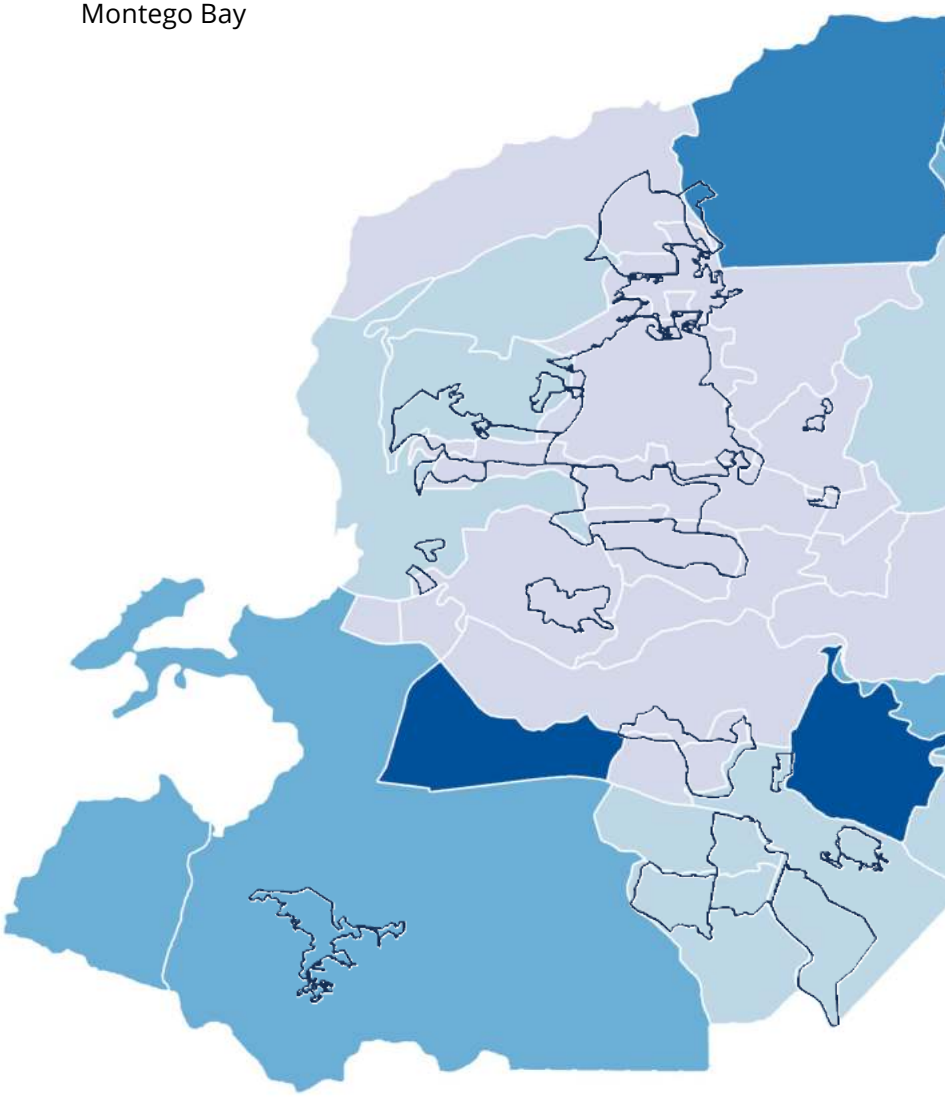
Electricity access in Jamaica is officially estimated to exceed 90 percent of the population.[36] While this suggests broad national coverage, it obscures persistent disparities in access and reliability across urban communities. In 2022, the Jamaica Public Service Company (JPS) identified nearly 200 "non-regularized" or "no-access" communities.[37] These are areas where households are close to the electricity grid but cannot obtain legal service due to regulatory, spatial, or legal constraints. In such places, informal connections are common, with households sharing power through improvised wiring. These setups are unsafe and contribute to electricity theft, which JPS estimates accounts for up to 17 percent of national distribution.[38]

To address this, JPS introduced initiatives such as the Community Renewal Programme (CRP) and the Residential Advanced Metering Infrastructure (RAMI) project.[39] These programmes aimed to regularize supply by offering subsidized meters, prepaid options, and technical assistance. However, uptake has been uneven. Many communities revert to illegal use due to challenges like lack of documentation, affordability concerns, distrust of utility providers, and inconsistent state follow-through.[40]

This study defines formal access to electricity as proximity to low-voltage distribution and medium-voltage transmission lines, which represent the spatial preconditions for legal and safe grid connectivity.[41] Using this definition, the Urban Integration Index highlights significant inequality. The national average score is 0.475. Communities like Hope Pastures, Norbrook, and Cherry Gardens score near the top, benefitting from robust infrastructure and steady investment. By contrast, Whitehall, Bottom Pen, and Kintyre score below 0.10, indicating limited grid presence and service gaps.

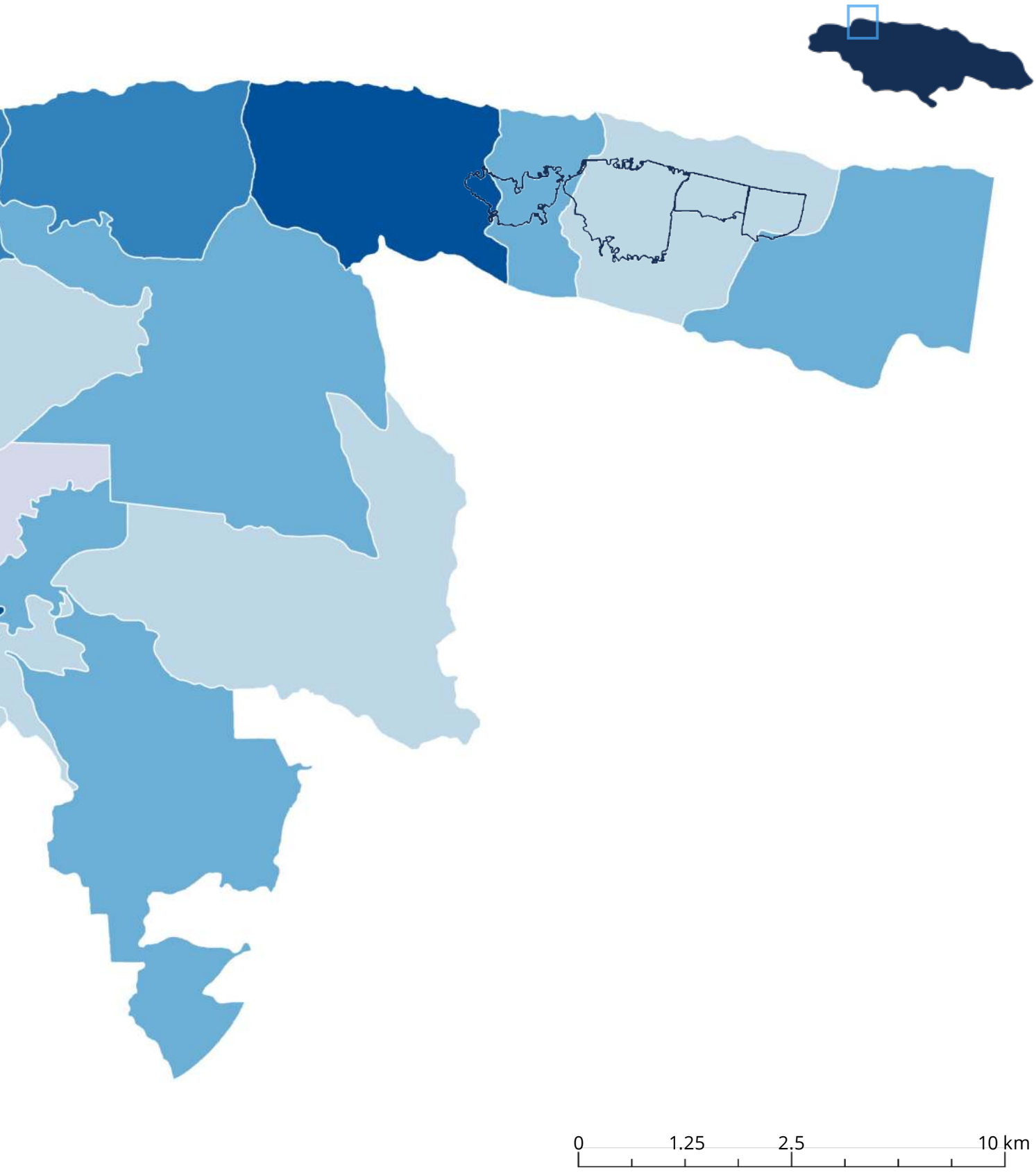
11 **Areas of GMB with Formal Access to Electricity**

Informal communities have lower levels access to electricity in Montego Bay



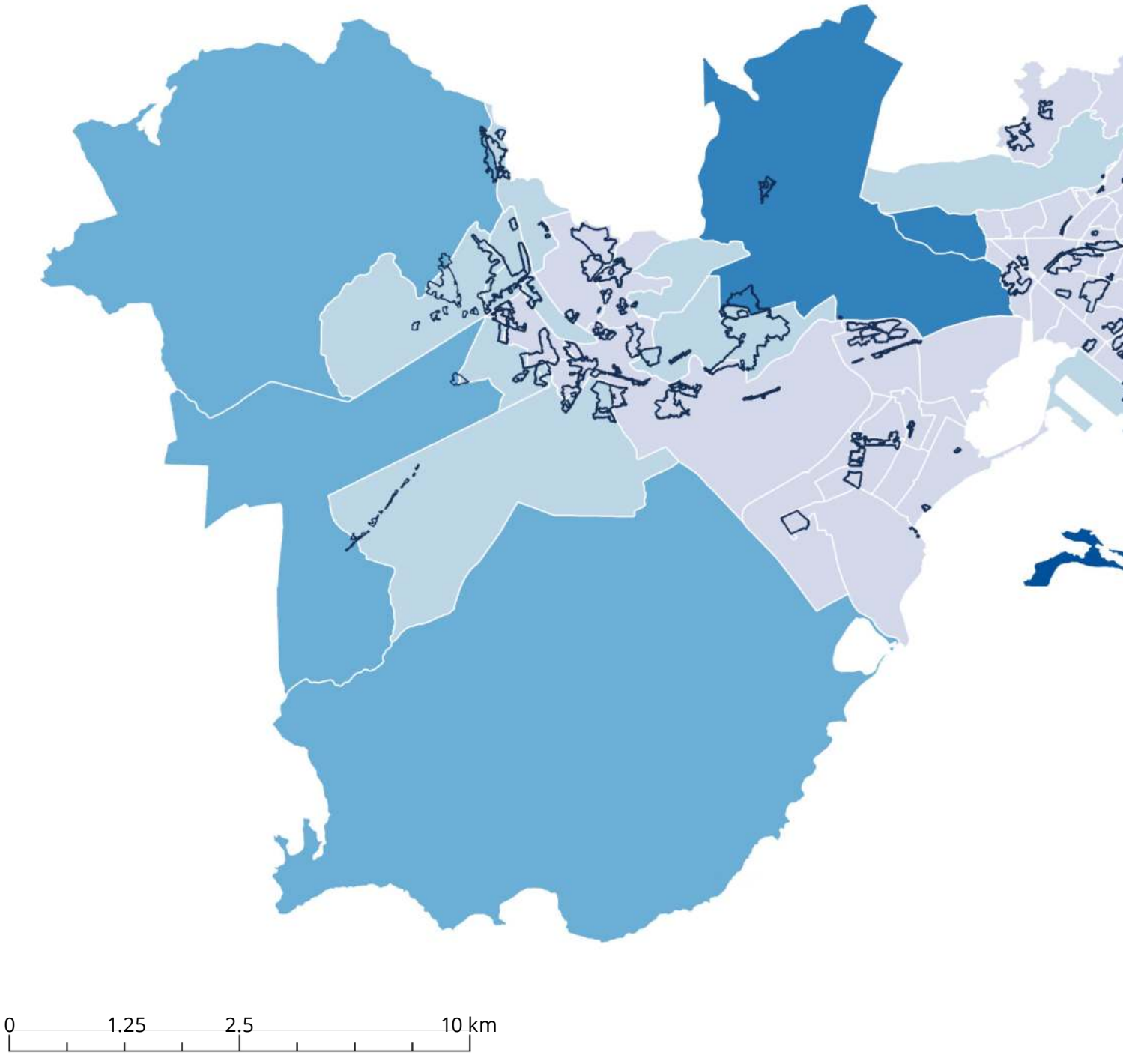
Levels of Electricity Access

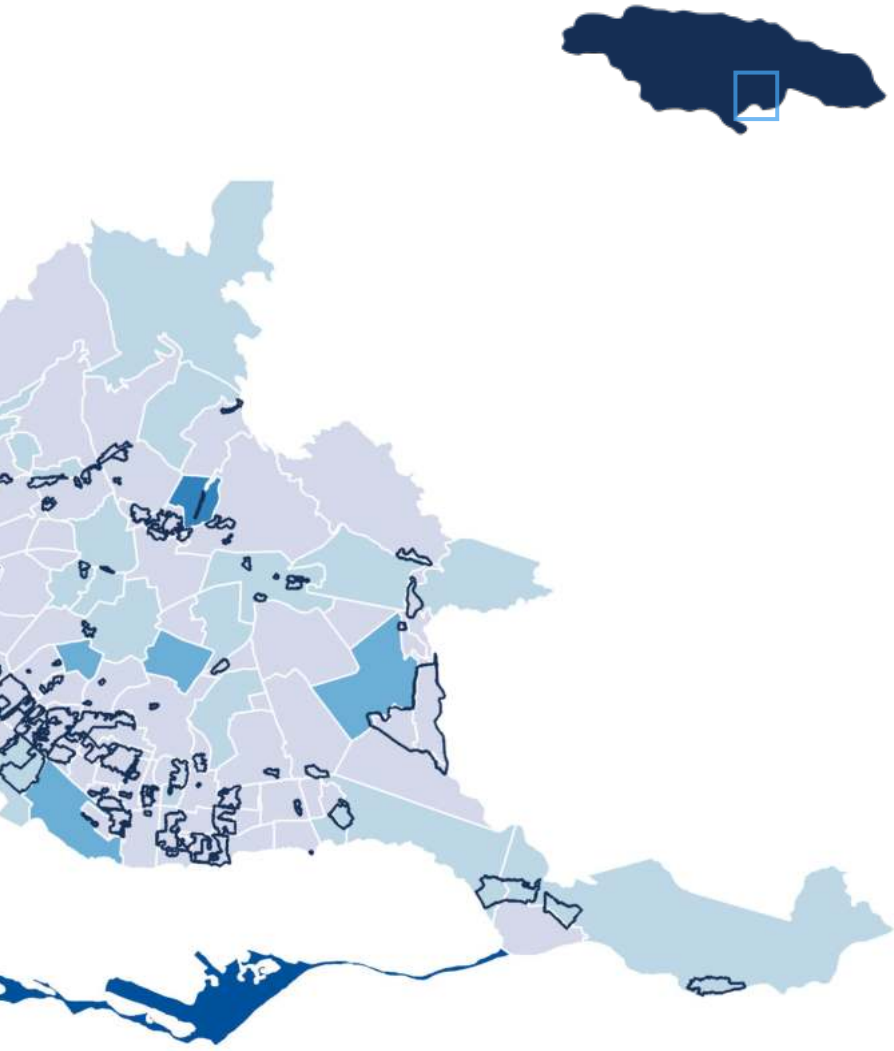
- Very High (>0.17 - 0.97)
- High (>0.09 - 0.17)
- Moderate (>0.04 - 0.09)
- Low (>0.02 - 0.04)
- Very Low (0 - 0.02)
- Informal Community Border


0
1.25
2.5
10 km

12 Areas of GKMA with Formal Access to Electricity

Informal communities have lower levels access to electricity in Kingston





These disparities follow historical patterns of exclusion. Planned, higher-income neighbourhoods were integrated early into utility expansions and typically meet zoning and tenure requirements. Informal settlements, often outside official plans, are excluded due to irregular tenure, lack of permits, or inaccessible terrain.[42] Even where grid extension is technically feasible, legal barriers prevent JPS from providing service.

The impacts of exclusion are far-reaching. Households without formal electricity face barriers to education, digital access, refrigeration, and livelihood activities. Many rely on unsafe or expensive informal sources and are at higher risk of fire, electrocution, and disconnection. Communities excluded from the grid are also less likely to be included in disaster resilience planning or targeted subsidy programs.[43]

Other countries offer models for bridging this gap. South Africa's Integrated National Electrification Programme (INEP) enabled temporary infrastructure deployment in informal areas while land regularization processes advanced.[46] In Kenya, geospatial mapping has been used to identify underserved "dark zones" and support targeted rollout.[47]

Indicator #6: Access to Education

Education is one of the most visible and symbolically powerful public goods in Jamaica. It is widely regarded as a pathway to individual opportunity and national development. Yet for many residents of low-income and informal urban communities, meaningful access to education remains out of reach. The barriers are not merely about distance to schools, but also about the institutional design and delivery of education, which often reflects deeper spatial inequalities and policy fragmentation.

To assess these dynamics, the Access to Education indicator within the Urban Integration Index uses two variables: (1) the density of primary and secondary educational facilities within or near each community, and (2) the average educational attainment of residents in that area. This dual approach captures both the supply of infrastructure and the system's effectiveness in producing educational gains.

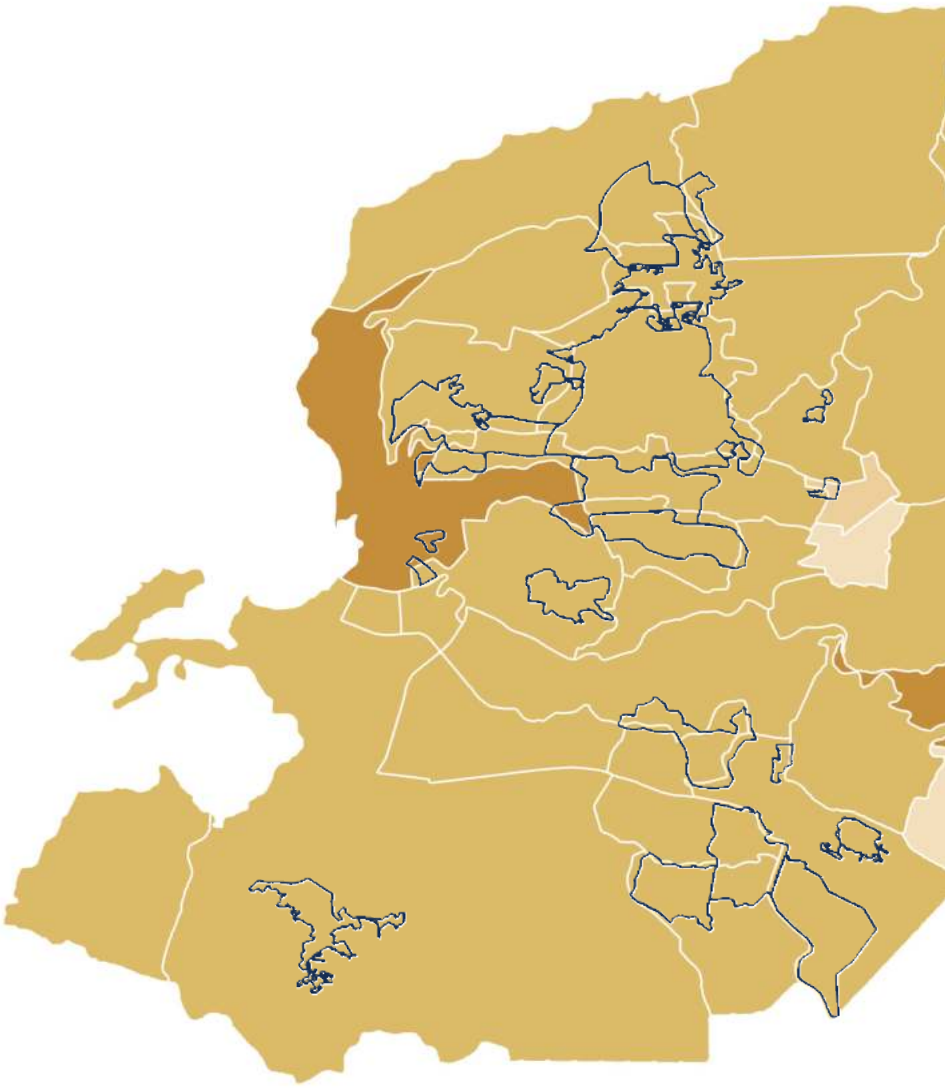
The average education access score across urban communities is 0.381. Communities such as Hope Pastures (0.78), Hughenden (0.72), and Nannyville (0.68) rank highest, reflecting both proximity to schools and higher adult education levels. In contrast, Newlands (0.09), Bottom Pen (0.11), and Franklyn Town (0.12) are among the lowest scoring.[47] In these communities, secondary completion rates are often below 40 percent, with minimal transition to post-secondary education.[44]

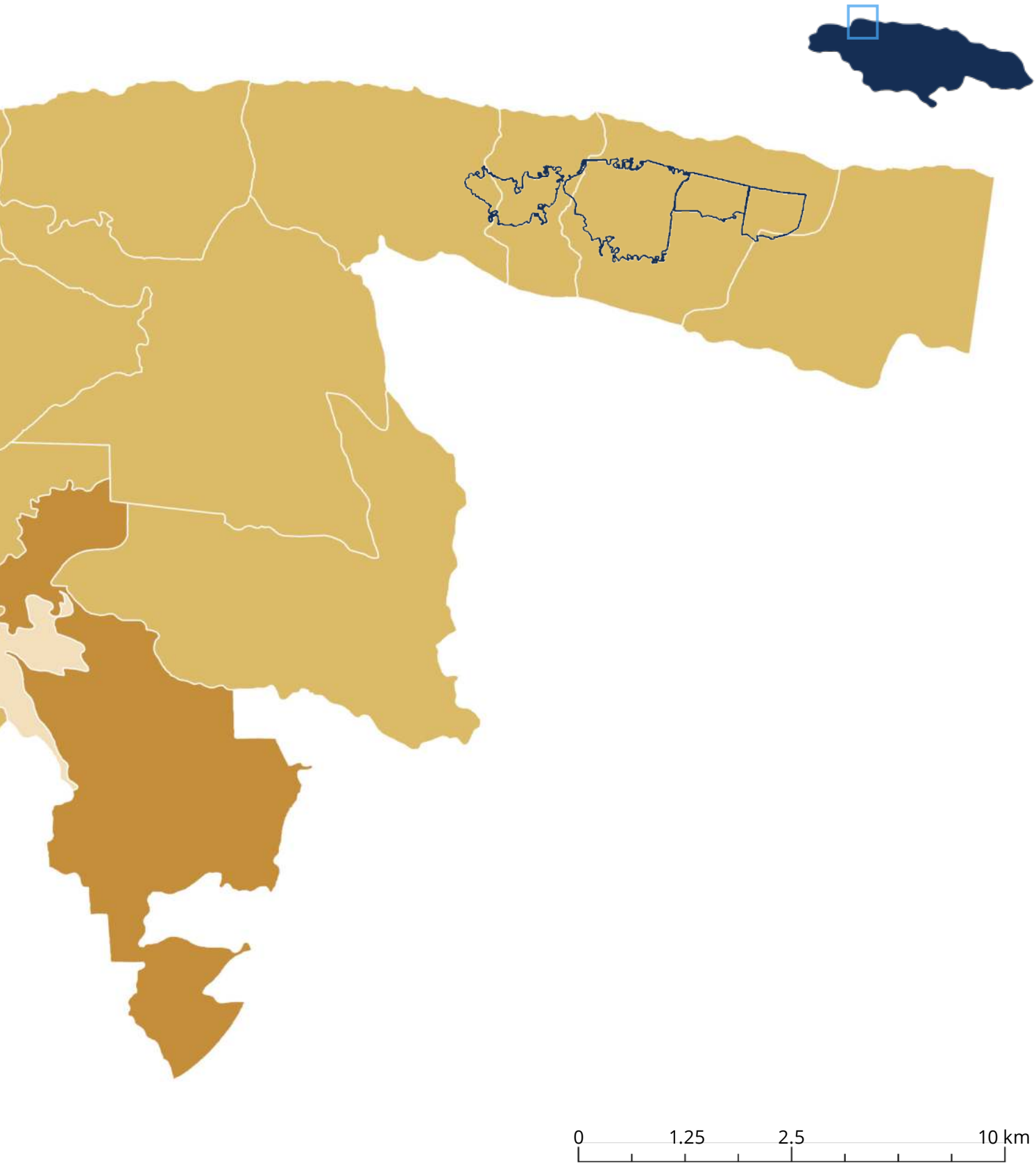
Low-scoring communities tend to be spatially marginal and informal. Students must commute long distances or attend under-resourced schools, compounding disadvantages such as food insecurity, unstable housing, or limited internet access.

CAPRI's report, Testing, Testing, also highlights a critical weakness in Jamaica's approach to social programming: a proliferation of small, uncoordinated educational initiatives that lack long-term integration into the nation-

13 **Areas of GMB with Access to Education**

Informal communities have lower levels of access to education in Montego Bay

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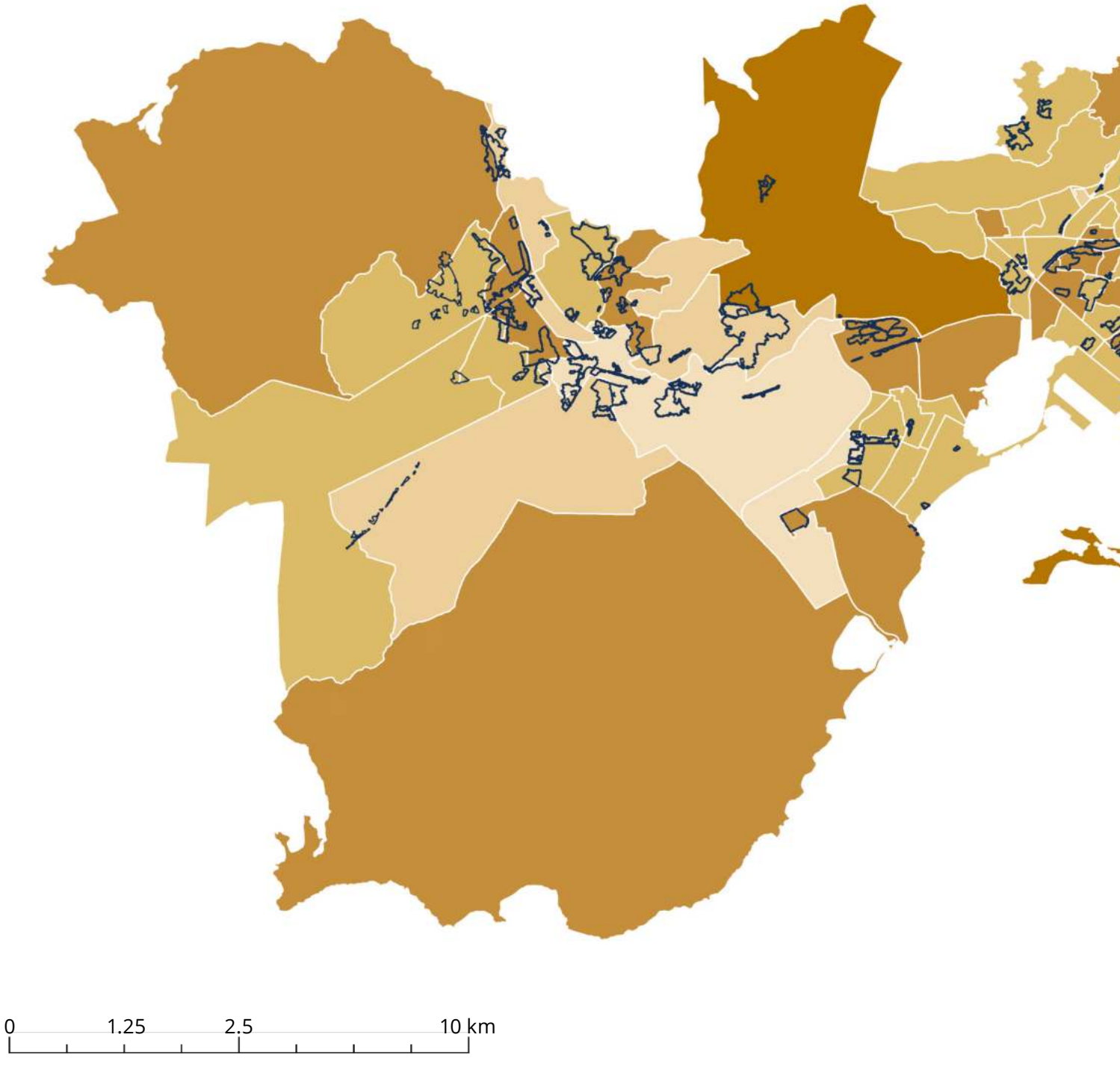
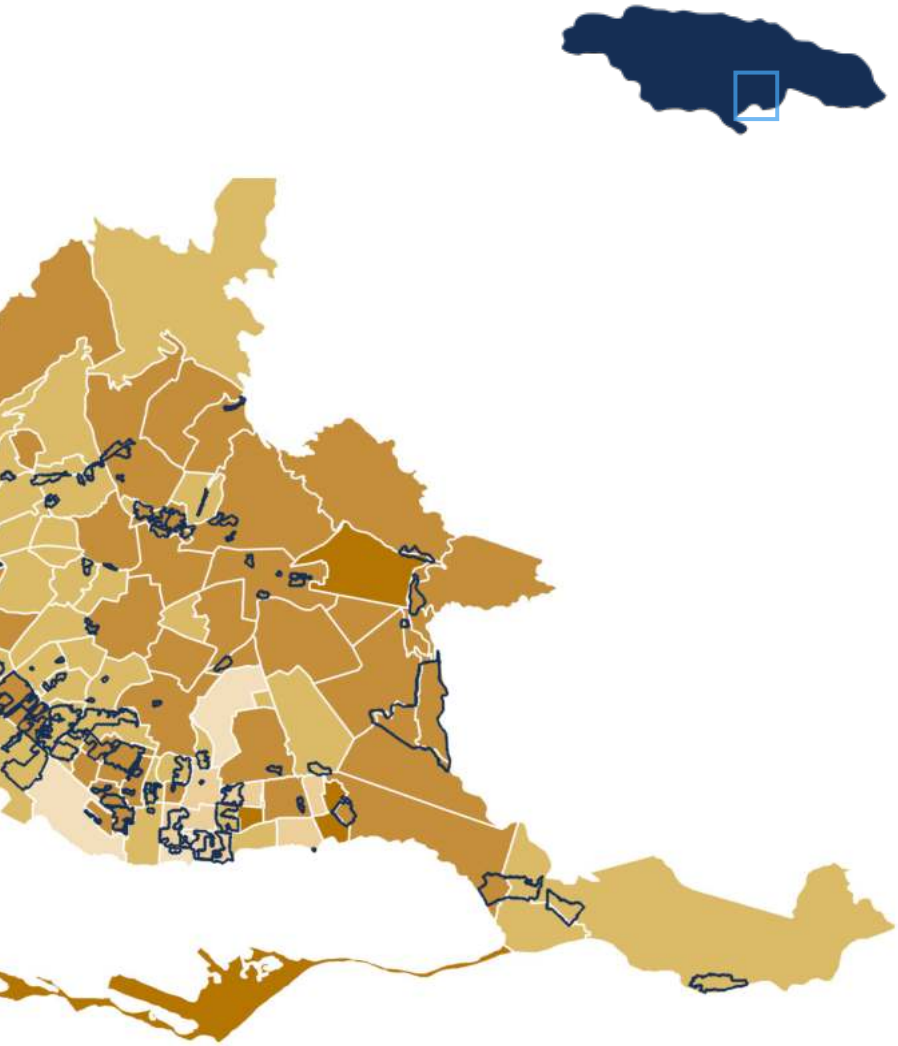
14 Areas of GKMA with Access to Education

There's no clear relationship between informality and access to education in Kingston





Levels of Education Access

- Very High (>21.4 - 25.9)
- High (>18.7 - 21.4)
- Moderate (>16.5 - 18.7)
- Low (>10.5 - 16.5)
- Very Low (0 - 10.5)
- Informal Community Border

al system.[45] Homework centres, youth mentorship programs, and academic subsidies are often designed to address symptoms rather than causes. Few are systematically evaluated, and many lack follow-up mechanisms once external funding ends.

International models provide useful contrasts. In Chile, the Preferential School Subsidy Law (SEP) channels additional funding to schools serving disadvantaged populations. Schools must adopt performance plans and are monitored for compliance, resulting in average test score improvements of six percent between 2008 and 2013.[46] In South Korea, the Education Welfare Priority Project embedded coordinators in schools to connect students with academic and social support, leading to a 30 percent drop in dropout rates over four years.[47]

Jamaica's policy framework, including the National Education Strategic Plan, acknowledges the need for equity and coordination. However, implementation has been uneven. The Primary Exit Profile (PEP) placement system continues to steer students from poorer communities into lower-performing schools.[48] These schools often struggle to attract experienced teachers or maintain infrastructure, further disadvantaging the students who need the most support.

Indicator #7: Access to Basic Information Services

Access to Basic Information Services (BIS) is necessary for participation in modern life. In Jamaica, digital infrastructure is unevenly distributed, leaving many low-income and informal communities disconnected. According to a national study conducted by the Office of Utility Regulations in 2021, only 41 percent of households had access to fixed broadband internet, with suburban areas in places like Spanish Town and Portmore falling well below national averages.[49]

The BIS indicator in the Urban Integration Index combines three components: mobile network density, broadband availability, and the presence of public Wi-Fi hotspots documented by the Universal Service Fund (USF).[50] While public Wi-Fi might suggest improved access, in this index it serves as a proxy for digital deprivation, as these hotspots are often introduced in areas lacking commercial broadband.

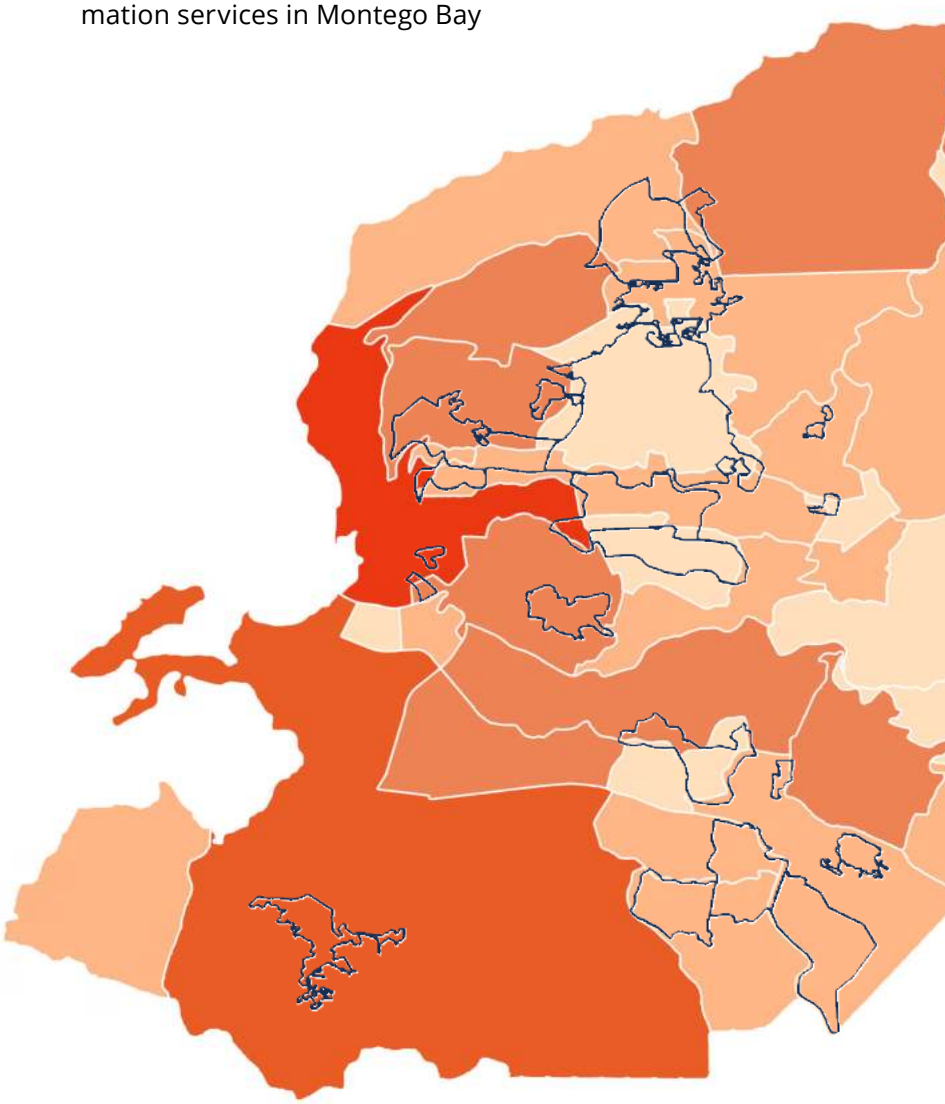
In many low-scoring communities, connectivity is patchy, costly, and dependent on mobile data packages with strict limits. Students struggle to access online coursework, and small businesses often cannot reliably market or manage services via digital platforms. Suburban areas and informal settlements that score lowest on this indicator are those where digital tools could offer the greatest benefit but where investment has been thinnest.[53]

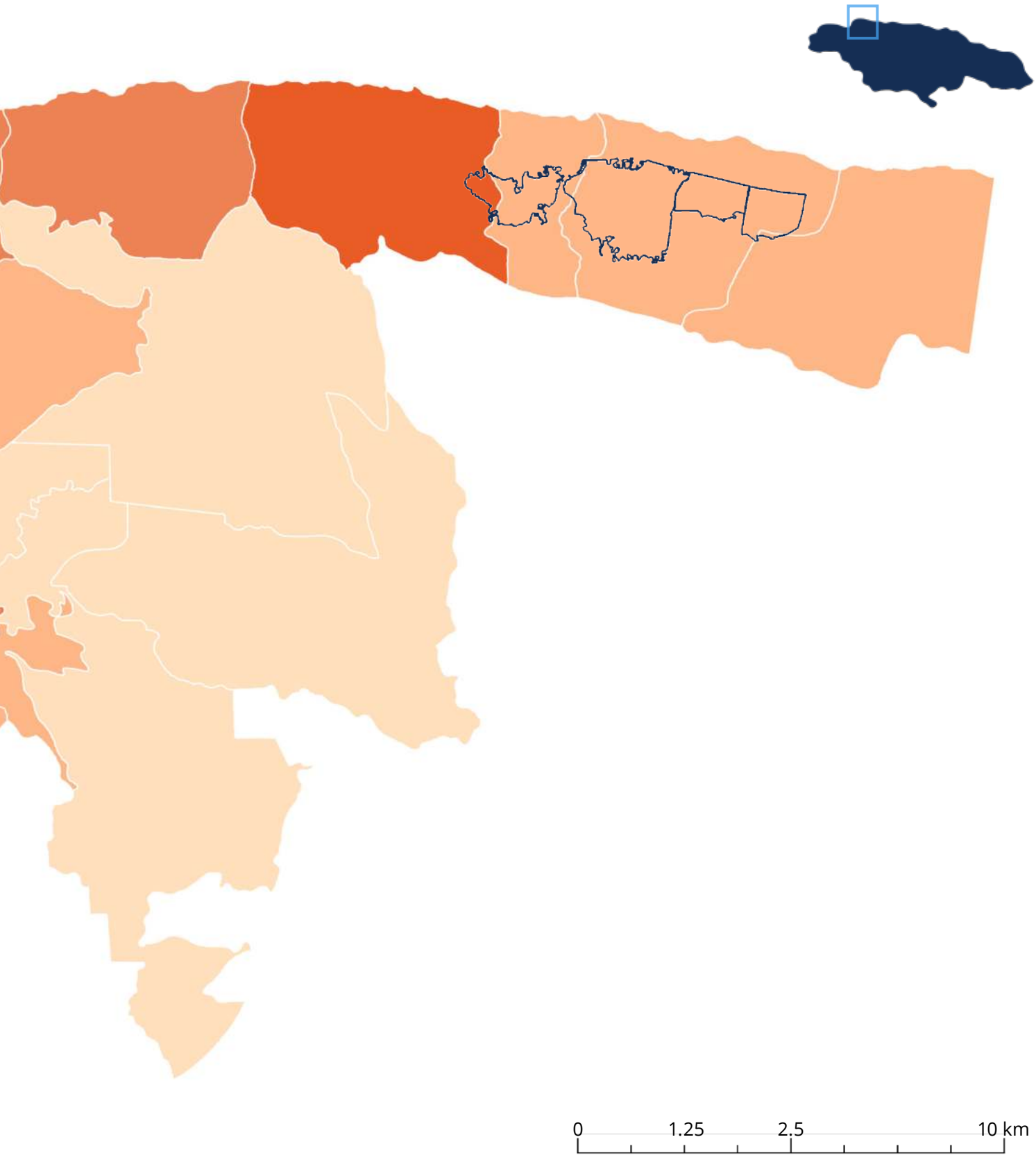
Exclusion from digital and internet connectivity reflects entrenched spatial and institutional disparities. It is clear that areas with poor connectivity are often those with the fewest public resources, lowest incomes, and weakest infrastructural footprints. Residents of these communities face compounded disadvantages, as digital deprivation limits their access to education, employment, and government services.

Jamaica's National Broadband Initiative, launched in 2021, seeks to address

15 **Areas in GMB with Basic Information Services**

Informal communities have lower levels of access to basic information services in Montego Bay

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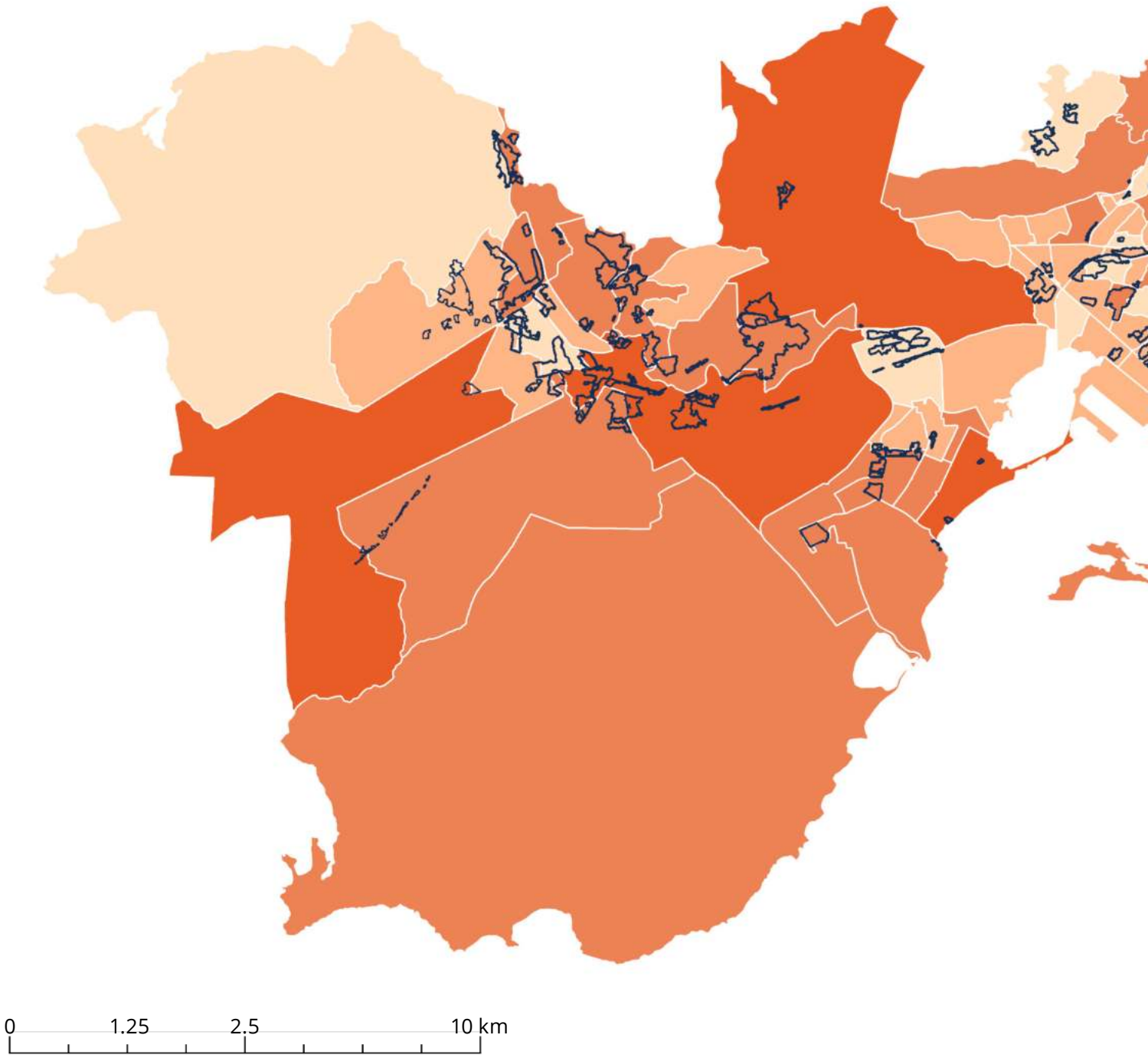
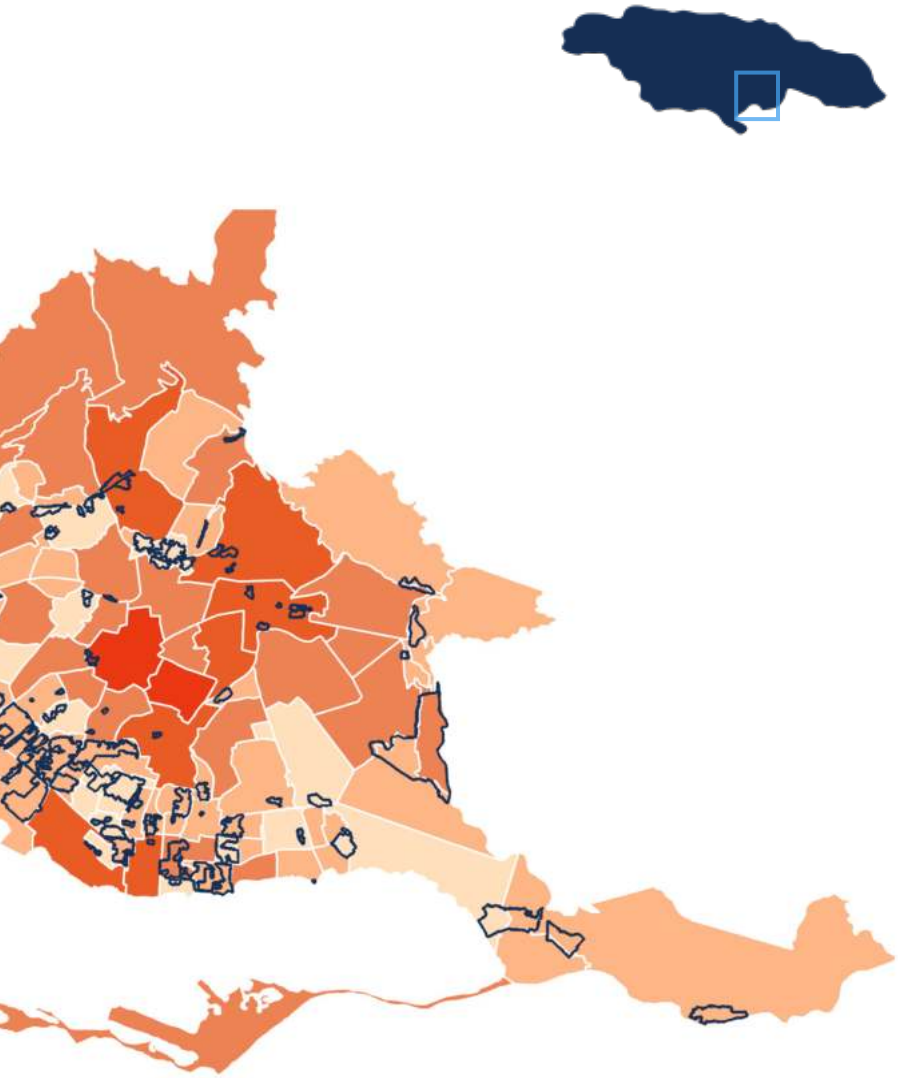
16 Areas in GKMA with Basic Information Services

Informal communities generally have lower levels of access to basic information services in Kingston





Levels of Access to Basic Information Services

- Very High (>0.59 - 1.00)
- High (>0.37 - 0.59)
- Moderate (>0.22 - 0.37)
- Low (>0.12 - 0.22)
- Very Low (0 - 0.12)
- Informal Community Border

some of these challenges by expanding infrastructure, reducing service costs, and delivering public Wi-Fi to more locations. [51] For this effort to succeed, however, it must be spatially targeted and designed with equity in mind. The BIS Index helps identify where investments will have the most impact, therefore providing more equitable access to public connectivity. Global lessons show what's possible. In parts of Latin America and Africa, public Wi-Fi aligned with urban planning has led to gains in school performance, civic participation, and trust in public institutions.[52]

Indicator #8: Financial Inclusion

Financial services are essential for economic participation and household stability. They allow individuals to save securely, access credit, manage risk, and engage in digital commerce. While Jamaica has made advances in modernizing its financial sector, access to formal financial services remains uneven. Many residents in low-income and informal urban communities continue to operate outside the reach of regulated financial systems. This exclusion is both a symptom and a driver of persistent inequality.

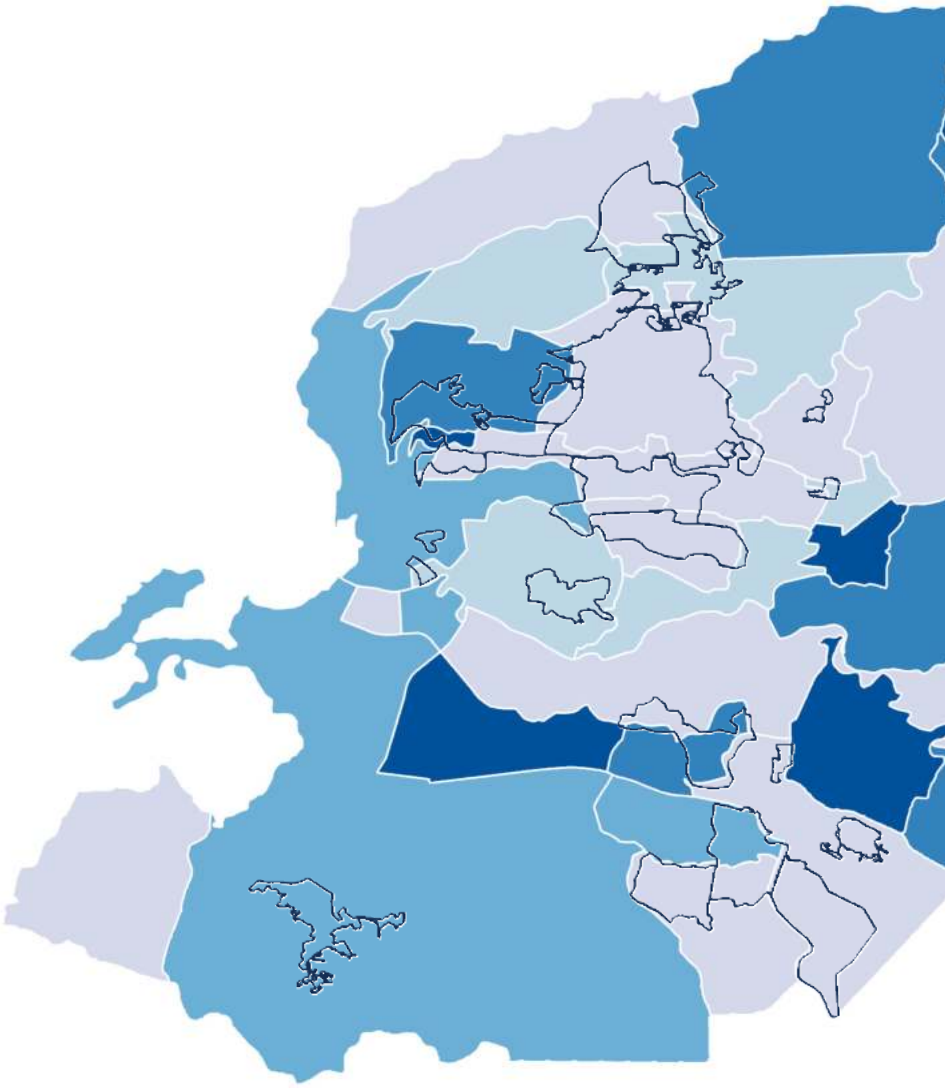
As of 2023, 22.8 percent of Jamaican adults did not have an account at any formal financial institution. [53] In communities with low scores on the Urban Integration Index, reliance on informal savings systems, cash-only transactions, and unregulated credit arrangements remains common. These practices are often the only accessible options but lack consumer protections and may not support long-term financial planning or wealth generation.

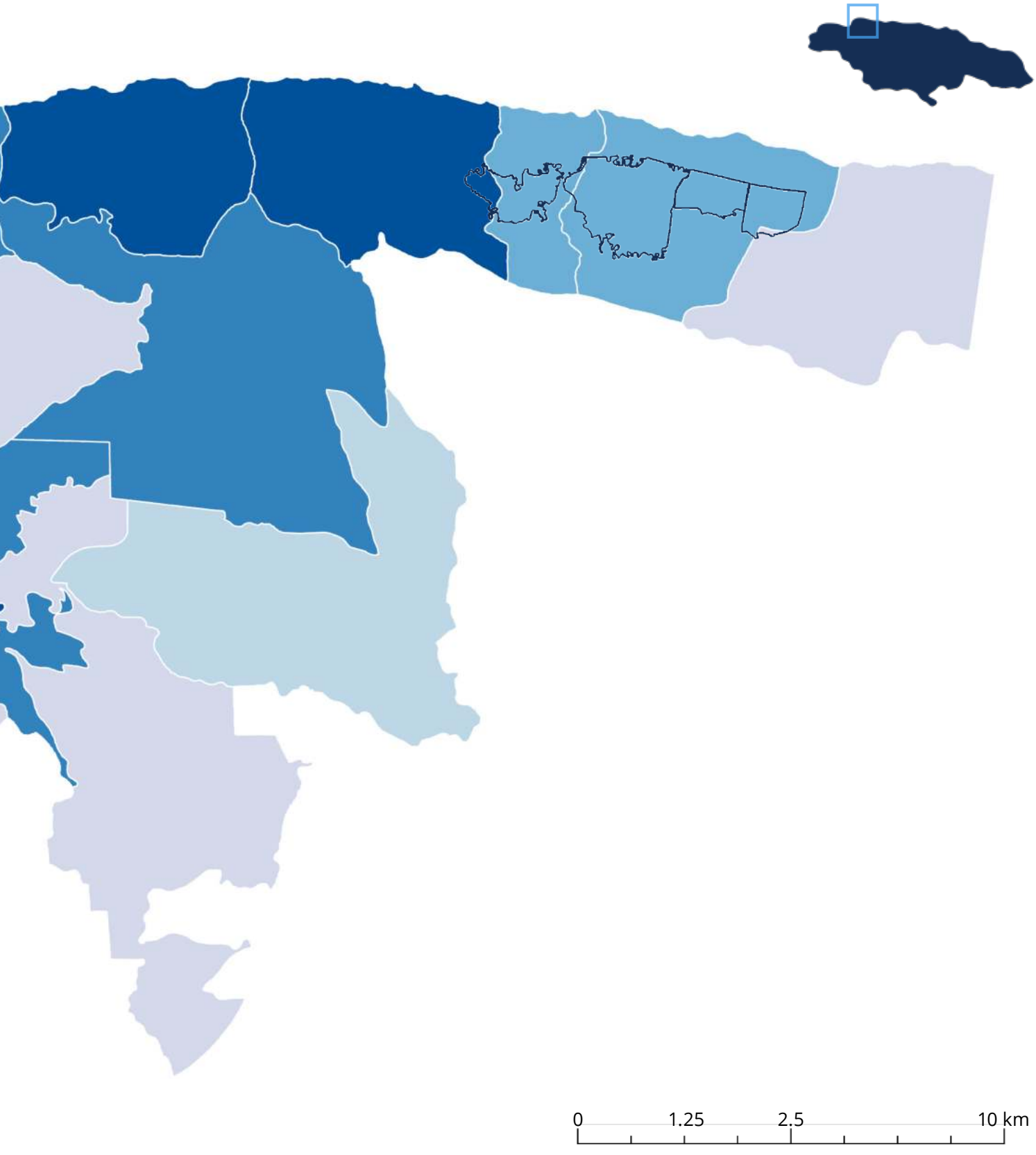
The Financial Inclusion indicator includes both physical access to financial services and actual usage patterns.[54] This provides a fuller picture of exclusion than infrastructure data alone. It recorded an average score of 0.447 across urban areas. Communities such as Hope Pastures, Norbrook, and Ironshore score above 0.74, reflecting widespread access to banking infrastructure and higher rates of formal financial usage. In contrast, areas like Bottom Pen, Newlands, and Naggo Head score below 0.12. These communities often lack nearby bank branches or ATMs and show limited engagement with digital financial tools.

Several barriers continue to undermine financial inclusion. A major challenge is the documentation required to open an account. Many low-income residents lack birth certificates, tax numbers, or proof of address, so that they are disqualified from formal services.

17 **Levels of Financial Inclusion for GMB**

Informal communities generally have lower levels of access to basic information services in Montego Bay

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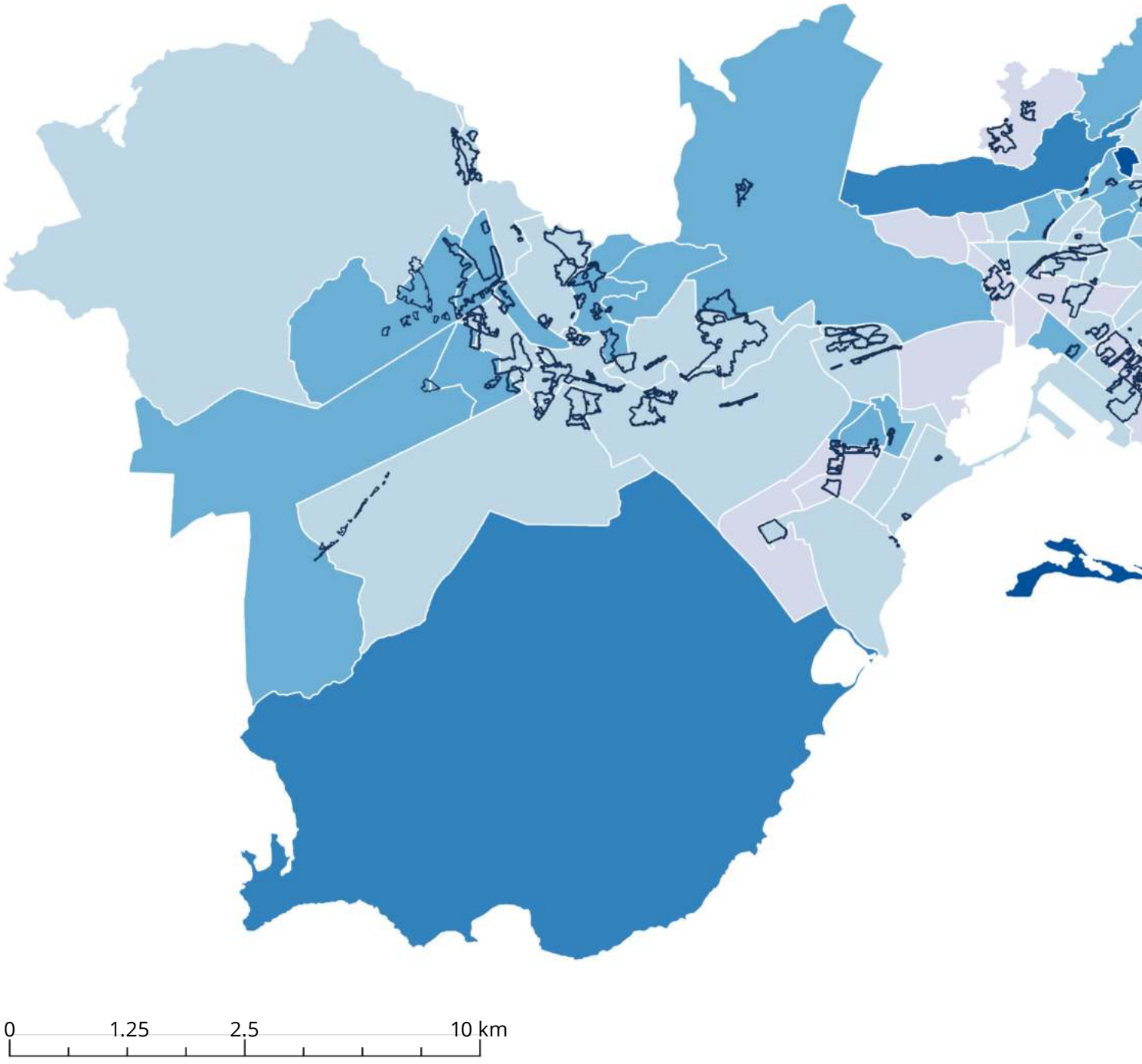
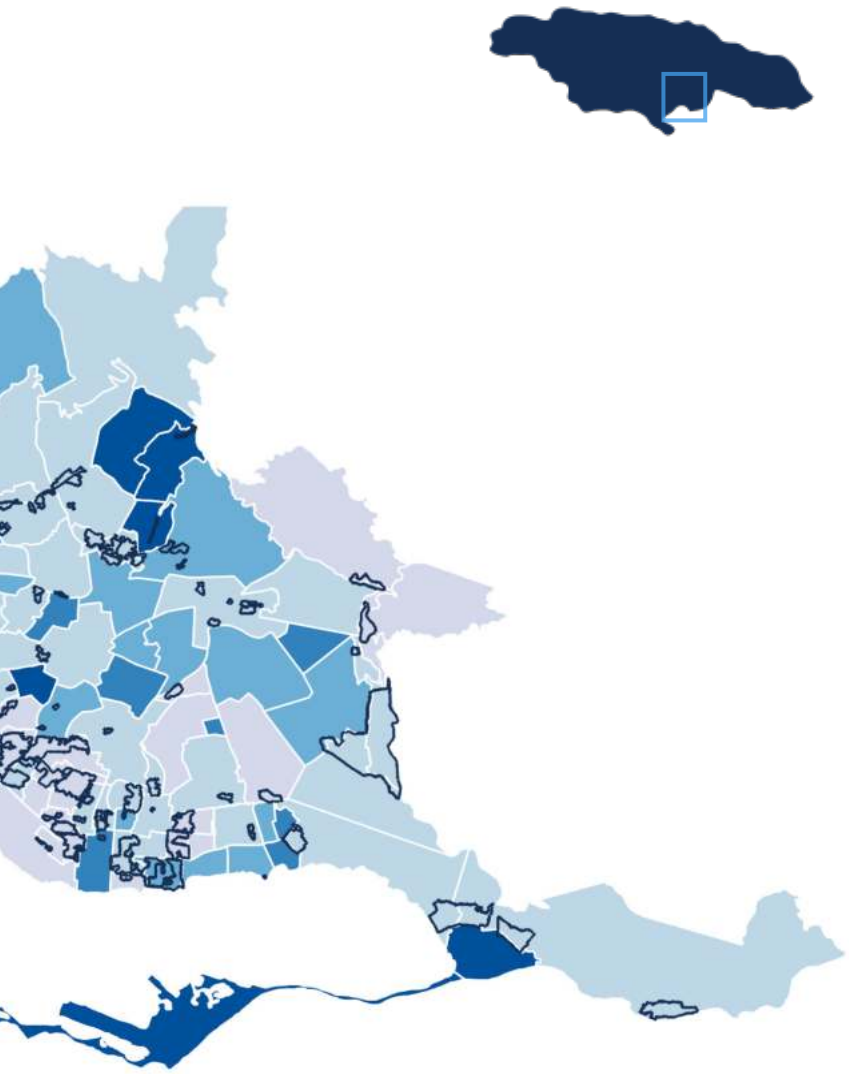
18 Levels of Financial Inclusion for GKMA

Informal communities generally have lower levels of access to basic information services in Kingston





Levels of Financial Services

- Very High (>0.52 - 1.00)
- High (>0.35 - 0.52)
- Moderate (>0.22 - 0.35)
- Low (>0.11 - 0.22)
- Very Low (0 - 0.11)
- Informal Community Border

The rollout of the National Identification System (NIDS) is meant to help by providing digital identities, but success depends on broad adoption and integration into financial systems.[55]

Financial literacy also limits uptake. Many excluded individuals are unfamiliar with how to use formal services or avoid banks due to concerns about fees, fraud, or poor customer support. [56] In the absence of trusted institutions, informal networks often fill the gap. While culturally embedded and flexible, these alternatives tend to reinforce financial vulnerability, especially in the face of shocks.

What the Index reveals is not just a gap in services, but a pattern. In many cases, financial infrastructure appears to stop where informal settlement begins. This spatial cut-off reflects deeper institutional assumptions about where risk lies and where returns are likely. Traditional delivery models prioritize commercially viable locations, which often excludes the very communities where financial services could have the greatest developmental impact.

If infrastructure investment and regulatory design continue to follow traditional logic, the financial system will remain misaligned with national inclusion goals. Instead, Jamaica's financial strategy should explicitly account for informal settlement geography in the placement of mobile agents, the design of onboarding requirements, and the rollout of digital financial tools. Regulatory flexibility, especially in documentation requirements and account minimums, could bring more residents into the formal economy. Mobile-first platforms, community-based financial agents, and flexible identity verification systems have already proven effective in other contexts. In India, simplified ID-linked bank accounts helped bring over 480 million people into the formal system.[57] In Kenya, community-embedded mobile agents contributed to mobile money usage by over 84 percent of the adult population. [58]

Indicator #9: Levels of Safety

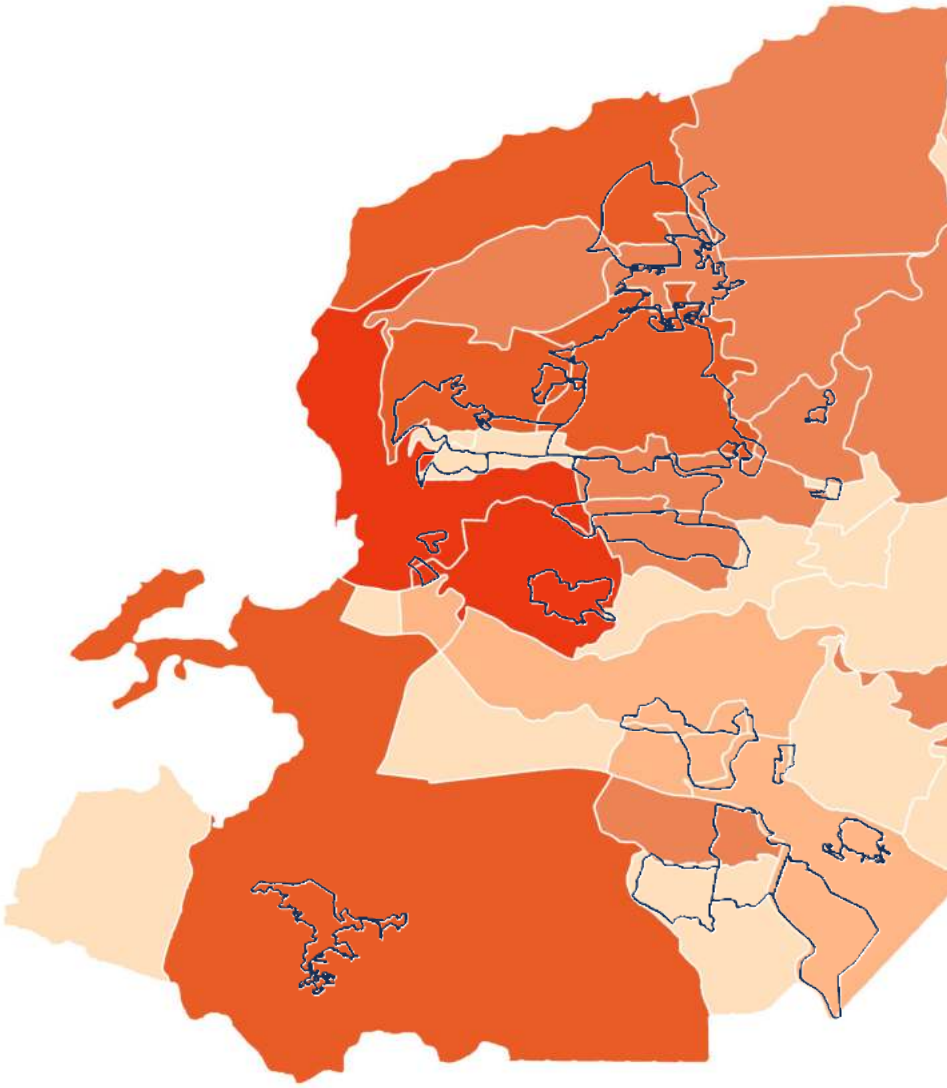
Safety is a precondition for urban inclusion. When residents feel unsafe in their neighbourhoods, they are less likely to use public spaces, access services, or engage in civic life. In Jamaica's urban areas, safety concerns remain pronounced, even amid national declines in reported violent crime. Within many communities, fear and restriction are shaped not only by actual incidents but also by broader experiences of institutional neglect and physical disrepair.

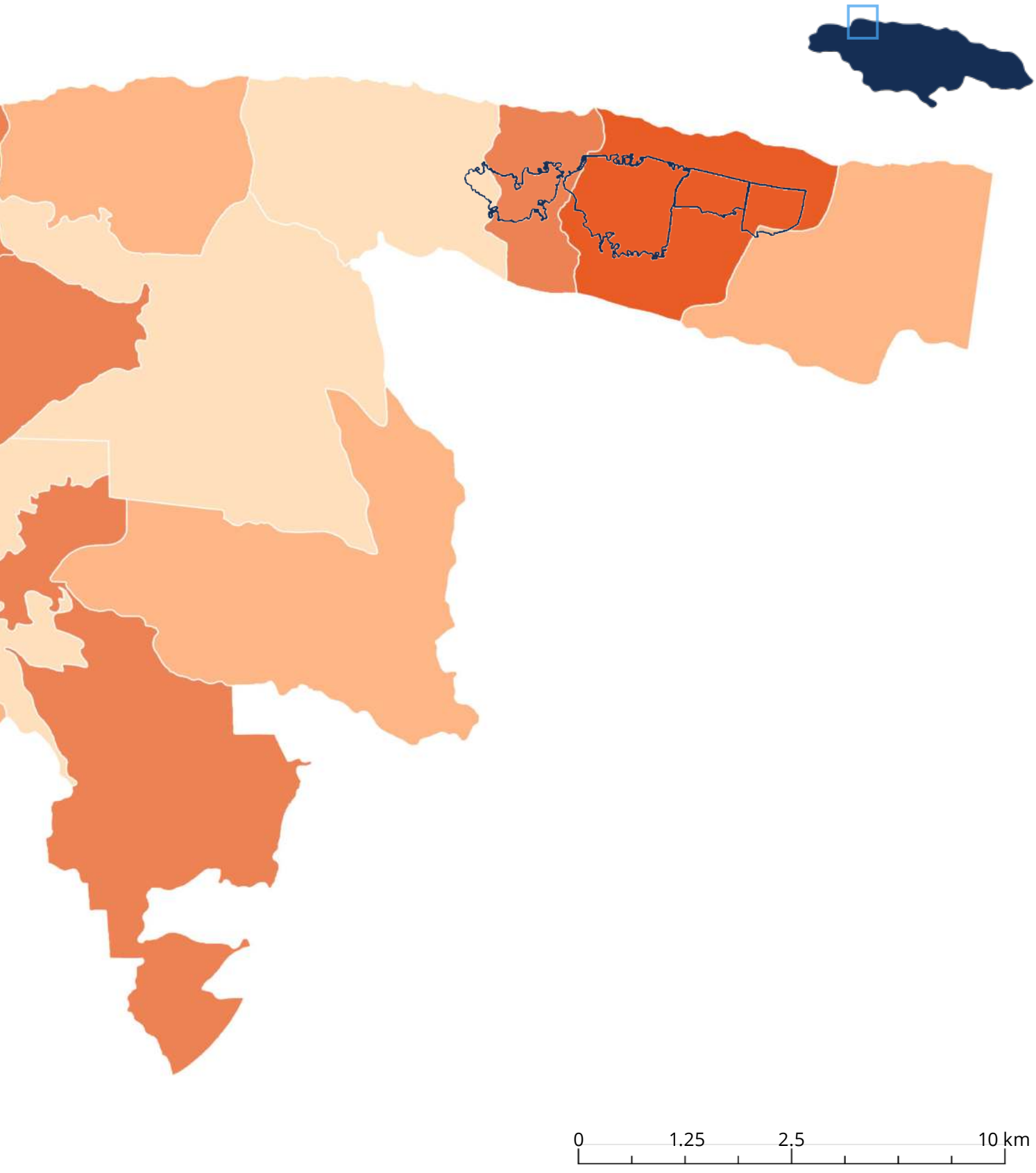
According to the 2023 Latin American Public Opinion Project (LAPOP), more than 45 percent of Jamaicans reported feeling unsafe walking in their neighbourhood at night.[59] These fears reflect both real and perceived threats. However, the Urban Integration Index does not use subjective perception data. Instead, the Levels of Safety indicator is constructed entirely from community-level crime statistics, sourced from the Jamaica Constabulary Force (JCF).[60]

The indicator includes per capita crime rates across multiple categories, such as murder, shootings, assault, and robbery, and is weighted by severity. This approach is designed to capture objective exposure to violent crime across Jamaica's urban communities. Across the Index, the national urban average score for the indicator is 0.509. Higher-scoring communities include Hope Pastures, Liguanea, and Ironshore, which report low rates of violent crime and are buffered by strong infrastructure, private security, and community organization. At the lower end of the distribution, communities such as Trench Town, Flankers, and Canterbury score below 0.30.[61] These areas consistently record higher rates of violent incidents and suffer from multiple intersecting vulnerabilities.

The spatial concentration of violence is not incidental. According to the Groundwork for Peace report, over 50 percent of all armed violence in Jamaica's urban

19 **Levels of Violence in GMB**
Informal communities have higher levels of violence in Montego Bay

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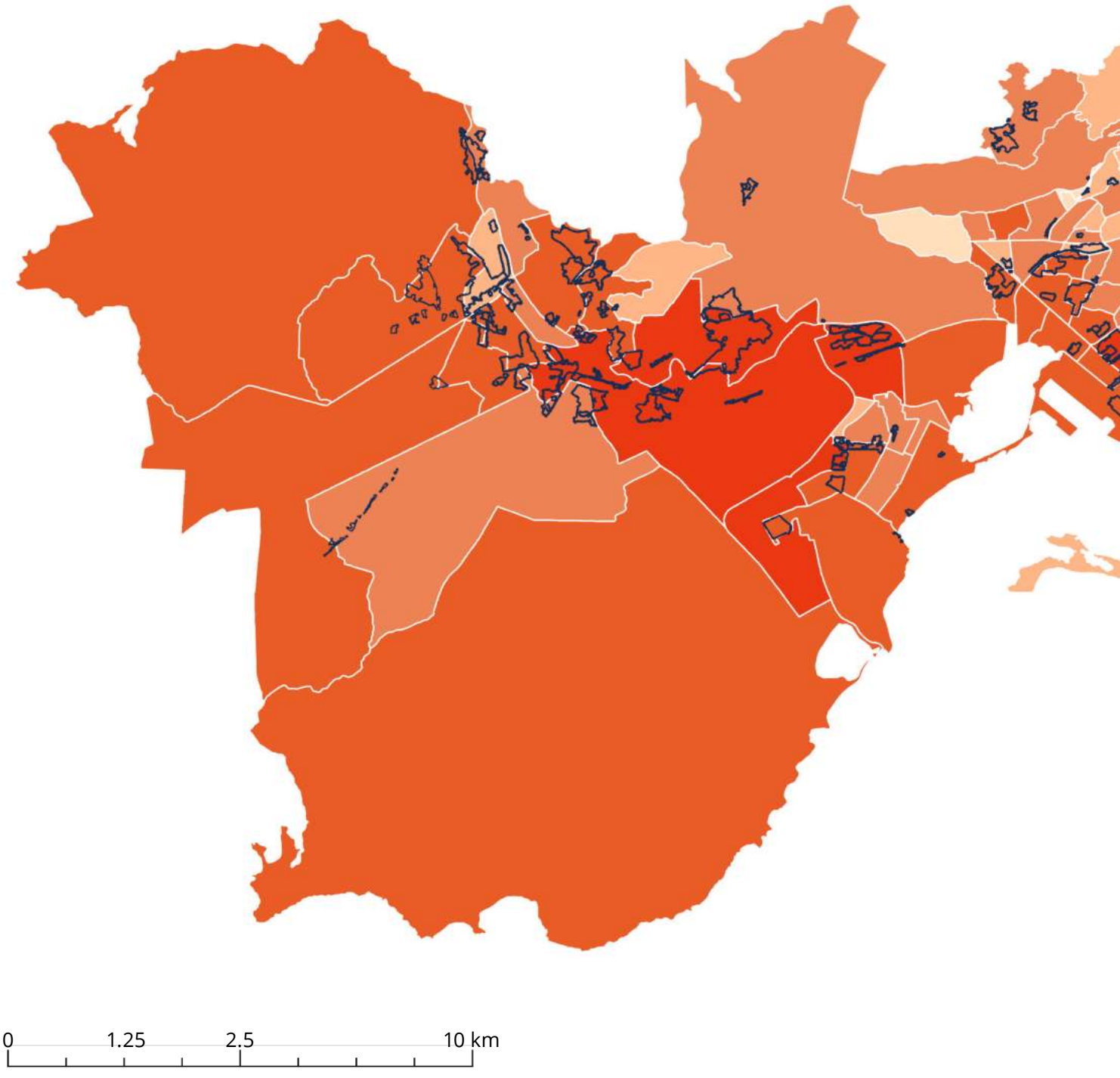
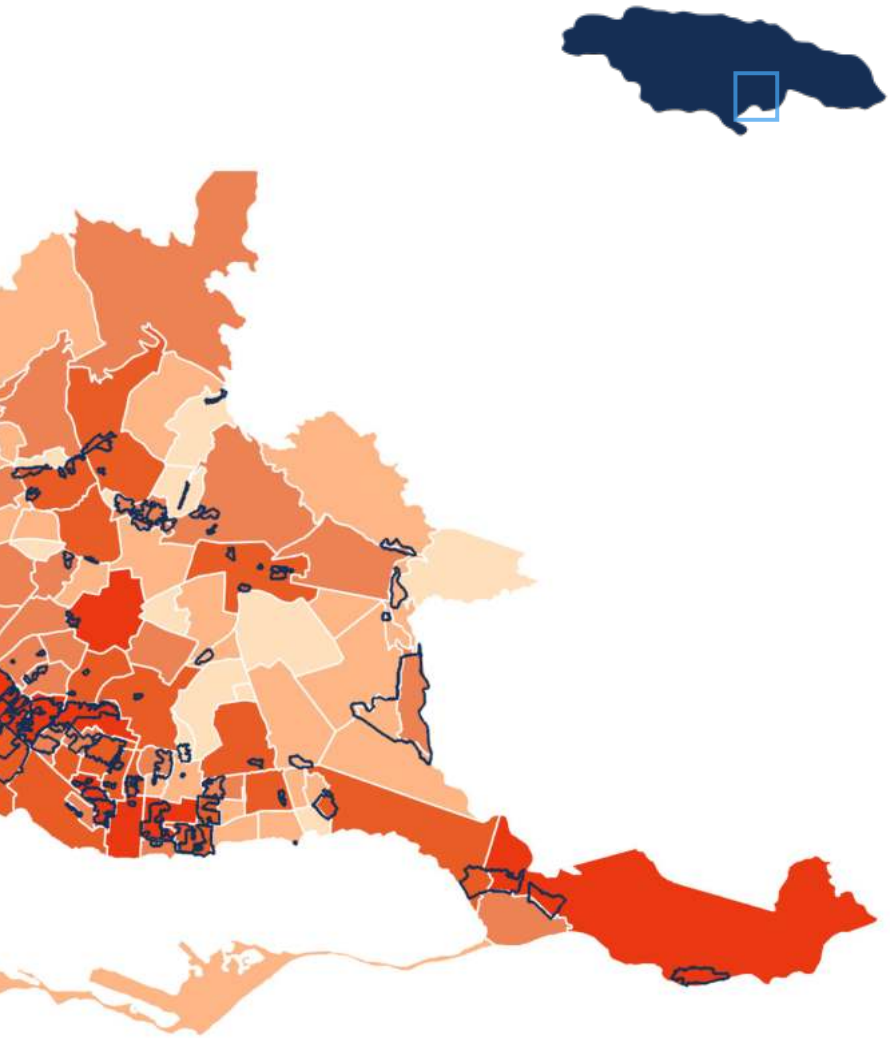
20 Levels of Violence in GKMA

Informal communities have higher levels of violence in Kingston





regions occurs in informal settlements, even though they account for only a fraction of the total urban population.[62] These communities are often poorly lit, inadequately policed, and disconnected from reliable services. They bear the compounded burden of insecure tenure, weak infrastructure, and limited access to justice. As a result, violent crime tends to cluster in the very places where institutional presence is most absent.

While Jamaica has pursued a range of violence reduction strategies, including Operation Kingfish and the Zones of Special Operations (ZOSO), results have been mixed. ZOSO was designed to combine security operations with social investment. In many communities, however, the social component has lagged, reducing the long-term impact on safety and trust. [63] Without consistent investment in schools, employment, urban services, and mental health, enforcement alone cannot resolve the complex spatial dynamics of violence.

Levels of Violence

- Very High (>0.80 - 0.95)
- High (>0.67 - 0.80)
- Moderate (>0.52 - 0.67)
- Low (>0.35 - 0.52)
- Very Low (0 - 0.35)
- Informal Community Border

Indicator #10: Street Structure

Street structure is a foundational component of urban life. It influences how people move, how services are accessed, and how safe or isolated a community feels. In this study, street structure was assessed through two core dimensions: connectivity, which measures how many streets intersect with others, and integration, which captures how embedded a street is within the broader road network of the city. These dimensions shape daily life in tangible ways, from the efficiency of travel to the ability to receive public services or escape unsafe situations.

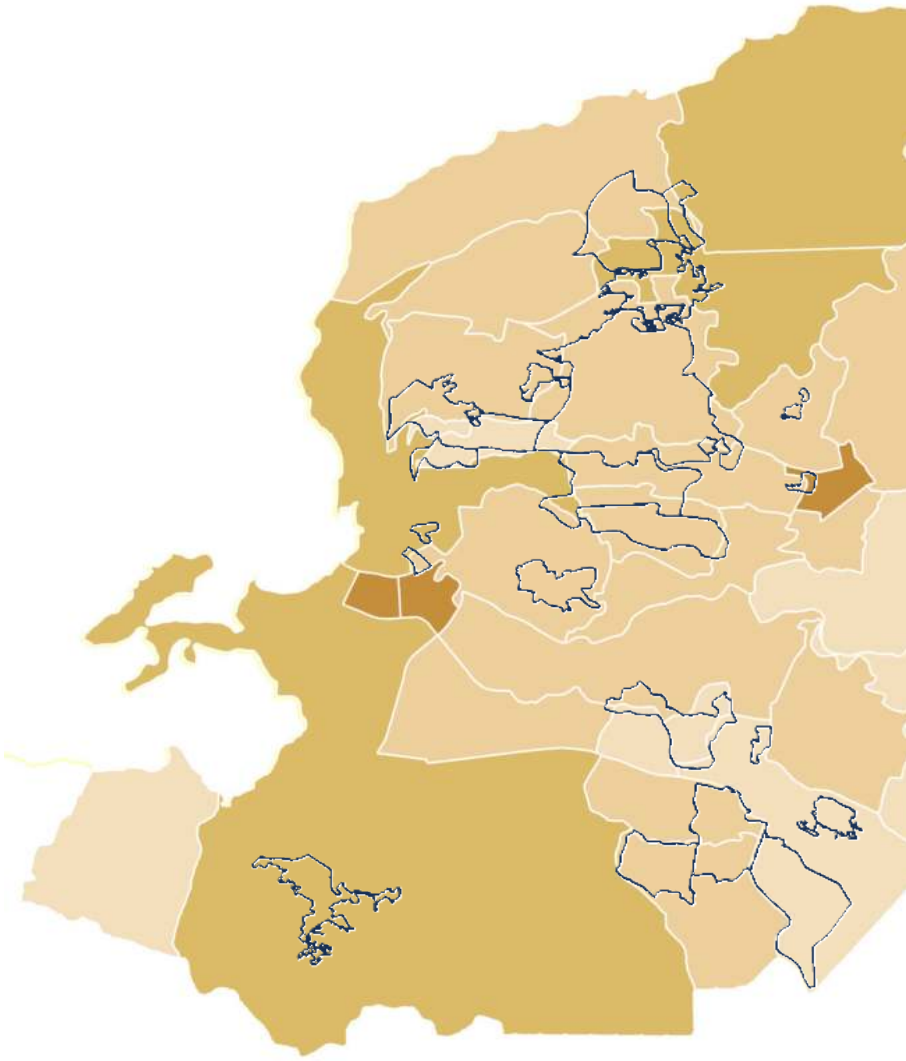
The Street Structure indicator evaluates how road layouts contribute to or hinder urban inclusion. Communities with well-connected, highly integrated street networks received higher scores, indicating greater ease of access and spatial openness. Conversely, areas with fragmented or isolated road networks scored lower, reflecting more limited connections to the wider urban environment.

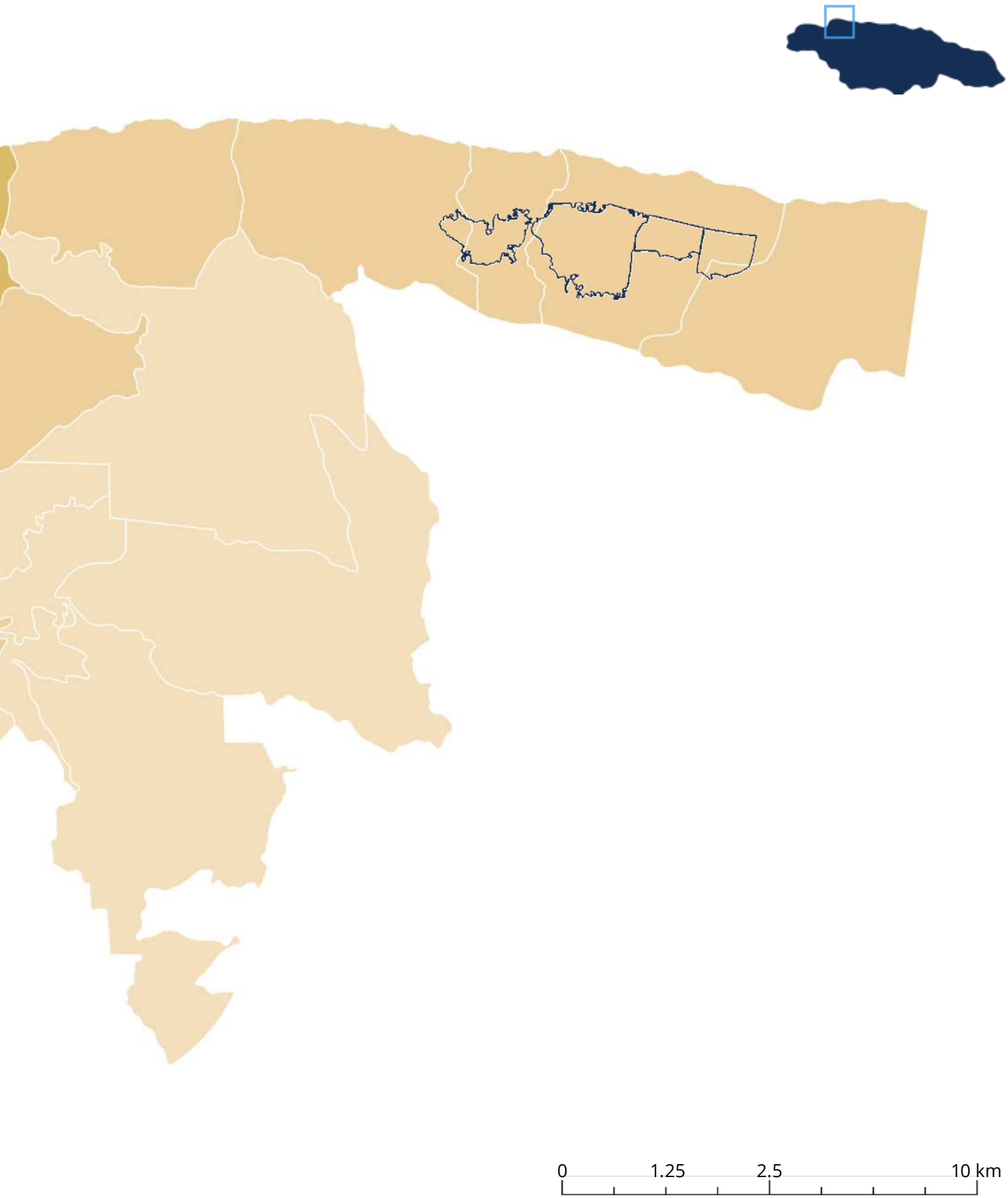
Findings reveal a consistent pattern: planned communities tend to be far better connected than informal ones. In Portmore and sections of Hellshire, for example, grid-like street patterns facilitate internal navigation and link residents easily to transport routes and public services. These patterns are visually indicated in yellow on the connectivity maps, reflecting short street links, many intersections, and few dead-ends.

By contrast, informal settlements such as August Town and Riverton City show low levels of street connectivity and integration. These areas exhibited irregular, tree-like street formations that limit navigability. Residents often must walk long, indirect paths to access a bus stop or health centre. This restricts their ability to participate in the economic and social life of the city and isolates them from emergency and public services.

21 **Street Structure Variations in GMB**

Informal communities tend to have irregular street structure in Montego Bay

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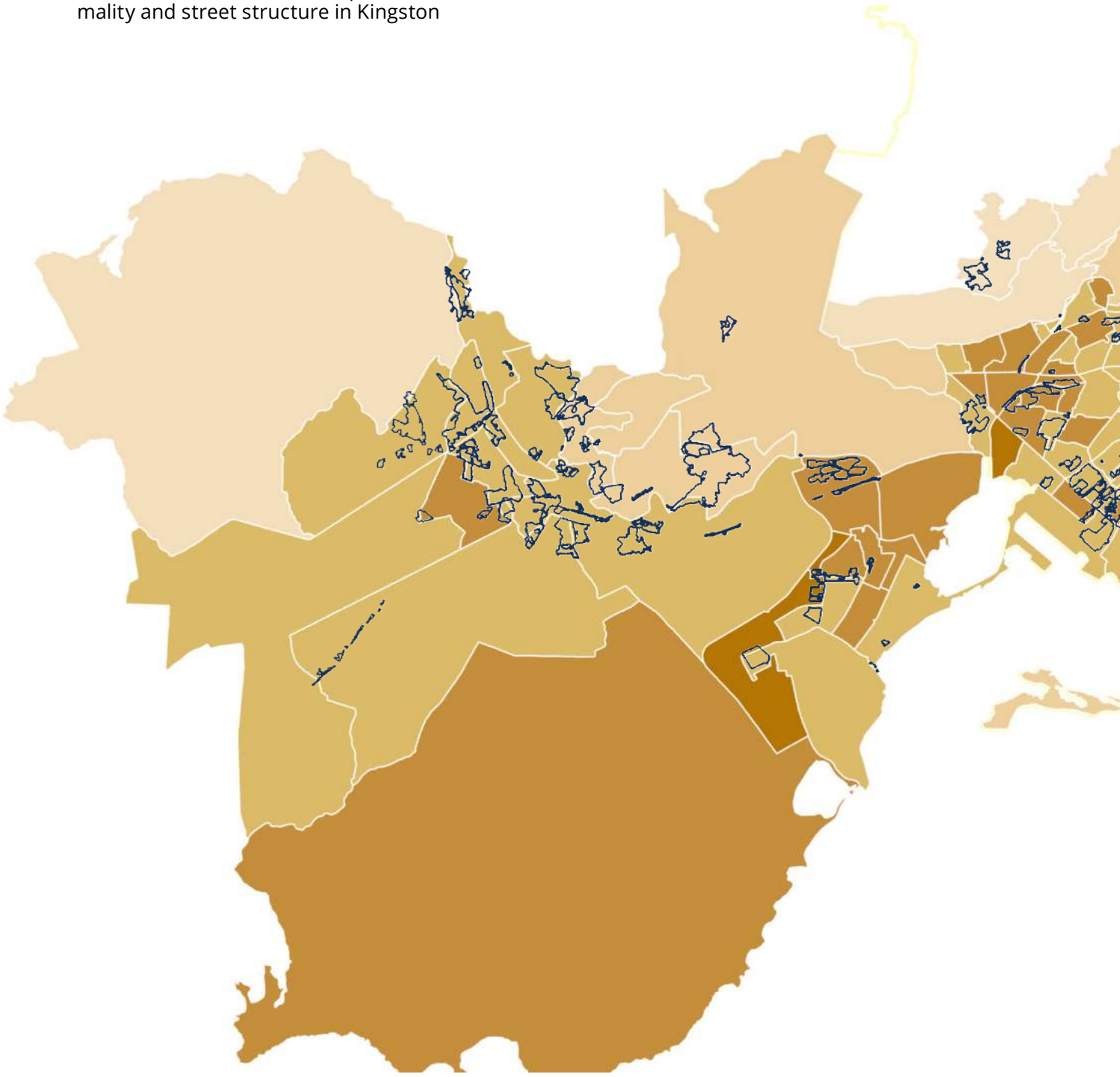
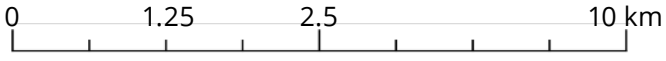
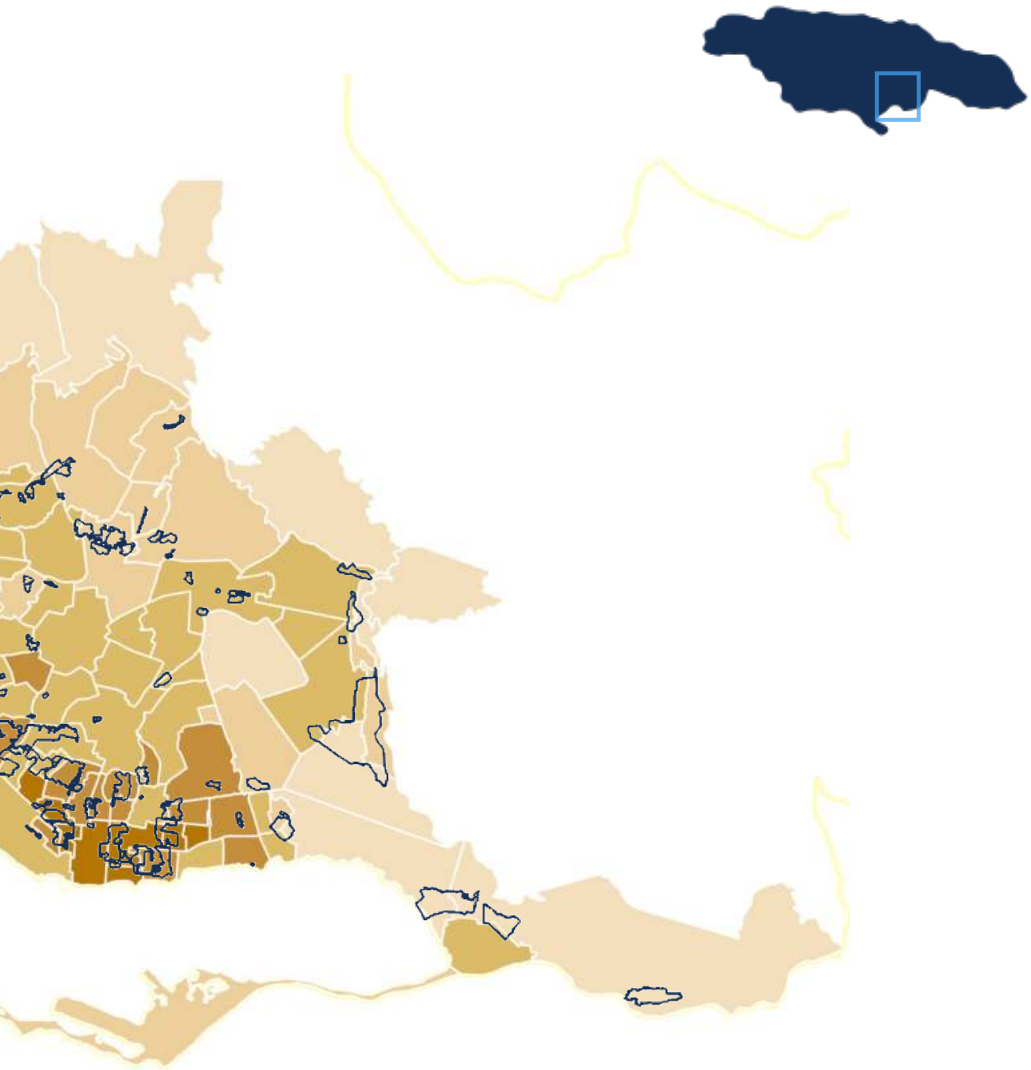
22 Street Structure Variations in GKMA

There is no clear relationship between informality and street structure in Kingston







However, connectivity does not guarantee integration or safety. In Central Downtown Kingston, the road network is highly connected, but issues such as building abandonment, high levels of informality, and crime persist. This suggests that infrastructure alone cannot resolve socio-economic challenges. High connectivity must be supported by broader investments in housing, safety, and services to produce meaningful urban transformation.

The structure of a community's street network also has implications for public safety. Areas with narrow, winding roads and limited access points are more vulnerable to crime. Limited visibility and restricted police access allow illicit activity to go unchecked. Spatially enclosed neighbourhoods can become zones of control for gangs or other armed actors, reinforcing cycles of violence.

In sum, well-structured street networks are essential for urban inclusion. They enable mobility, support service delivery, and foster social interaction. But their benefits only fully materialize when paired with investments in safety, housing, and opportunity. Street structure, in this context, should be seen not only as a feature of physical design but as a platform for equitable urban development.

Levels of Access to Street Structure

- Very High (>0.48 - 1.00)
- High (>0.32 - 0.48)
- Moderate (>0.20 - 0.32)
- Low (>0.09 - 0.20)
- Very Low (0 - 0.09)
- Informal Community Border

Indicator #11: Environmental Hazards

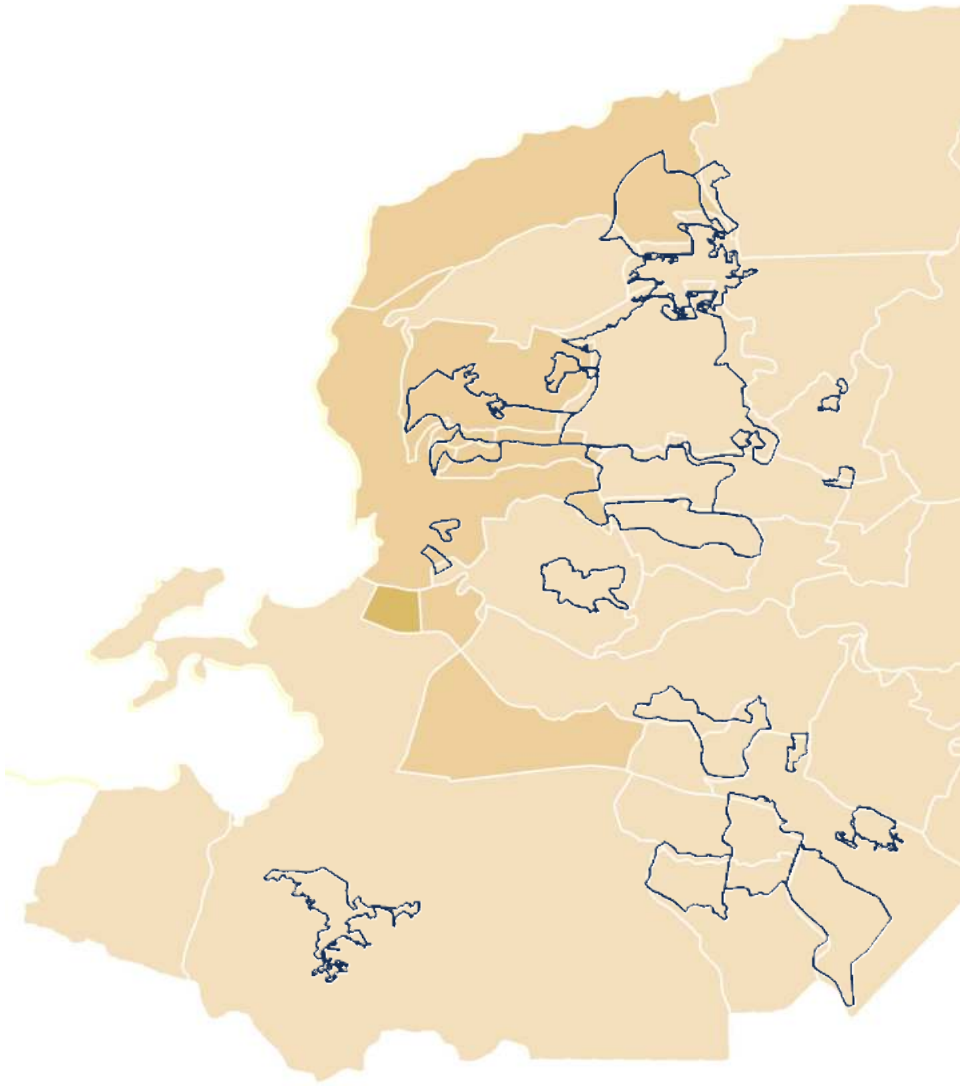
The OneCity Explorer examines environmental hazards through a composite measure that includes three key hazards: flood risk, the urban heat island effect, and air pollution. These environmental stressors are not evenly distributed across Jamaica's urban landscape and often compound existing inequalities in marginalised communities.

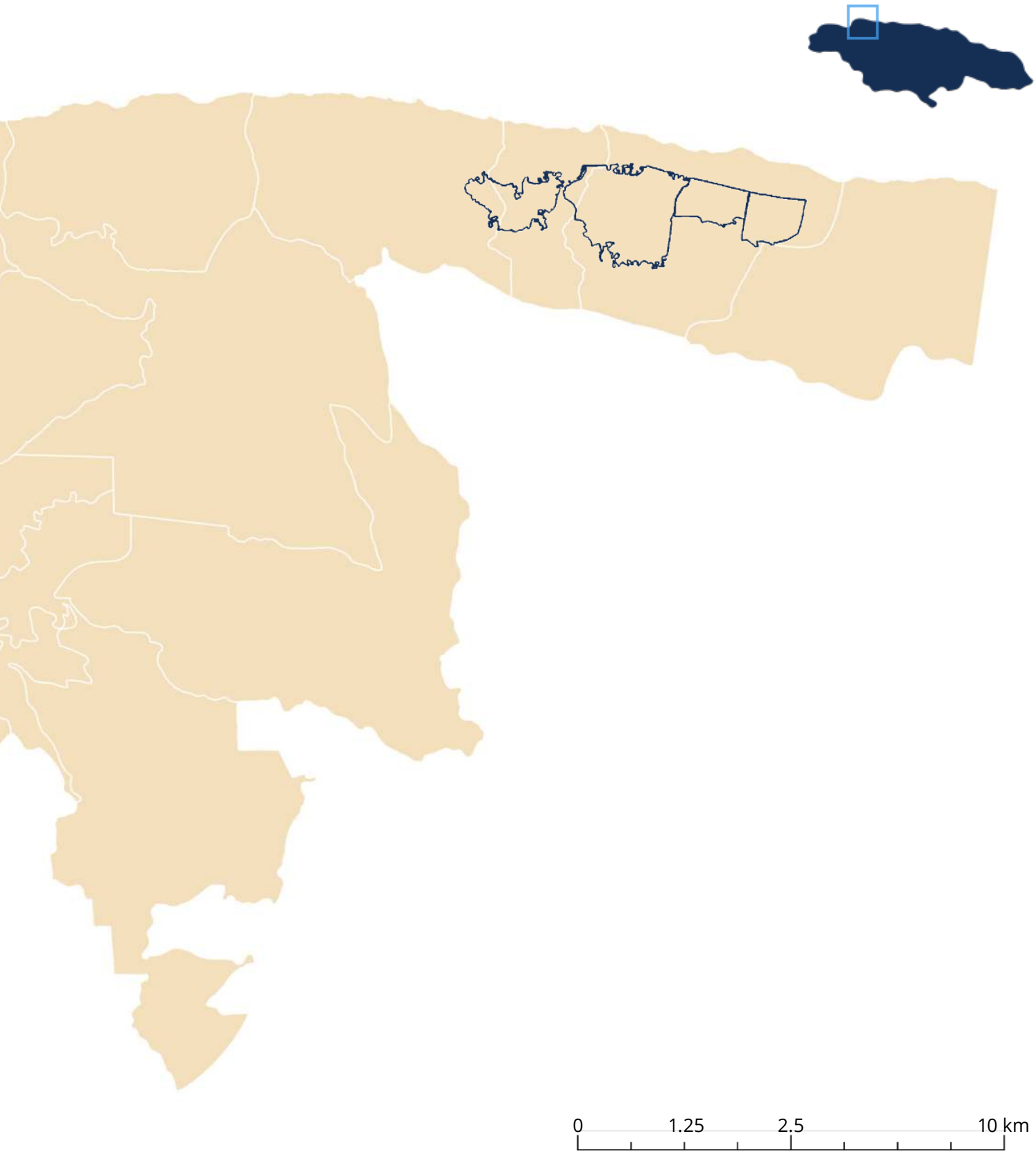
Flood risk remains one of the most pressing environmental challenges facing urban areas. Over half of Jamaica's urban communities are located in flood-prone zones, with especially high exposure in peripheral and informal settlements. This pattern is closely tied to inadequate land-use planning, including the occupation of wetlands and riverbanks. In addition, poor waste management has significantly worsened the situation. An estimated 25 to 30 percent of Jamaica's garbage is dumped in gullies, which clogs drainage infrastructure and raises the likelihood and intensity of flood events. Kingston has been particularly affected, experiencing repeated flood losses over the decades. According to the United Nations Office for Disaster Risk Reduction, Jamaica ranks among the top three countries globally in terms of economic exposure to multiple natural hazards, with over 96 percent of its GDP considered at risk.[64]

The urban heat island (UHI) effect adds another layer of vulnerability. The data shows substantial differences in average annual surface temperatures across urban communities. Densely developed areas like Downtown Kingston, Portmore, and Spanish Town experience much higher temperatures due to a lack of vegetation, extensive built-up infrastructure, and widespread use of heat-retaining materials such as asphalt and concrete. These conditions increase thermal discomfort and can be especially harmful to the elderly, children, and those with underlying health conditions. As climate change

23 **Areas of GMB with Environmental Hazards**

Informal communities in Montego Bay generally have lower levels of exposure to environmental hazards

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1.25
2.5
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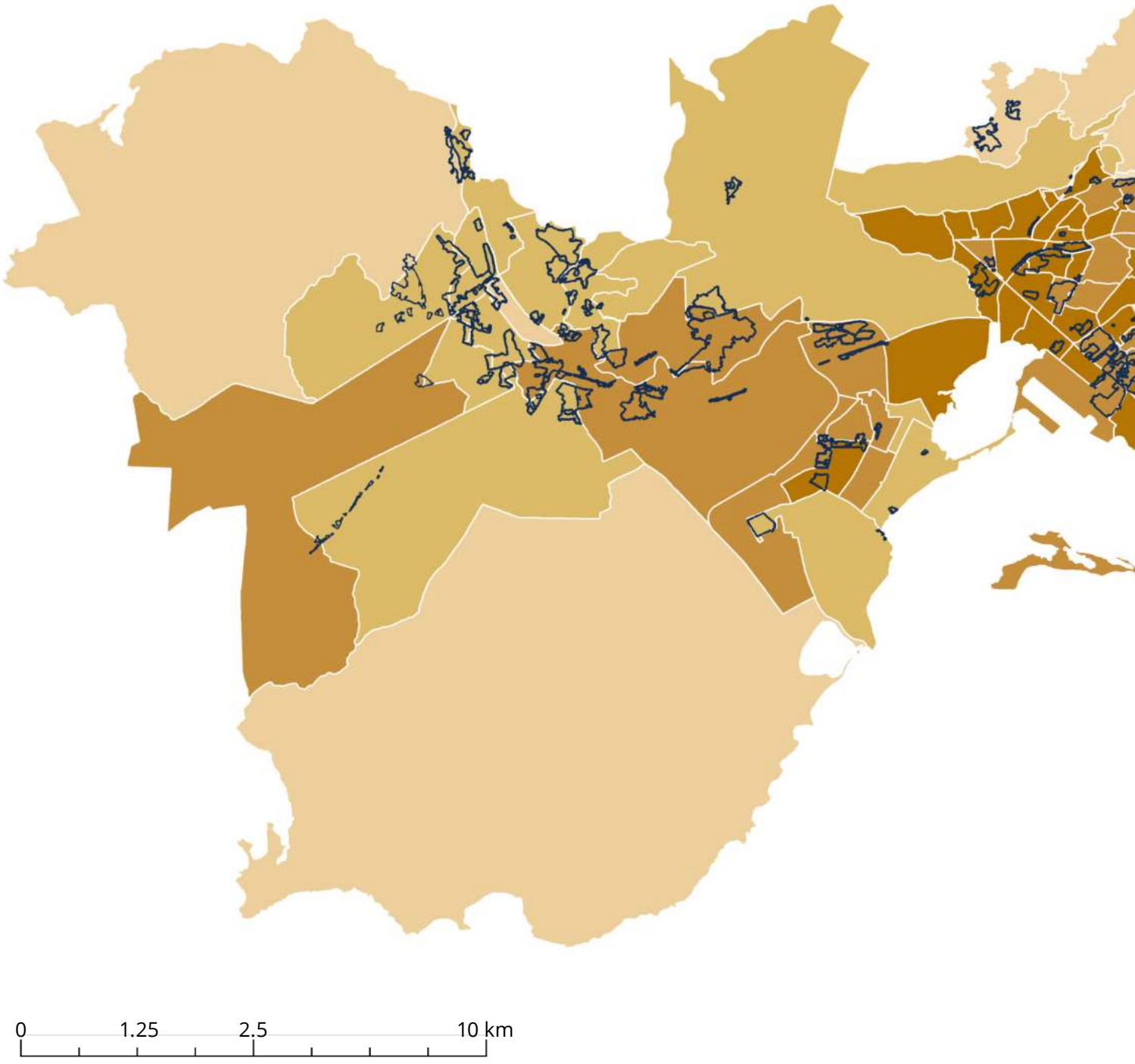
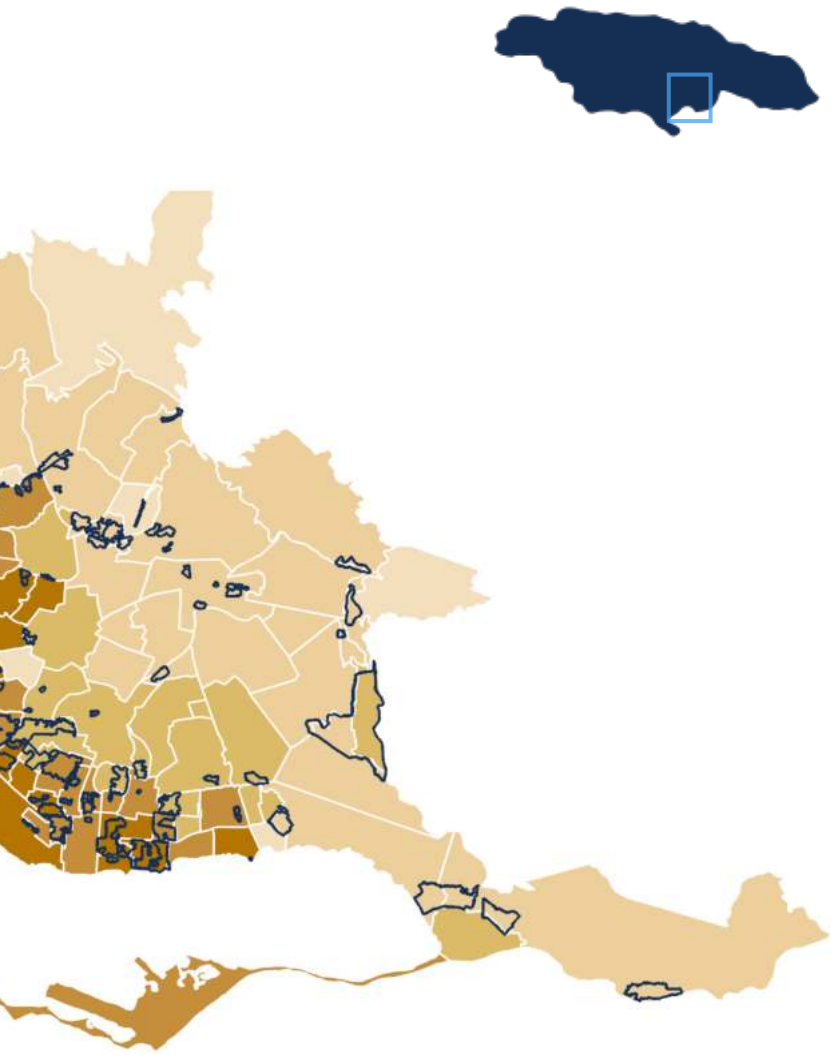
24 Areas of GKMA with Environmental Hazards

Informal communities in Kingston generally have higher levels of exposure to environmental hazards





Levels of Environmental Hazards

- Very High (>0.67 - 0.82)
- High (>0.54 - 0.67)
- Moderate (>0.37 - 0.54)
- Low (>0.22 - 0.37)
- Very Low (0.07 - 0.22)
- Informal Community Border

intensifies, these disparities are likely to grow more severe. The absence of green spaces in the hottest areas points to a clear need for urban cooling strategies, including the creation of public parks, tree-planting campaigns, and incentives for climate-sensitive architecture.

Air quality, the third component of environmental vulnerability, is assessed through concentrations of fine particulate matter (PM2.5), which is known to pose serious health risks. The analysis shows that industrial zones and heavily trafficked areas have the worst air quality. Downtown Kingston, Marcus Garvey Drive, and Port Royal are among the most affected communities, with emissions from factories, heavy vehicle traffic, and airport operations all contributing to high levels of airborne pollutants. Prolonged exposure to PM2.5 is associated with respiratory illness, cardiovascular disease, and increased mortality. Organisations like the Jamaica Environment Trust have consistently called attention to this issue, urging stronger regulation and the implementation of health impact assessments to protect vulnerable populations.

Environmental vulnerability is not limited to informal areas. Some formal urban communities, such as parts of Downtown Kingston, face multiple overlapping risks despite having relatively strong infrastructure and road connectivity. These cases illustrate that environmental vulnerability is as much about policy and investment as it is about physical form. Without targeted interventions, ranging from better land use and waste management to climate adaptation and pollution control, urban environments will continue to produce and reproduce inequality.

Indicator #12: Employment and Productivity

Employment shapes whether residents can meet their basic needs, access essential services, and contribute meaningfully to the social and economic life of their communities. In Jamaica's urban areas, however, opportunities for stable, formal employment remain deeply uneven. While headline national figures show progress, a closer look reveals that employment outcomes are highly dependent on where people live and how proximate and connected they are to the engines of economic activity.

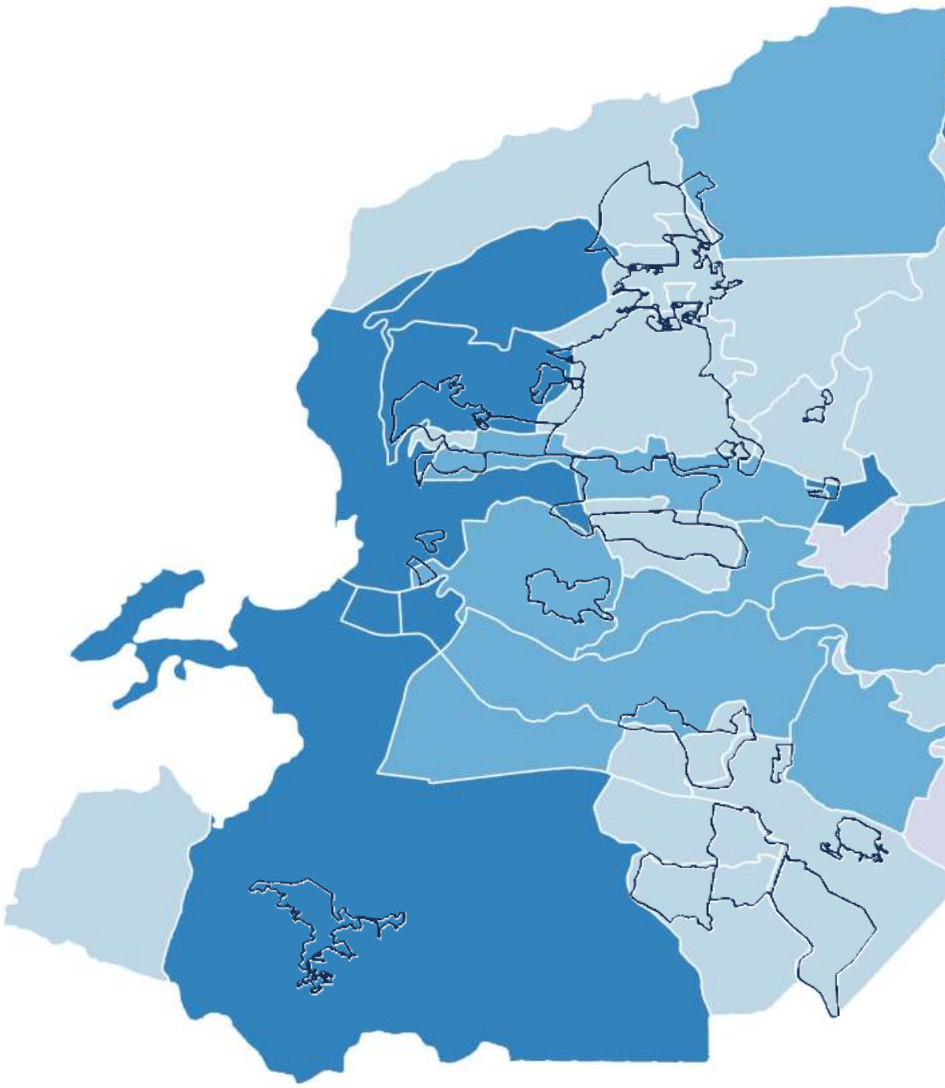
Jamaica's official unemployment rate reached a record low of 4.5 percent in 2023.[65] But this national achievement conceals sharp disparities across the urban landscape. In many inner-city and fringe communities, work remains highly informal, intermittent, and precarious. Residents often rely on street vending, day labour, domestic work, or self-employment, activities that fall outside the purview of social protections, bankable income streams, and long-term security.

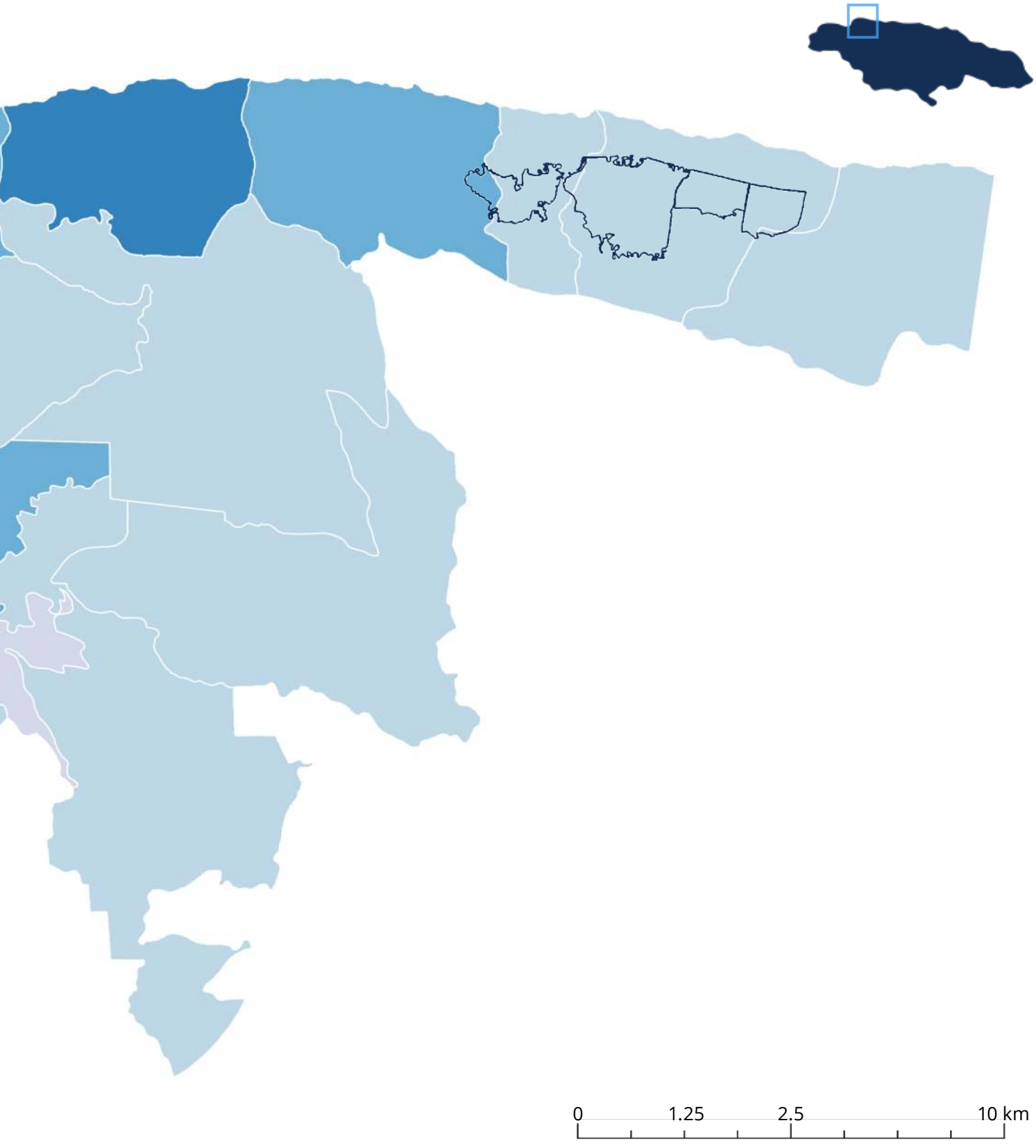
The Employment indicator records an average score of 0.583 across Jamaica's urban communities. Higher-scoring areas include commercial hubs and service-oriented neighbourhoods in New Kingston, Liguanea, and Ironshore. These locations benefit from proximity to job centres, stronger transport connectivity, and local economic dynamism. By contrast, communities such as Flankers, Newlands, and Maxfield Park score below 0.25. [66] These areas tend to lack consistent formal job opportunities, are under-resourced in infrastructure, and demonstrate low visible economic activity.

The indicator uses three components: (1) modelled employment rates, (2) income levels, and (3) a measure of localized economic activity derived from nighttime satel-

25 **Levels of Employment in GMB**

Informal communities in Montego Bay generally have lower levels of access to employment

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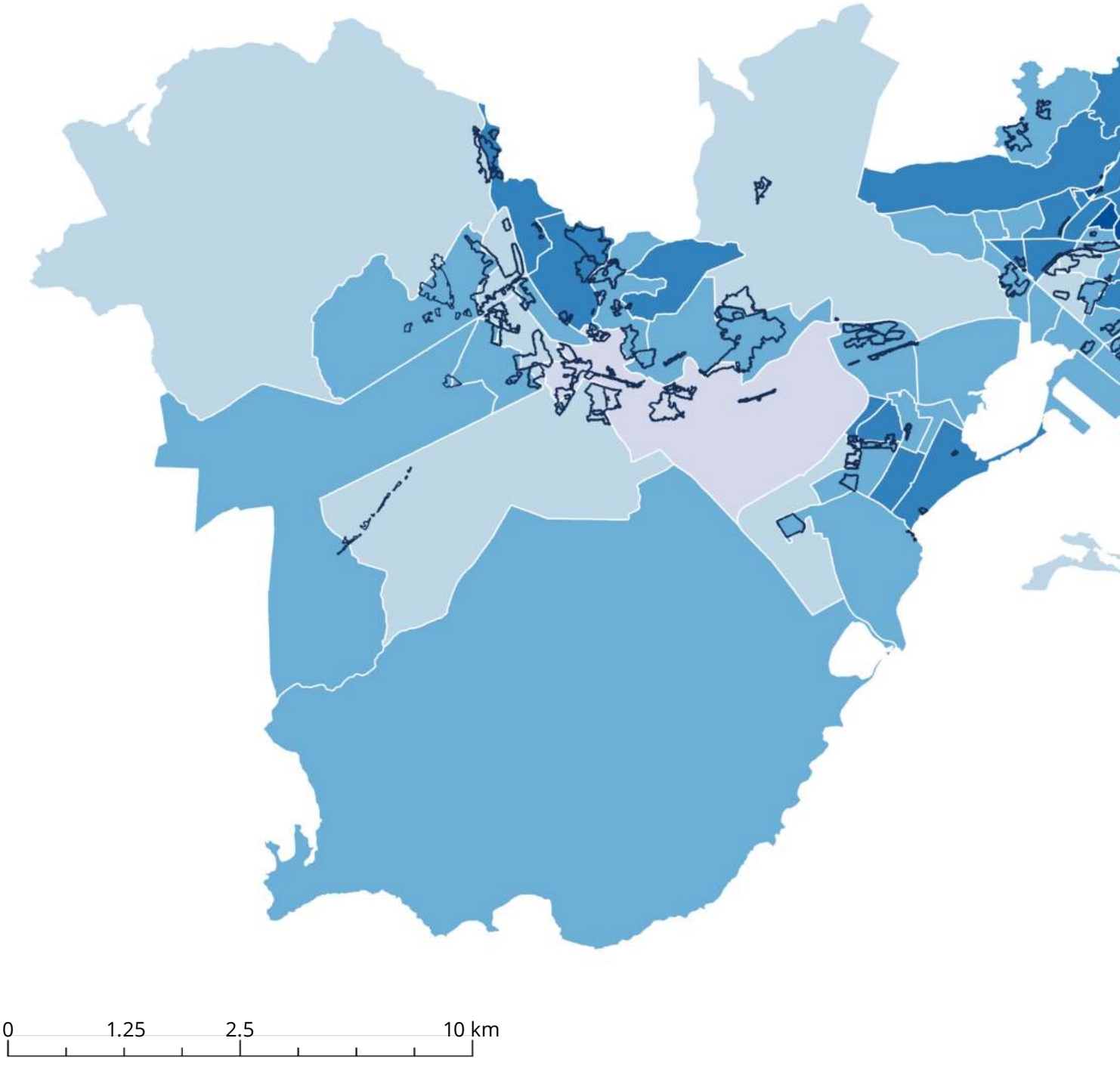
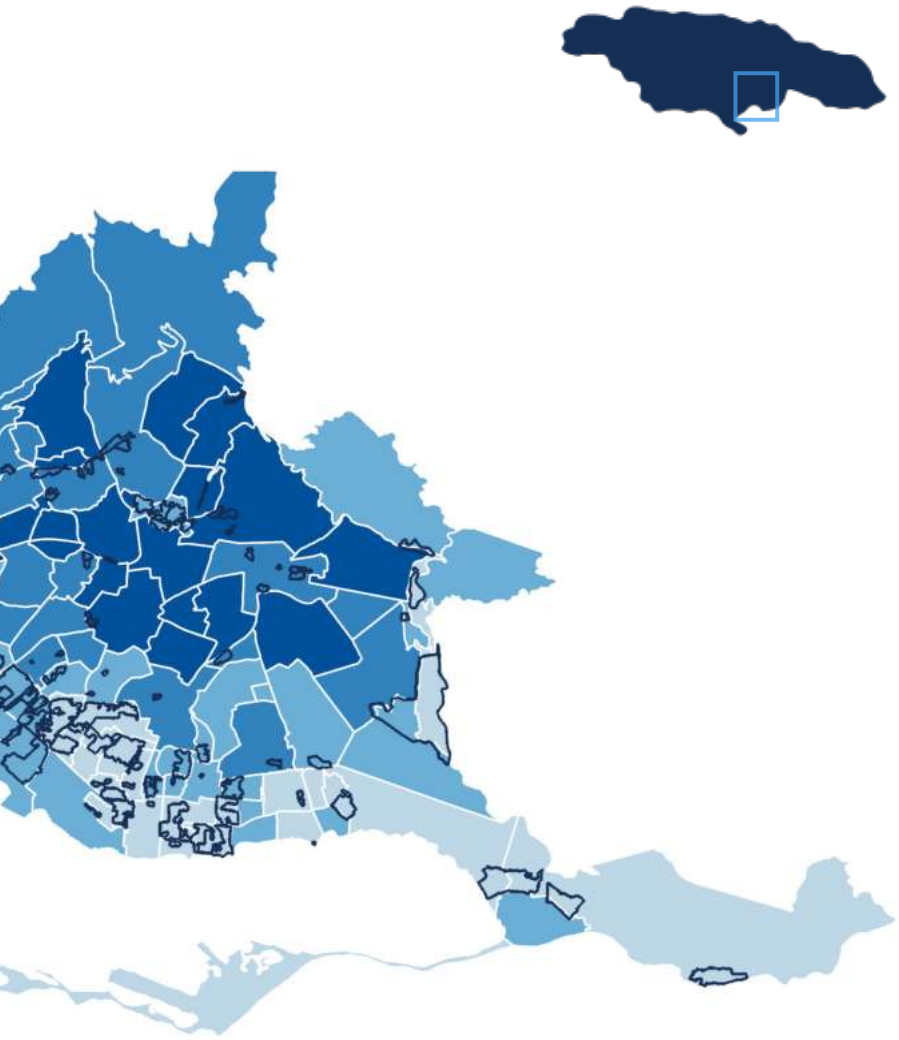
1.25
2.5
10 km

26 Levels of Employment in GKMA

Informal communities in Kingston generally have lower access to employment





lite imagery adjusted for population density.[67] The inclusion of night-time lights data allows analysts to map economic output even in areas where conventional labour force data are sparse or outdated.[68],[69] This approach reveals important insights: while Kingston's commercial centres display concentrated light emissions, many surrounding low-income communities appear dim, suggesting weak integration into formal economic flows.

A key factor underlying this divide is spatial mismatch: the disconnect between where people live and where jobs are located. Many residents in low-scoring communities face long, expensive, or unsafe commutes to reach employment zones. Poor road infrastructure, inadequate public transport, and security concerns restrict their access to job markets, even when opportunities exist within geographic proximity.

Yet the issue is not only one of distance or infrastructure but also about recognition. Many low-scoring communities are economically inactive. They are home to informal economies that remain invisible to the state and disconnected from broader development initiatives. Rather than treating these activities as marginal, policy should explore ways to integrate informal livelihoods into formal planning and support systems. In other countries, cities have developed responsive frameworks that support informal employment: mobile licensing for vendors, legal vending zones, targeted credit programs, and cooperative networks that help workers access health insurance and business services.[70]

Indicator #13: Access to Healthcare

Access to healthcare is a cornerstone of urban inclusion. It determines whether residents can manage illness, respond to emergencies, and maintain overall wellbeing. In Jamaica's cities, however, access is shaped less by outright scarcity and more by spatial inequality. Infrastructure gaps, weak transport links, and the clustering of services in wealthier areas leave many low-income communities underserved.

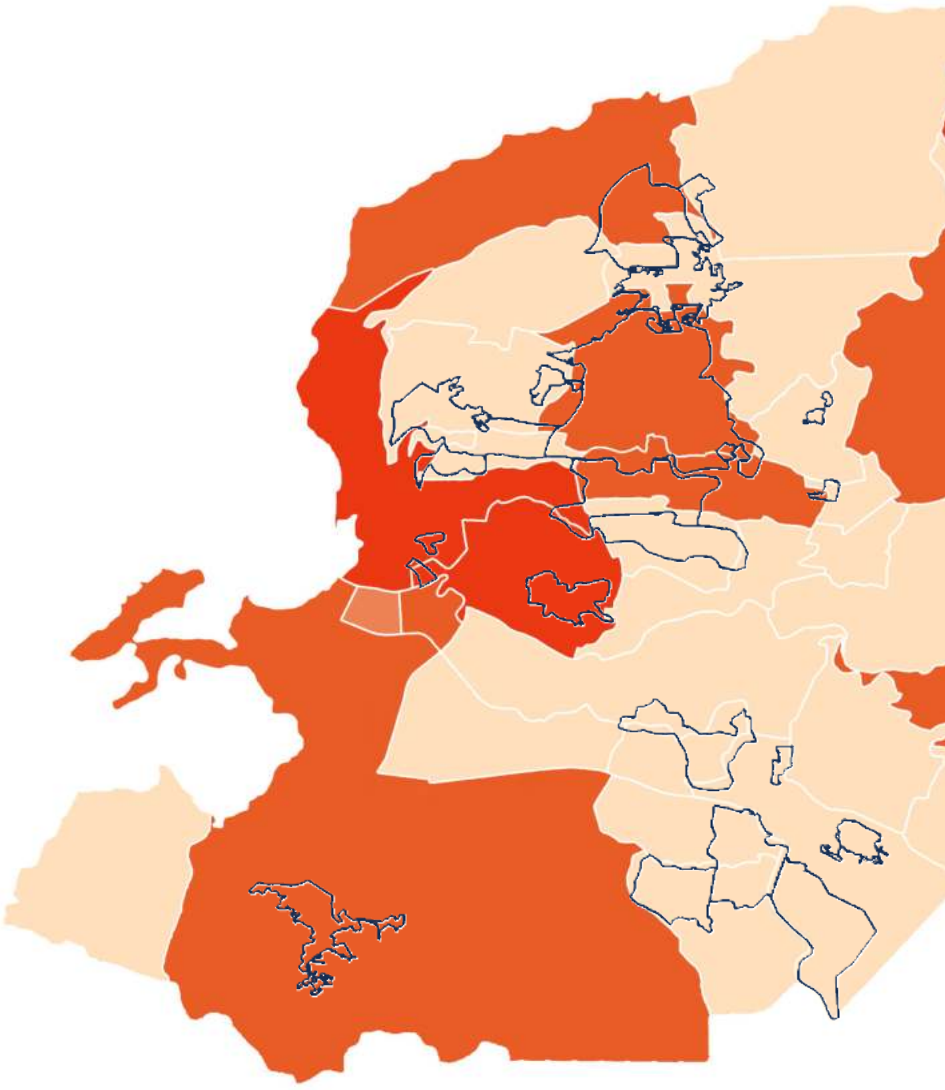
The Urban Integration Index's Access to Healthcare indicator, known as the Proximity-Adjusted Healthcare Index (PAHI), records a national average score of 0.614. While this reflects moderate overall access, there is wide variation across communities. New Kingston, Liguanea, and Ironshore score above 0.85 due to their proximity to major hospitals, private clinics, and efficient transport. In contrast, Newlands, Flanker, and Seaview Gardens score below 0.35, reflecting poor infrastructure, limited connectivity, and long travel times to care.

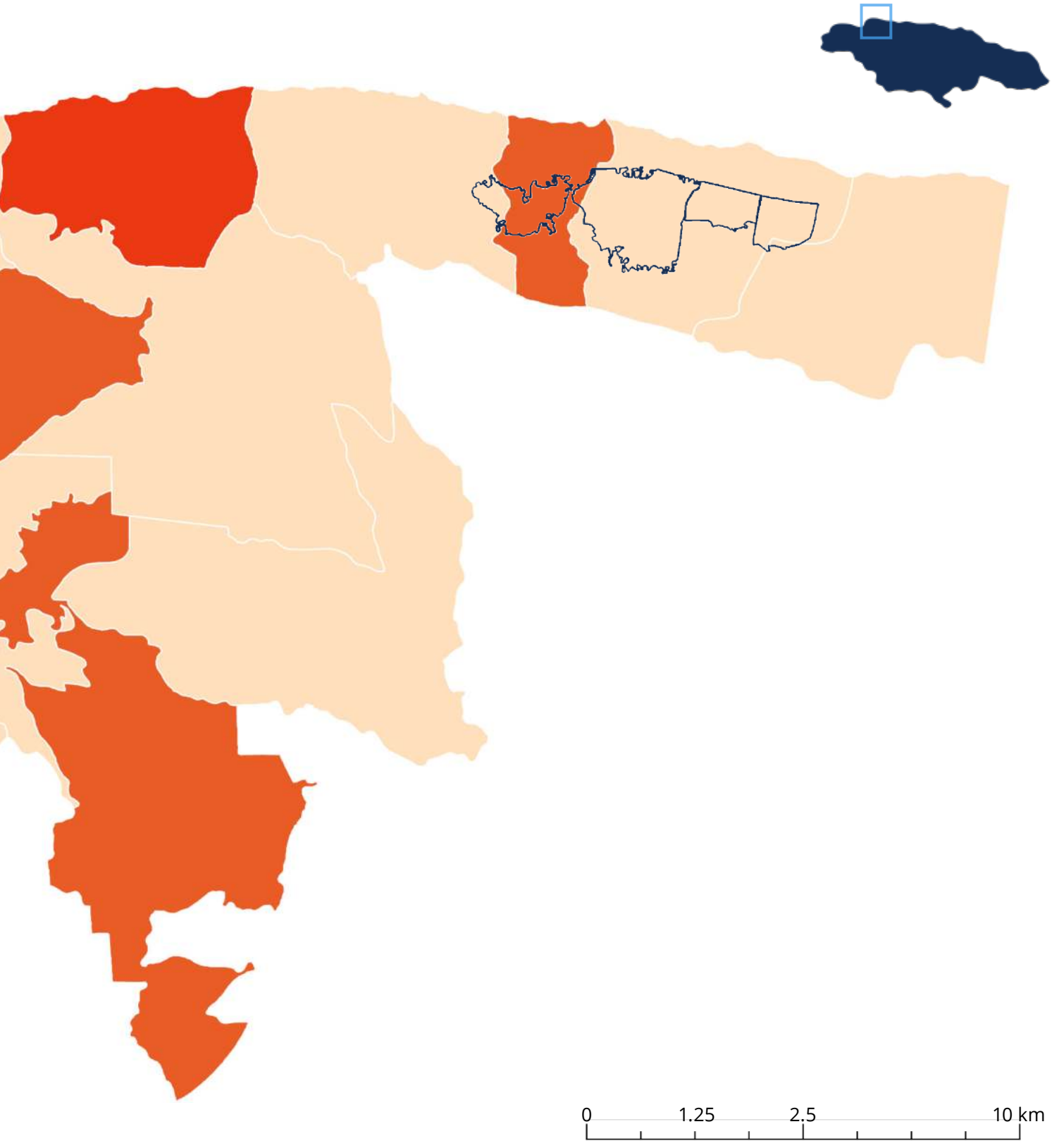
The PAHI incorporates three components: motorized travel time to the nearest healthcare facility, walking time, and the density of hospitals and clinics within or near each community. These variables are based on internationally validated accessibility models and geospatial datasets from sources such as the Humanitarian Data Exchange. Travel time is a key factor, given its proven impact on outcomes in cases like trauma, maternal emergencies, and infectious disease. In Jamaica, where many households lack private vehicles and where public transport is often unreliable, travel time becomes a major determinant of whether care is reachable.

The indicator also reveals how informal settlements suffer from institutional exclusion. Communities on the urban periphery, particularly in Montego Bay and Spanish Town, often have sparse infrastructure and few nearby services.

27 **Areas of GMB with Access to Healthcare**

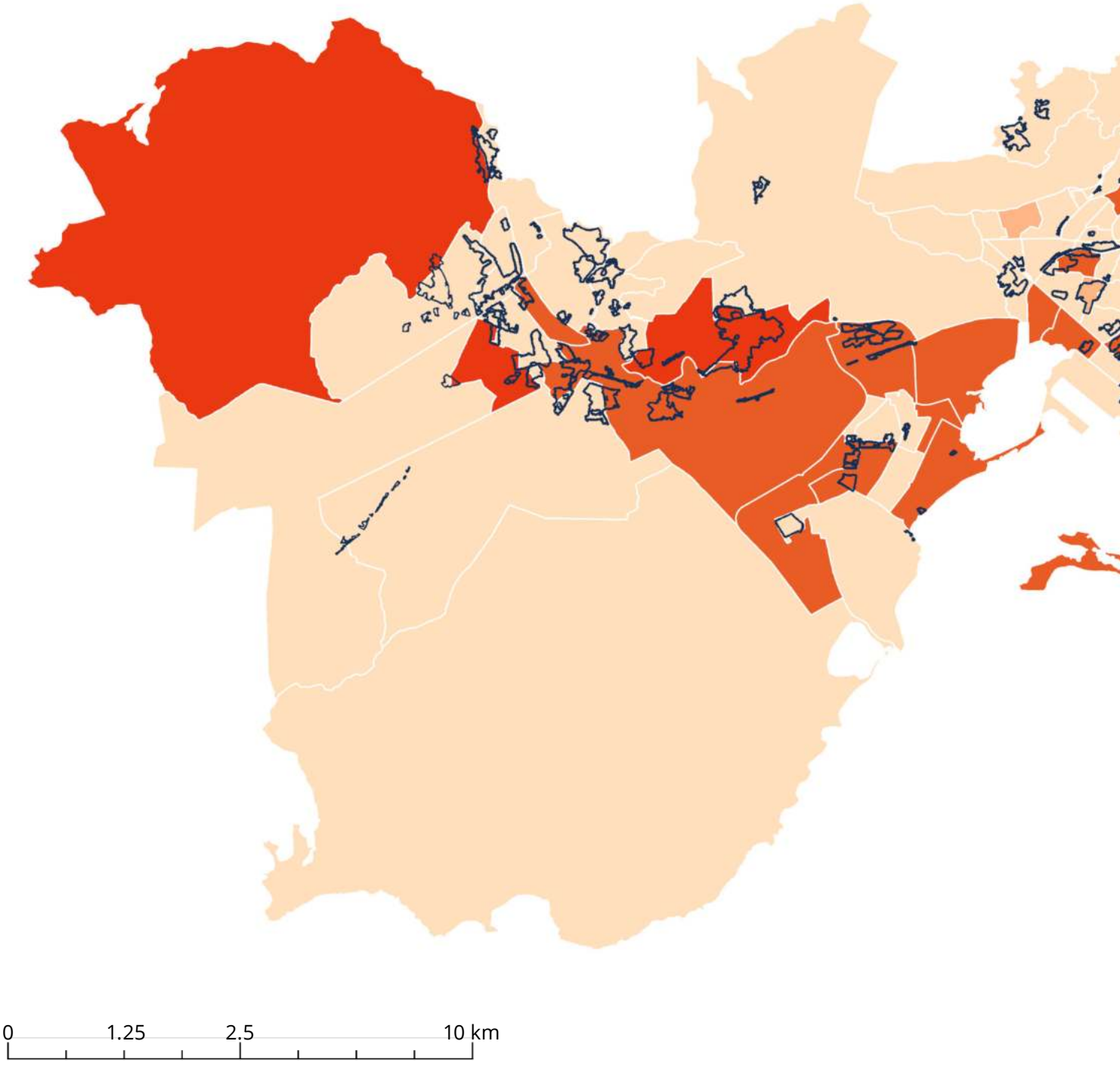
Informal communities in Montego Bay generally have lower access to healthcare

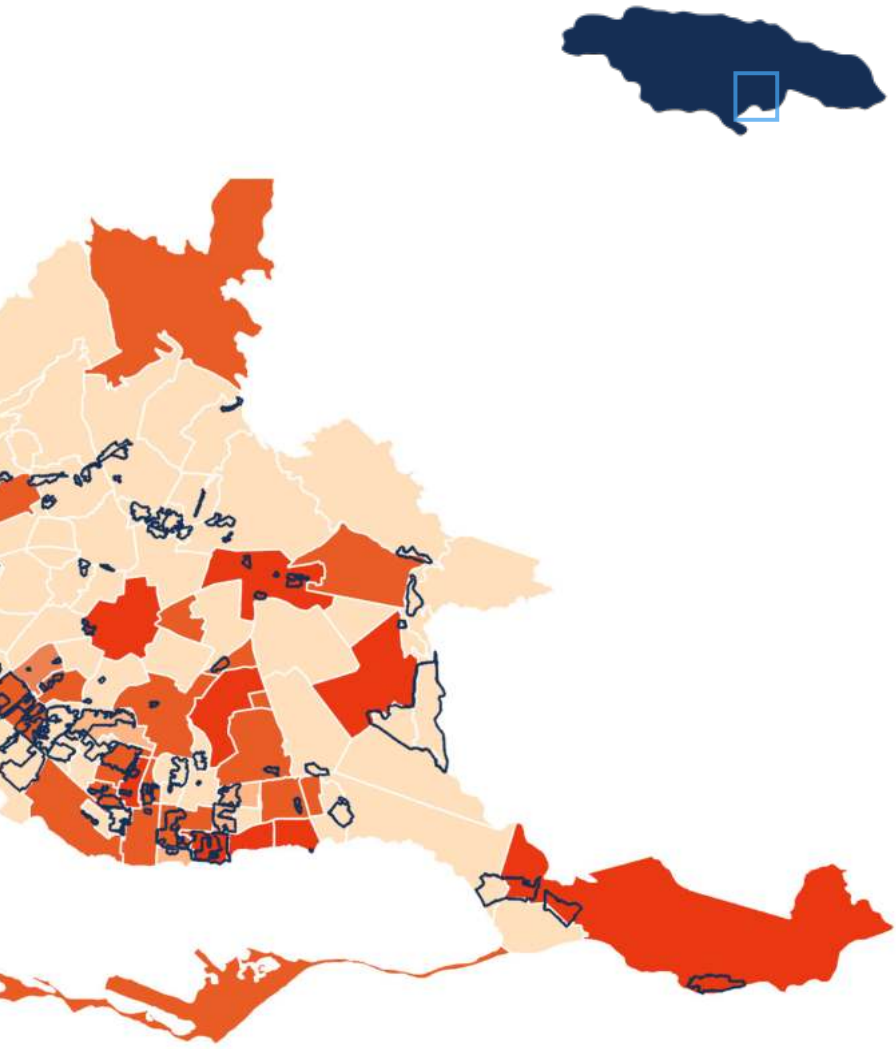



0
1.25
2.5
10 km

28 Areas of GKMA with Access to Healthcare

There is no clear relationship between informal communities and access to healthcare





Flood-prone or industrial-edge communities are similarly affected. In many of these areas, residents rely on clinics with limited hours, minimal staff, and few resources. These gaps delay treatment and contribute to preventable health complications and higher long-term costs.

While Jamaica has made important gains through the National Health Fund and the expansion of Type 1 clinics, these improvements have not reached all urban communities equally. Facility construction has slowed in recent years, and coordination across levels of government remains weak. Some decentralization efforts, including mobile clinics and school-based health posts, have potential but lack the consistency needed to close persistent access gaps.

To address these disparities, health planning must be more spatially responsive. One promising approach involves zonal health equity plans, used in cities like Bogotá and Cape Town. These integrate spatial data with health systems planning and community consultation to prioritize underserved areas. Another solution is strengthening the interface between informal settlements and the formal health system. This includes transport upgrades, embedded health posts, and referral linkages between frontline care and hospitals. Anchoring access in both space and system design is key to making urban healthcare truly equitable.

Levels of Healthcare

- Very High (>0.24 - 1.00)
- High (>0.11 - 0.24)
- Moderate (>0.05 - 0.11)
- Low (>0.02 - 0.05)
- Very Low (0 - 0.02)
- Informal Community Border

Indicator #14: Civic Engagement

Civic engagement is a core component of inclusive urban governance. It reflects the degree to which residents participate in shaping their communities, influencing policies, and holding institutions accountable. In Jamaica's urban landscape, however, participation is often viewed not as a right but as a transaction, something done for material benefit, political obligation, or under duress. This reflects deeper structural issues that limit meaningful engagement, particularly in communities historically affected by clientelism, neglect, and distrust.

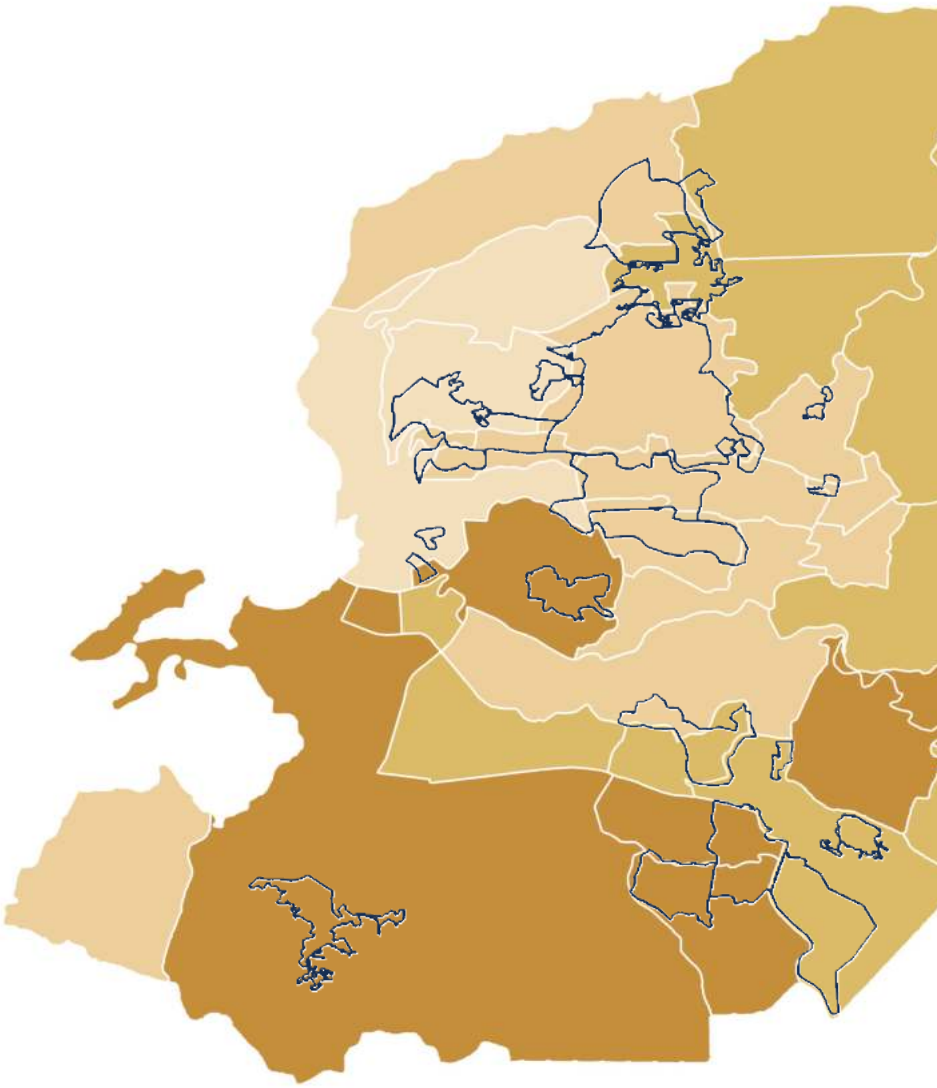
Civic engagement was examined using two main variables: voter turnout and community engagement. The latter was assessed by evaluating the presence of active Community Development Committees (CDCs) and the number of functioning Community-Based Organisations (CBOs) within each area. These indicators served as proxies for residents' political participation and grassroots involvement in local governance.

When mapped, the findings revealed a complex picture. Higher civic engagement often aligned with higher socio-economic status, reflecting greater institutional trust, political efficacy, and stronger social networks in better-off communities. This pattern aligns with social disorganisation theory, which suggests that low-income communities tend to exhibit weak informal social controls and lower civic participation due to instability, transience, and fragmented social ties.

Yet the Jamaican case reveals a more layered reality. High levels of civic engagement were found not only in neighbourhoods like Barbican and Liguanea but also in communities such as August Town and Tivoli Gardens. These areas showed strong voter turnout and active local organising, including functioning CDCs and a visible presence of CBOs. This duality challenges the idea

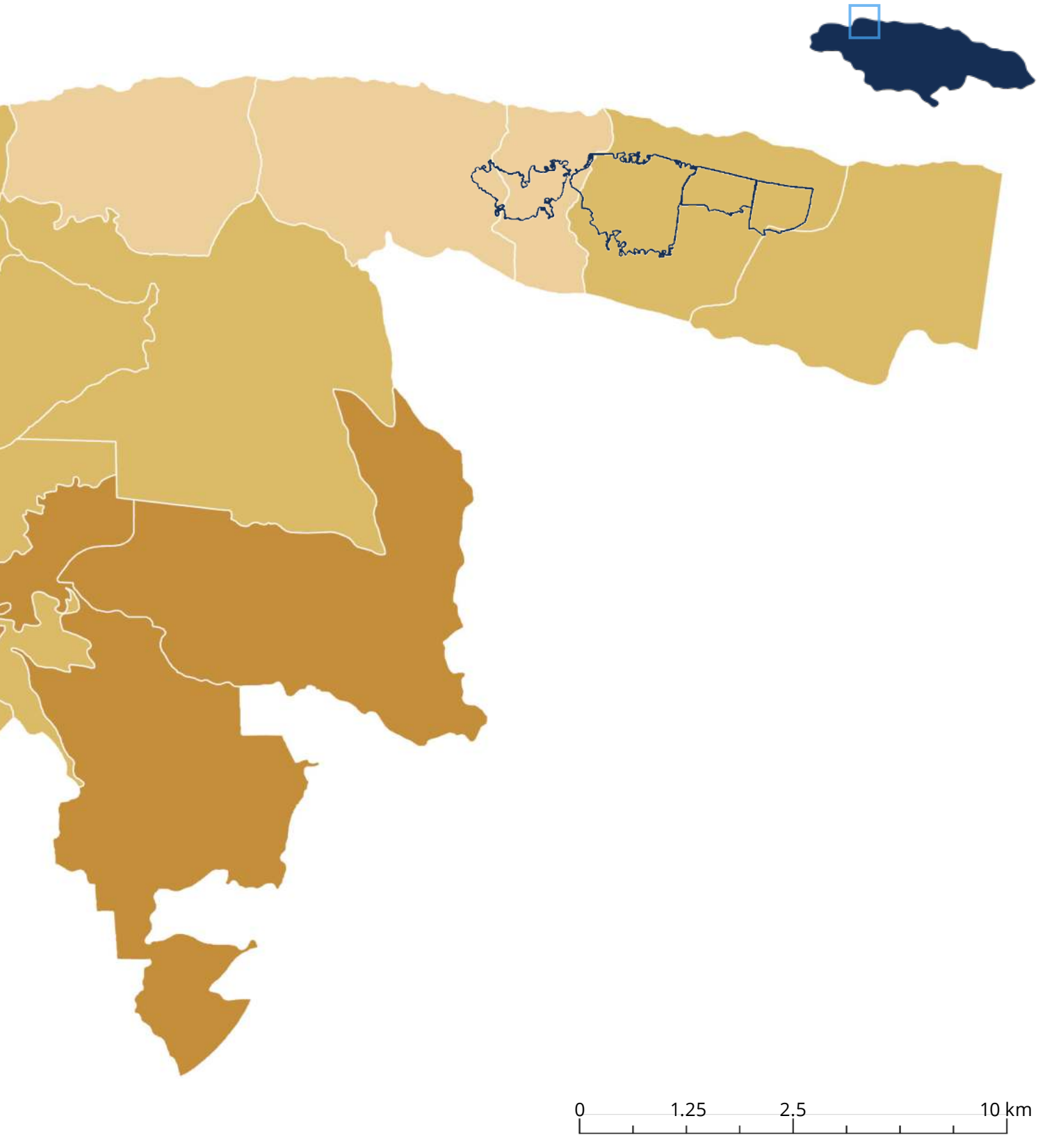
29 **Levels of Civic Engagement In GMB**

Informal communities in Montego Bay generally have high levels of civic engagement



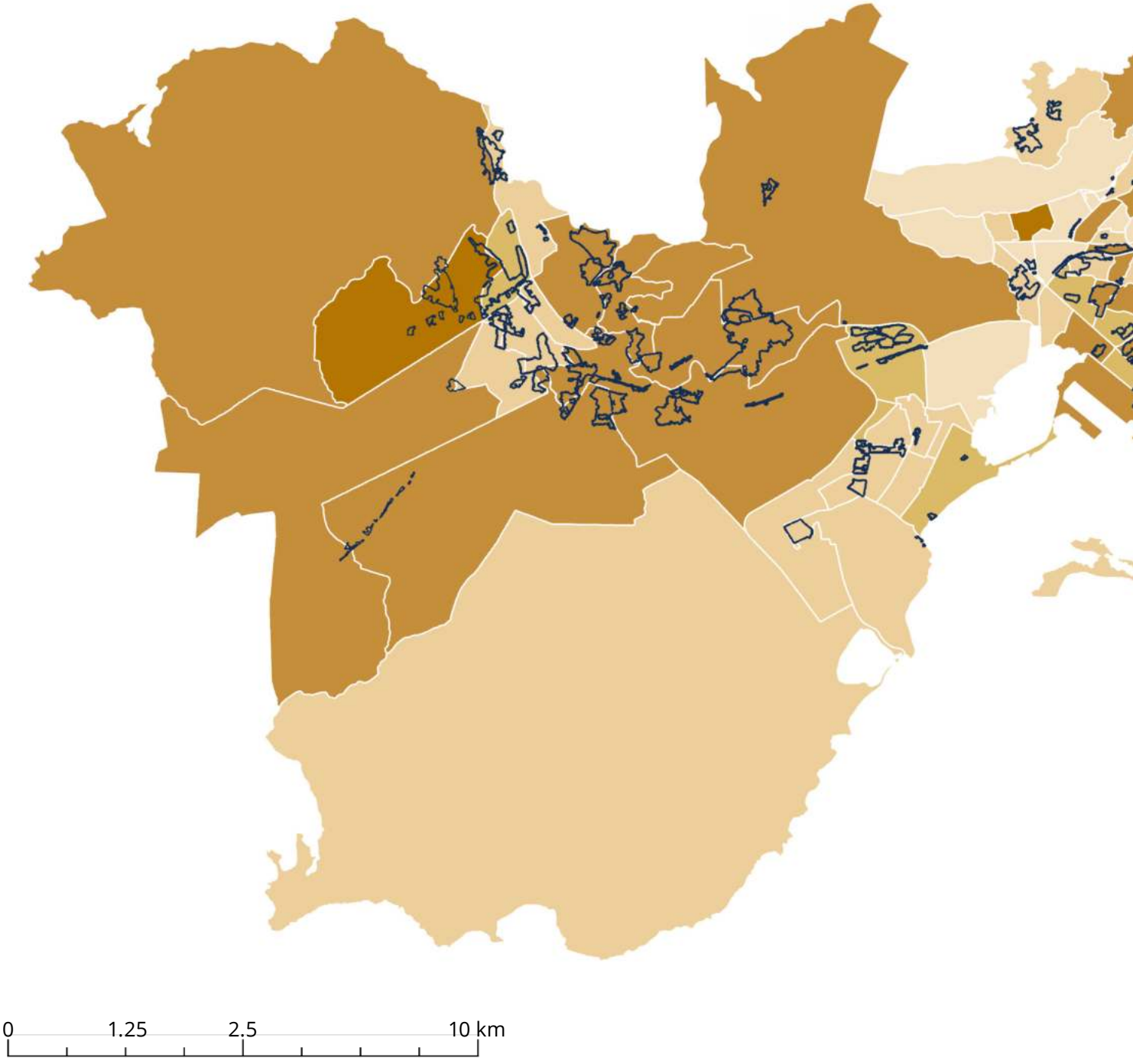
Levels of Civic Engagement

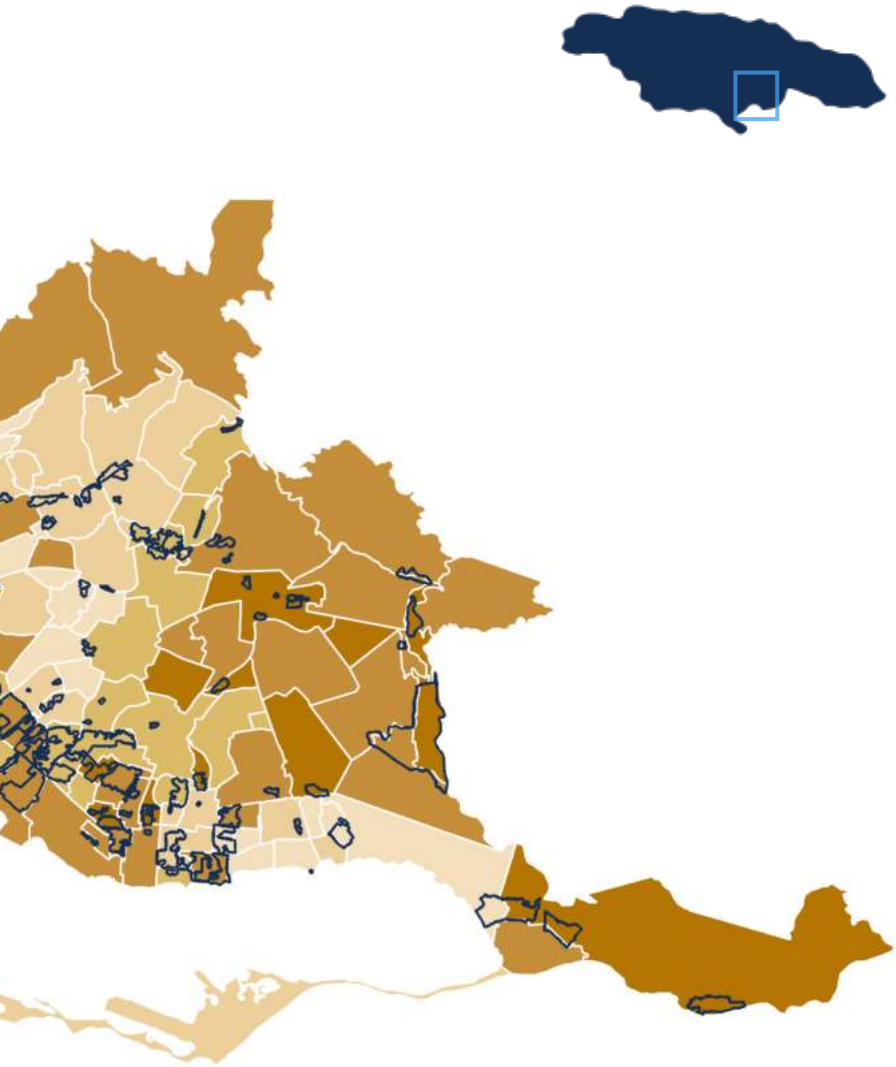
- Very High (>0.54 - 1.00)
- High (>0.34 - 0.54)
- Moderate (>0.23 - 0.34)
- Low (>0.12 - 0.23)
- Very Low (0 - 0.12)
- Informal Community Border


0
1.25
2.5
10 km

30 Levels of Civic Engagement In GKMA

Informal communities in Kingston generally have high levels of civic engagement





Levels of Civic Engagement

- Very High (>0.54 - 1.00)
- High (>0.34 - 0.54)
- Moderate (>0.23 - 0.34)
- Low (>0.12 - 0.23)
- Very Low (0 - 0.12)
- Informal Community Border

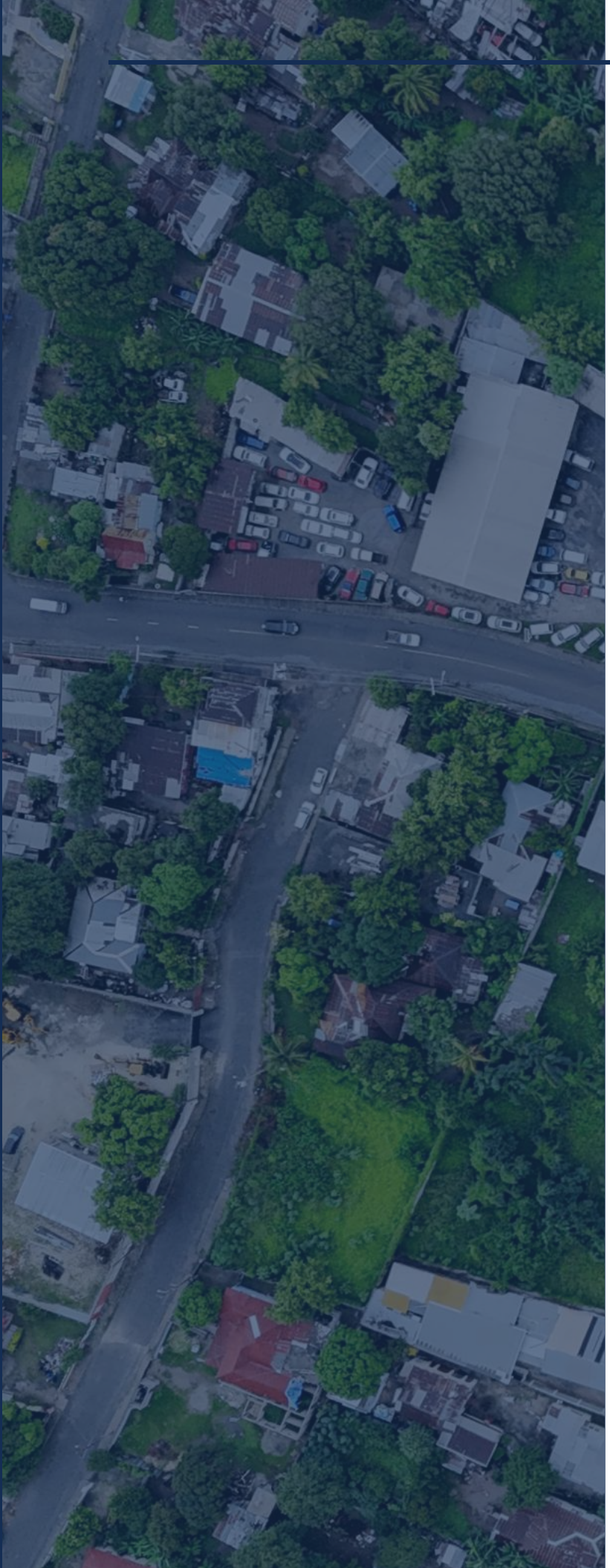
that civic vitality is confined to wealthier enclaves and suggests that under certain conditions, lower-income communities can also support high levels of engagement.

One explanation lies in the influence of political patronage. In many lower-income communities, participation has historically been structured through informal networks where access to resources, such as jobs, housing, or infrastructure, is mediated by political actors. In these settings, civic action may reflect strategic interaction with systems of brokerage rather than conventional notions of political inclusion. Community groups in these areas often navigate complex relationships with elected officials, balancing grassroots advocacy with efforts to maintain access to state resources.

By contrast, civic participation in affluent areas tends to be motivated by policy advocacy, local development concerns, and long-term planning rather than immediate material needs. These divergent pathways illustrate that while civic engagement can be measured using common indicators, it functions through very different logics depending on context.

5

Conclusion



The **index** is grounded in the recognition that urban integration is multidimensional

The index is grounded in the recognition that urban integration is multidimensional. A community may have strong civic participation but not have basic infrastructure, or it may be environmentally secure yet spatially disconnected from public transit and employment hubs. The Urban Integration Index responds to this complexity by weighting and standardising each component indicator to produce a single, comparable score for each urban community. This approach allows for both granular analysis and broader comparisons across the urban system.

Preliminary findings from the index show some expected patterns of development and difference, and confirm some assumptions of the existence of spatial inequalities and unequal rights to the city. Communities such as Barbican, Liguanea, and parts of New Kingston scored consistently high across most domains. These areas are characterised by formal planning, robust infrastructure, low environmental risk, and high access to services—traits that reflect strong levels of integration into the city's core systems. In contrast, communities such as Riverton City, Seaview Gardens, and Naggo Head ranked among the lowest, with intersecting challenges including insecure tenure, exposure to flood risk and pollution, limited access to water and sanitation, and spatial disconnection from key services and opportunities.

However, the index also highlights important exceptions. There are communities that perform well in some areas despite structural challenges in others. August Town, for example, while facing environmental and economic constraints, demonstrates high civic engagement, a relatively active network of community organisations, and moderate levels of access to public services. Similarly, Tivoli Gardens, though historically stigmatised and affected by violence, showed strong voter turnout and community participation alongside reasonable access to services, suggesting a degree of social resilience.

Conversely, some communities with relatively good infrastructure and planning still face persistent social or environmental issues. Downtown Kingston, despite high street connectivity and centrality, remains highly vulnerable to heat and air pollution, with aging infrastructure and elevated levels of informality within older buildings. These cases challenge simplistic readings of integration based solely on planning status or geographic location.

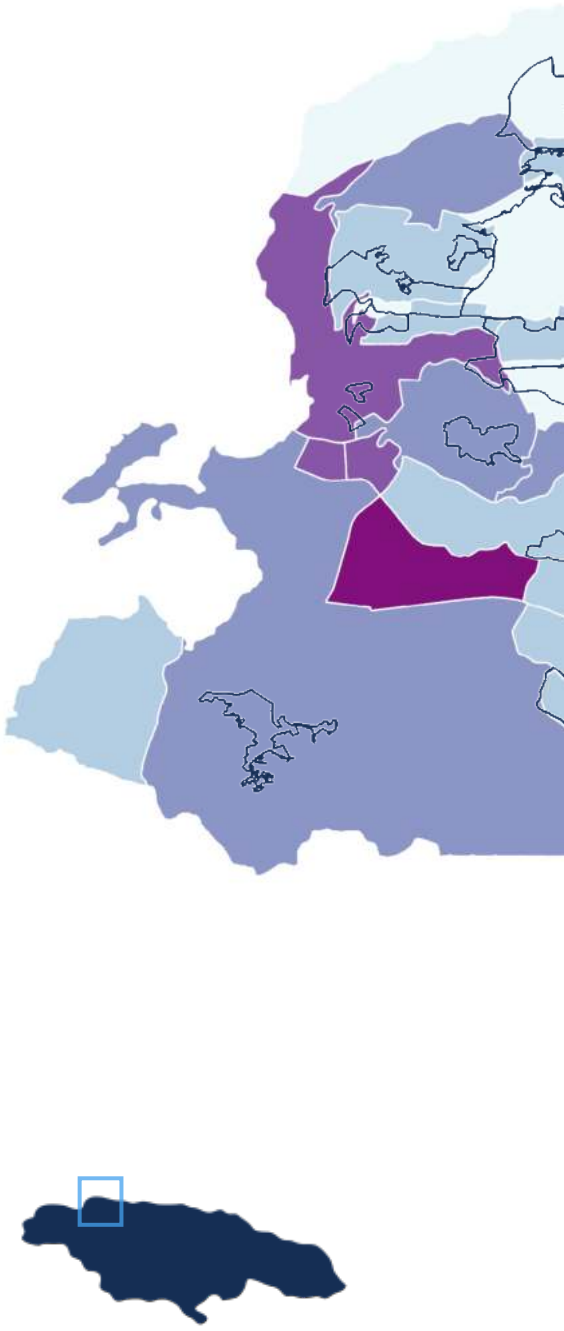
The Urban Integration Index is not only a descriptive tool but also a platform for action. By making visible the spatial and structural disparities that shape everyday urban life, the index can inform targeted interventions, guide resource allocation, and support more equitable urban planning. It is designed to be dynamic and adaptable, with the potential to evolve as more data becomes available and as the priorities of urban policy shift over time. In sum, the Urban Integration Index provides a framework for diagnosing urban inequality and tracking progress toward more inclusive, just, and resilient cities in Jamaica.

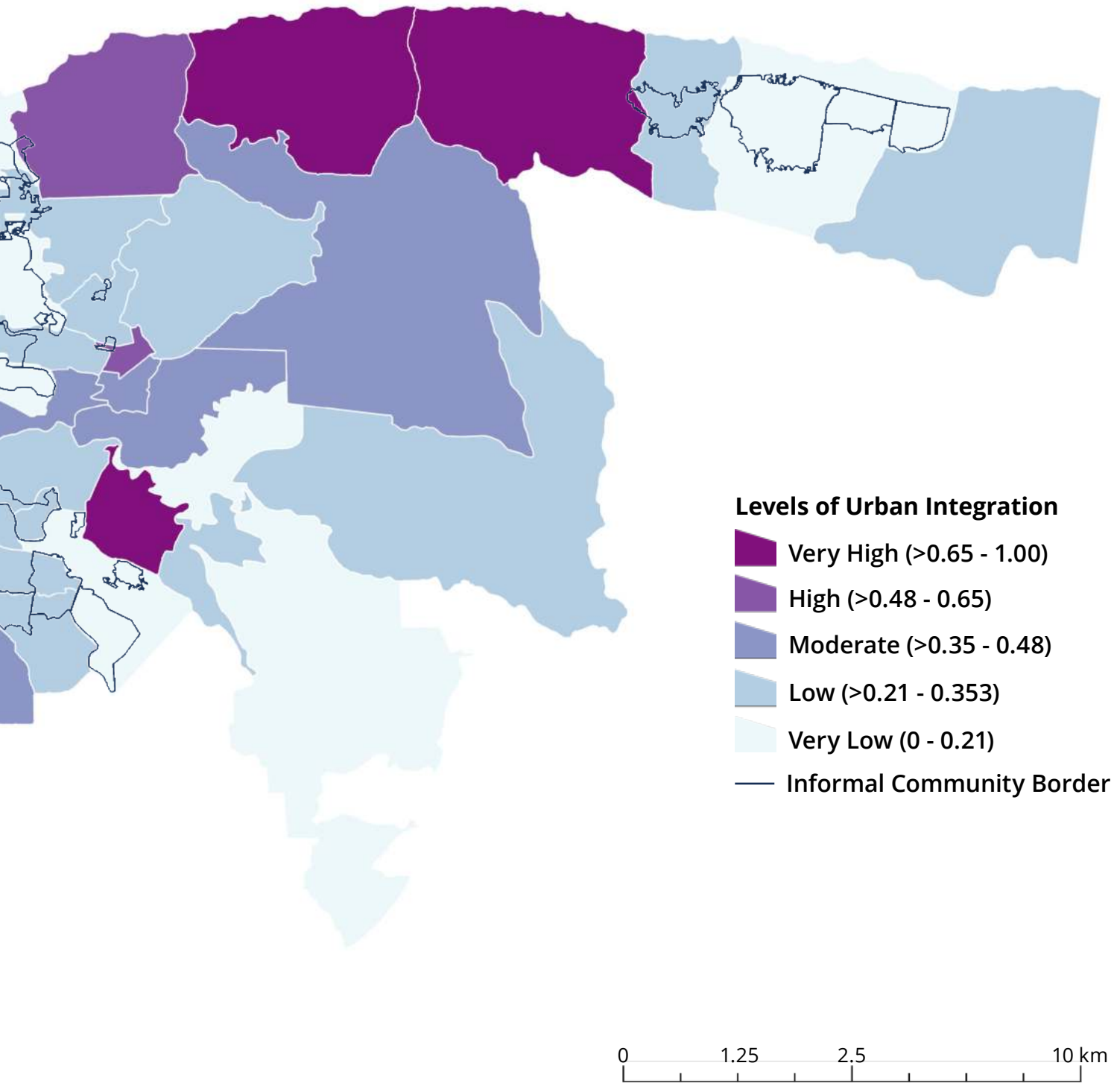
Socioeconomic and Spatial Trends

Analyses of the data that constitute the Urban Integration Index reveal distinct patterns in the spatial and socioeconomic composition of Jamaica's urban landscape. These patterns offer critical insights into the underlying dynamics that shape urban life—ranging from access to secure housing and regularised infrastructure to environmental risk, safety, digital inclusion, and civic engagement. What emerges is a clear case for data-informed, spatially targeted interventions that recognise how physical geography, infrastructural layout, and socio-political dynamics intersect to produce either inclusion or exclusion. The trends discussed below should therefore serve as a foundation for designing policy and programming in the realm of urban integration—ensuring that efforts to improve communities

31 Levels of Urban Integration in GMB

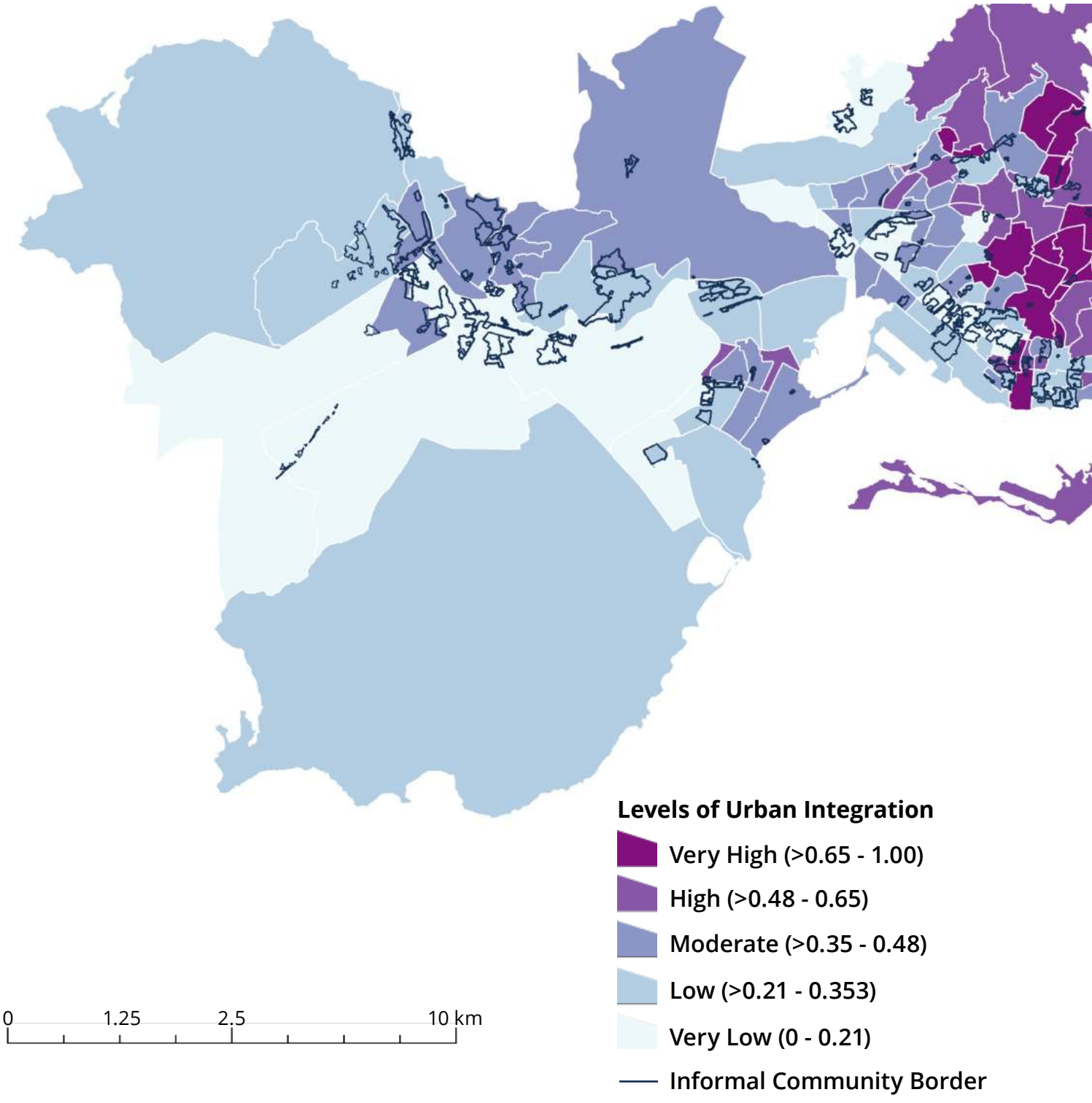
Informal communities in Montego Bay generally have lower levels of urban integration

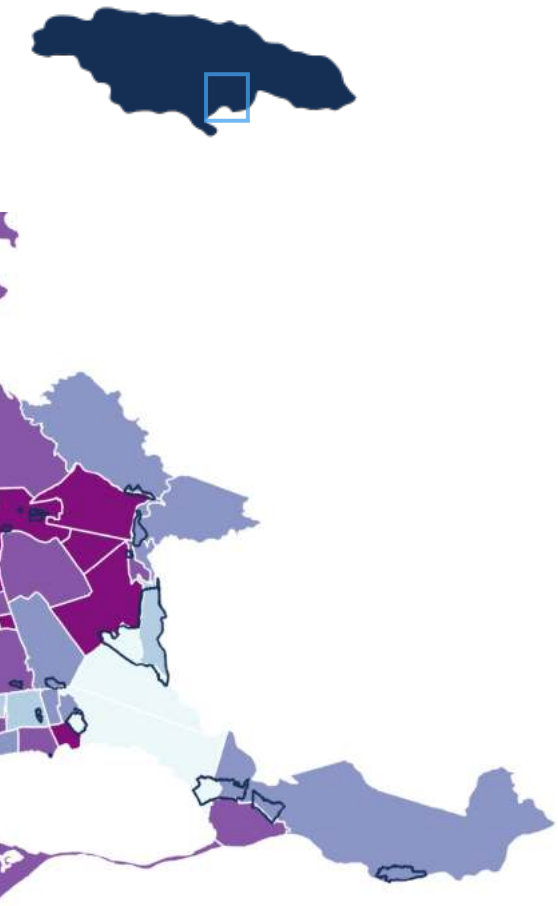



Levels of Urban Integration
Very High (>0.65 - 1.00)
High (>0.48 - 0.65)
Moderate (>0.35 - 0.48)
Low (>0.21 - 0.353)
Very Low (0 - 0.21)
Informal Community Border
0
1.25
2.5
10 km

32 Levels of Urban Integration in GKMA

Informal communities in Kingston generally have lower levels of urban integration





are grounded in an evidence-based understanding about how the structure of the built environment, and the policies undergirding that structure, affect the outcomes of urban residents across districts.

Geographic Distribution of Tenure Insecurity

The highest concentrations of informal settlements are found in GKMA and GMB, where rapid urbanization has outpaced formal housing provisions. Kingston, Spanish Town, and Montego Bay contain extensive captured land settlements, reflecting broader trends of rural-to-urban migration and economic marginalisation. These communities often exist on the fringes of established neighbourhoods, forming a patchwork of formal and informal development.

Tenure security, defined in this dataset as the proportion of a community consisting of planned, legal occupation rather than informal settlements, has a statistically significant and quantitatively meaningful connection to community integration.[71] Communities where a higher percentage of residents enjoy secure housing rights tend to exhibit higher levels of overall integration. This alone underscores the robustness of the relationship, as tenure security emerges as a single key predictor even before controlling for other factors.

These results suggest that communities with higher rates of legal housing ownership or formal leasing arrangements tend to fare better across multiple dimensions that define integration, such as safer neighbourhoods, improved sanitation, and stronger economic outcomes. The data shows that formalised housing rights and property security contribute significantly to a community's aggregate well-being. Accordingly, policymakers may consider placing a high priority on formalising housing arrangements, since the statistical evidence shows that investments in land tenure regularisation can translate into measurable improvements in economic productivity, environmental resilience, public safety, and other key facets of community integration.

Spatial Inequality and the Digital Divide

There are other perhaps unexpected dimensions of informality. Areas with lower tenure security enjoy worse access to essential information services, including internet connectivity, communication networks, and media access. Several factors could contribute to this relationship.

Firstly, secure tenure may attract greater infrastructure investment, particularly in the development of telecommunication networks and internet services. Secondly, higher tenure security often correlates with greater economic stability. Residents with secure housing are more likely to have stable income sources, enabling them to afford technological services and internet connectivity. Finally, areas with formalised tenure arrangements are often better integrated into official planning frameworks, which could contribute to better service provision and more reliable access to information services.

The positive relationship between Tenure Security and Access to Basic Information Services has several policy implications. Improving tenure security through community formalisation provides for greater access to basic information services, as now-underserved communities are better integrated into broader urban planning frameworks that promote access to essential information services.

Tenure Security and Civic Engagement: Evidence of Clientelism in Informal Settlements

There is also a statistically significant negative relationship between tenure security and civic engagement, even when controlling for a range of social, infrastructural, and economic factors.[72] While this may seem counterintuitive—given that formal tenure is often associated with increased institutional trust

and participation—the pattern aligns with established theories of clientelism and informal governance in contexts of urban informality.

In many low-income settlements, residents lacking formal land rights must rely on political brokers or community leaders to secure access to housing, utilities, and social protection. These intermediaries often act as gatekeepers, mobilising civic participation along partisan lines in exchange for promises of state support or protection.

As a result, civic engagement in insecure tenure environments is not necessarily a reflection of formal democratic participation but rather of informal political dependency. Conversely, once tenure is formalised and basic services become routinized, the incentive to engage through these networks may diminish, leading to lower levels of reported civic activity.

This finding suggests that efforts to formalise tenure must also be accompanied by strategies to institutionalise inclusive governance—ensuring that civic engagement transitions from being clientelist and survival-oriented to being rights-based and democratic. Without such measures, formalisation may inadvertently erode existing forms of political mobilisation without replacing them with more accountable or participatory alternatives.

Tenure Security as a Predictor of Employment and Productivity

The findings reveal a statistically significant positive relationship between tenure security and the Employment and Productivity Index, which captures employment levels, income proxies, and GDP per capita across urban communities.[73] This indicates that communities with a higher percentage of formal tenure—i.e., where residents have secure and legally recognised claims to land and housing—tend to exhibit stronger economic performance. Tenure security contributes to economic well-being by providing a foundation for stability, investment, and participation in the formal economy. Secure tenure reduces the risk of eviction, increases the likelihood of household improvements and commercial investments, and facilitates access to credit or formal employment opportunities that require proof of address or residence. These results support long-standing development theory that links property rights and economic development.[74]

Formality and Environmental Hazards

Analysis of the Environmental Vulnerability Score—which captures exposure to flood risk, the urban heat island effect, and air pollution—reveals a significant relationship between a community's level of tenure security and its degree of environmental resilience. The composite score is structured such that higher values indicate lower vulnerability to environmental hazards.[75]

This finding aligns with broader urban development patterns. Informal settlements are often located on marginal, high-risk lands—such as flood plains, steep slopes, or areas adjacent to industrial pollution. These areas frequently lack drainage infrastructure, tree cover, and regulated building practices, leaving residents more exposed to flooding, extreme heat, and poor air quality. In contrast, formally titled communities are more likely to be integrated into urban planning systems, benefit from environmental protections, and receive investments in risk mitigation infrastructure. The evidence underscores the importance of secure land tenure not just as a legal or economic issue, but as a key determinant of environmental vulnerability.

Street Network Planning and Safety

There is negative association between the Street Structure index score and the safety score, suggesting that as communities exhibit a stronger grid layout, they tend to be less safe. In practical terms, the data indicate that commercial districts—often characterized by a clear, orderly grid network—are linked with higher crime and violence levels. This finding is counterintuitive, as it is expected that well-planned districts to exhibit higher degrees of order and safety. However, in the Jamaican, the data is reflecting that incidents of crime are highly concentrated in the downtown areas of Kingston, Spanish Town, and Montego Bay, along with additional commercial districts such as Crossroads and Half-Way-Tree. Downtown areas in Jamaica exist adjacent to urban informal communities beset by gang violence, which plays out in densely arranged blocks that provide both a steady flow of potential targets and straightforward navigation for assailants. Commercial districts, where commuters and pedestrians make for soft targets, are also frequent locations of acquisitive crimes such as robbery. Moreover, burglaries of businesses are expected to be more frequent where businesses are concentrated.

From a policy perspective, this underscores the need for heightened security measures in districts with well-defined street grids that double as commercial hotspots. Closed-circuit television (CCTV) monitoring and other forms of surveillance can act as deterrents in these spaces by increasing the perceived risk of detection. Furthermore, a larger, more consistent law-enforcement presence can mitigate the vulnerability of residents, business owners, and patrons who congregate in such accessible, high-traffic streets. While a grid layout can benefit commerce and mobility, these findings make clear that careful planning and targeted interventions are essential to balance economic vibrancy with community safety.

Environmental Vulnerability and Safety: The Spatial Logic of Risk

There is a statistically significant positive relationship between environmental resilience and safety outcomes. Communities with higher environmental vulnerability—defined by greater

exposure to flood risk, air pollution, and the urban heat island effect—tend to experience lower levels of safety.[76] This finding reflects the spatial logic of vulnerability in Jamaica's urban landscape, where environmental and social risks often overlap. Environmentally vulnerable communities in Jamaica are frequently located on the urban periphery or in ecologically fragile zones, such as floodplains or areas adjacent to industrial zones. These areas tend to have higher levels of informality, limited infrastructure investment, and weak institutional oversight. In turn, these characteristics correlate with higher levels of insecurity. This analysis suggests that better land-use planning across Jamaica's urban areas can mitigate risks associated with both crime and environmental vulnerability.

Conclusion

The urban integration indicators across GKMA and GMB show the differences in access to and availability of several different claims that citizens might have in asserting their right to the city. Many of the issues of access and availability are adjacent to broader socio-economic inequalities, and have implications for public health, urban planning, and social equity, among other concerns. Chief among these is land tenure, which of all indicators is the strongest predictor of overall urban integration. The relationships identified between tenure security and a range of integration indicators suggest that land formalisation is not simply a matter of property rights, but a multidimensional lever with the potential to transform urban conditions. Overall, the index makes clear what investments and interventions are needed where, thus providing for targeted initiatives that are informed by data, instead of generalisations or assumptions.

Appendix 1: Limitations

Definition and Use of "Informal Communities"

The term "informal communities" is used in this report to refer to areas often euphemistically labelled in official circles as "troubled," "vulnerable," "volatile." Traditionally known as "squatter settlements" or "squatter communities," these terms have been eschewed in recent political discourse. The term "squatter" is now considered pejorative and its use has declined due to a shift in the political zeitgeist that frames squatting as a consequence of historical injustices. In the case study on Medellín these would be what are referred to as peri-urban communities.

In this report, informal communities may also include semi-formal communities. These are areas with a mix of tenured and untenured properties or tenured properties occupied by persons without legal rights to the land. Often, these are individuals unaffiliated with the rightful owners but who have moved in nonetheless. These communities are predominantly impoverished, with high birth rates and teenage pregnancy rates, and typically feature weak, albeit often multigenerational, family structures. The physical infrastructure in these areas ranges from poor to extremely dilapidated, with wooden houses and zinc structures, though many feature concrete dwellings, albeit irregularly constructed. Livestock pens may be situated dangerously close to human dwellings. The layout is generally characterised by a chaotic arrangement of alleyways and dirt footpaths. Utilities such as electricity and water are usually accessed through irregular connections, with many residents relying on community pipes for water, as their homes lack indoor plumbing. Such a community tends to lack formal social infrastructure. In many of these communities, living conditions are just marginally above homelessness.

The informal communities referred to in this report are also described as garrisons, garrison-like, or garrisonised. While these terms are used interchangeably for rhetorical convenience, it is acknowledged that a more detailed investigation into the specific political economy of these communities might find such interchangeability to be misleading. However, this level of detail is beyond the scope of the current analysis.

A garrison community is that which emerged out of attempts to semi-formalise informal communities through social housing projects aimed at poverty alleviation and securing political loyalty. Over time, even communities that remained informal became garrisonised, growing dependent on political patronage to stave off eviction. Local enforcers, or "dons," play a pivotal role in these areas, securing community loyalty to political parties in exchange for jobs, goods, services, and at times, through acts of violence. This patronage allows these area leaders to establish and maintain organised criminal networks.

Garrisons are thus semi-isolated communities that operate under a separate system of law and order, directed by an area leader who administers "justice" through the use or threat of violence. The social arrangements within garrison communities impede the functioning of the state and its security forces. The irregular land tenure and the presence of armed groups further entrench these communities as loci of organised violence across the island, hence their official designation as "violence hotspots."

Appendix 2: Calculation of Indicators of Urban Integration

Indicator #1: Land Tenure

The Land Tenure Indicator was developed to assess the extent of informal settlements within various communities, providing insights into areas where residents may lack formal land tenure. The analysis was conducted using geospatial data and satellite imagery to map and measure the proportion of land without secure tenure. The National Land Agency (NLA) provided the initial data, which included a list of point locations corresponding to known informal communities.
The methodology involved overlaying the point locations from the NLA onto satellite imagery of residential areas. Through this process, informal areas were visually identified and delineated, resulting in the creation of polygons that represented each informal community. The boundary determination for these informal areas was done visually, with the accuracy of this process reliant on the clarity and resolution of the available satellite imagery.

To enhance the accuracy and reliability of the mapping process, the visual boundary determination was regularly reviewed by other members of the project team and select advisory board members. This peer review process provided an additional layer of scrutiny, ensuring that the delineated boundaries were as accurate and consistent as possible given the available data. After mapping out the informal areas, the next step was to calculate the proportion of land marked as informal within each of the 173 communities under study. This was done by comparing the area of the polygons representing informal settlements to the total land area of each community. The result was expressed as a percentage, indicating the proportion of the community's land area that was without formal land tenure.

The Land Tenure Indicator was then created by using these percentages to rank the communities. Communities with a higher proportion of informal land were assigned lower scores, reflecting greater issues with land tenure.

However, several limitations are associated with this methodological approach. The primary limitation is the age and accuracy of the data sources. The point locations of informal communities provided by the NLA, as well as the satellite imagery used, were outdated and may not fully represent current conditions. Informal settlements can change rapidly due to new developments, relocations, or regularisation efforts, meaning that the data may not capture recent changes in the landscape. Additionally, the quality of the satellite imagery, combined with the reliance on visual determination of boundaries, introduces potential inaccuracies in the mapping process.

Furthermore, while the regular peer review by the project team and advisory board members helped to mitigate some of these limitations, the process is still inherently subjective, and results should be interpreted with caution. The Land Tenure Indicator provides a valuable snapshot of land tenure issues across communities, but it is recommended that the indicator be periodically updated with more current and accurate data to maintain its relevance and accuracy.

Indicator #2: Access to Water and Sanitation Services

The Access to Water and Sanitation Services (WSS) Index was developed to assess disparities in access to essential water infrastructure at the community level across Jamaica. While both water and sanitation are critical to public health and quality of life, this version of the index focuses specifically on water access due to data availability. The index relies on modeled water

scarcity data sourced from the open-access dataset "Measuring Water and Sanitation Access at the Sub-National Level in the Global South Using Spatial Datasets," published on Mendeley Data. The dataset includes global raster files representing modeled estimates of water scarcity, calculated by comparing human water demand with renewable surface and groundwater availability at a resolution of 0.5 degrees.

For the purposes of this index, only the consumption-weighted yearly average of total water resources (wsi_total) for the period 2001–2010 was used. This raster surface was selected as it offers a synthesised view of long-term water scarcity conditions, taking into account both supply and demand across communities. To align the data with local administrative boundaries, the raster values were aggregated using zonal statistics. Each administrative level 3 (ADM3) boundary was overlaid on the raster, and the mean value of all intersecting grid cells was calculated to produce a community-level estimate of water scarcity.
These community-level water scarcity values were then normalised to a scale of 0 to 1 using min-max normalisation, where 0 represents the least water-scarce areas (i.e., communities where renewable water supply is sufficient relative to demand), and 1 represents the most water-scarce (i.e., areas where demand exceeds available resources). The result is a standardised score that allows for direct comparison between communities.

A key limitation of this index is that it currently captures only water-related access constraints. While sanitation is an equally important component of service access, disaggregated data on sanitation infrastructure or facility coverage at the ADM3 level was not available from the source dataset and is therefore not included. As such, the WSS Index should be interpreted primarily as a measure of water scarcity and its implications for service access, rather than a full reflection of water and sanitation infrastructure. Future versions of the index will seek to integrate sanitation data where available, to provide a broader view of basic service access across urban and peri-urban areas.

Indicator #3: Access to Solid Waste Services

The Access to Solid Waste Services (SWS) Indicator was developed to quantitatively assess the effectiveness of solid waste collection services across various communities. Data for this index was sourced from the National Solid Waste Management Authority (NSWMA), which was provided with a list of 173 communities. The NSWMA was asked to fill in specific categories of information related to the accessibility, frequency, and challenges associated with waste collection in these communities. These categories were then used as components in the calculation of the final SWS Index.

The SWS Index integrates three primary components: Accessibility, Frequency of Collection, and Challenges Encountered during Collection. Each of these components was assigned a score based on the data provided by the NSWMA.

First, the Accessibility Score evaluates whether a community is accessible for waste collection services. A community that is accessible receives a score of 1.0, while a community that is not accessible receives a score of 0.0.

Next, the Frequency Score measures how often waste is collected within the community. The scoring system for this component is tiered, with daily collection receiving the highest score of 1.0. Communities where waste is collected twice per week receive a score of 0.75, and those with once-weekly collection receive a score of 0.5. Less frequent or sporadic collections are assigned a proportionately lower score based on observed frequency.

The final component, the Challenge Score, assesses the operational challenges encountered during waste collection. These challenges were categorised by the NSWMA and assigned specific weights to reflect their impact on service delivery. If no challenges were reported, the community received a score of 1.0. However, if challenges such as cars blocking access or low-hang-

ing wires were reported, the community received a score of 0.75 or 0.5, respectively. In cases where waste collection was scheduled according to limited resources, a score of 0.25 was assigned. If no roadway access was available, the score was 0.0. To calculate the final SWS Index for each community, the scores from the three components—Accessibility, Frequency, and Challenges—were averaged. The formula used is as follows:

$$SWS\ Index = \frac{\text{Accessibility Score} + \text{Frequency Score} + \text{Challenge Score}}{3}$$

This index provides a standardised measure of the overall effectiveness of waste collection services in each community, taking into account the ease of access, regularity of service, and any challenges that may hinder the process.

Indicator #4: Access to Basic Mobility

The Access to Basic Mobility Index (BMI) was developed to assess the availability and density of key transportation infrastructure within communities. This index integrates four components: Road Network Density, Intersection Density, Bus Stop Density, and Transportation Hub Density, to provide a comprehensive measure of mobility access. Each component was calculated on a per-square-kilometre basis to ensure standardised comparisons across communities of varying sizes.

Road Network Density and Intersection Density were derived from data provided by the Humanitarian OpenStreetMap Team (HOTOSM) through the Humanitarian Data Exchange (HDX) Platform. The data was accessed on August 9, 2024, from the latest available export. The HOTOSM dataset was chosen over alternative sources, such as the National Land Agency (NLA), due to its more detailed representation of minor roads and side streets. These smaller roads play a role in local mobility and are often underrepresented in official datasets. Intersection counts were extracted using a specialised tool that identified and counted all road intersections within each community's boundary, ensuring an accurate measure of network connectivity.

Bus Stop Density and Transportation Hub Density were based on data provided by the Mona GeoInformatics Institute (MGI). Using Geographic Information Systems (GIS), the total number of bus stops and transportation hubs within the boundaries of each community was counted.
Each component was normalised using min-max normalisation to scale the values between 0 and 1. The index was calculated using a weighted sum of the normalised variables based on the Configuration 1 methodology. The assigned weights were 0.3 for Road Network Density, 0.2 for Intersection Density, 0.3 for Bus Stop Density, and 0.2 for Transportation Hub Density. These weights reflect the importance of roads and public transportation infrastructure in ensuring basic mobility. Road Network Density and Bus Stop Density were given higher weights due to their direct impact on everyday travel, while Intersection Density and Transportation Hub Density were assigned slightly lower weights to reflect their role in enhancing connectivity and regional mobility.

While the BMI offers valuable insights into the state of mobility infrastructure, it does not currently account for the quality of road infrastructure. Road quality, which influences travel safety, efficiency, and mobility, can vary significantly between communities. Incorporating road infrastructure quality into future iterations of the index would enhance its ability to assess transportation accessibility more comprehensively.

As with any index, limitations exist. The HOTOSM road network data relies on crowd-sourced updates, which may result in incomplete coverage, particularly in remote or underrepresented areas. Additionally, the absence of bus stops in St. James, despite the presence of a bus system, highlights the challenge of fully capturing all forms of public transportation infrastructure. discrepancy reflects that the Montego Bay Metro primarily serves rural areas outside the city rather than the urban

core, highlighting a potential gap in public transportation infrastructure within Montego Bay. While the BMI offers valuable insights into the state of mobility infrastructure, it does not account for the quality of road infrastructure. Incorporating road infrastructure quality into future iterations of the index would enhance its ability to assess transportation accessibility more comprehensively.

Indicator #5: Connection to the Electricity Grid

The Electricity Access Index was developed to assess the availability and accessibility of electricity infrastructure across communities using an equal-weighted method. This approach integrates data on transmission lines, distribution grid coverage, and low-voltage infrastructure to provide a well-rounded measure of electricity access.

The data used for this index originates from the study Predictive Mapping of the Global Power System Using Open Data, published in Scientific Data. The dataset, which offers predictive models of global electricity infrastructure, was accessed through the World Bank Open Data platform.

The index was built from three components: the length of predicted transmission lines per unit population, reflecting the availability of large-scale infrastructure; the total area expected to be connected to the electricity distribution grid, also normalised per unit population, highlighting grid coverage; and the value of predicted low-voltage infrastructure within each area, measuring localised neighbourhood-level connections.

In the equal-weighted method, each component was given an equal weight of 33.3 percent, ensuring a balanced contribution from all three infrastructure types. The result is a straightforward index that treats all three dimensions of infrastructure as equally important.

The index values were scaled using Min-Max normalisation to ensure comparability across communities. The Equal-Weighted Electricity Access Index provides a comprehensive and balanced measure of electricity infrastructure across communities. By assigning equal importance to transmission, distribution, and low-voltage infrastructure, the index offers a well-rounded perspective on electricity access. This standardised approach ensures that infrastructure weaknesses are identified and provides policymakers with actionable insights to target investments and improvements where they are most needed.

Indicator #6: Access to Education

The Access to Education Index was developed to assess the availability and utilisation of educational resources across communities in Jamaica. This index combines data on the number of educational facilities with data on educational attainment levels to provide a comprehensive measure of access to education. Community-level data on the highest level of education attained by residents were obtained from the MonaGeoInfomatics Institute (MGI). The data reflects the proportion of residents in each community whose highest level of education spans pre-primary, primary, secondary, university, and other tertiary education. The number of educational facilities within each community was sourced from the Humanitarian Data Exchange (HDX), based on an export created by the Humanitarian Open Street Map Team (HOTOSM) on October 1, 2024. This dataset, updated monthly, provides information on the location and density of schools and other educational facilities, essential for understanding the physical accessibility of education in each area.

The index was designed to balance two components: physical access to educational facilities and educational outcomes through attainment levels. Educational facilities account for 30 percent of the index, capturing the availability of institutions within a community. Pre-primary and primary education levels are combined and weighted at 15 percent, reflecting their foundational importance. Secondary education is assigned a weight of 25 percent, as it is a key transition point in the educa-

tion system. University education, also weighted at 25 percent, represents the highest formal attainment, indicating access to and completion of higher education. Other tertiary education, such as vocational training, contributes 5 percent to the index, recognising alternative post-secondary pathways.

Several limitations should be noted. The index does not account for the quality of facilities or resources within them, which can impact educational outcomes. It also does not capture enrolment or participation rates, focusing instead on attainment data, which reflects the highest level completed but not whether individuals are currently engaged in education. Additionally, proximity to facilities and the ease of access are not measured, meaning the number of institutions may not reflect the practical accessibility for residents. While the facility data is updated monthly, community-level attainment data may not be refreshed as frequently, leading to potential temporal misalignment between datasets. Despite these limitations, the index provides a valuable snapshot of educational access across communities. Future enhancements could incorporate participation data, dropout rates, or proximity analysis to refine the measure further and better capture educational equity in Jamaica.

Indicator #7: Access to Basic Information Services

The Basic Information Services (BIS) Index was developed to assess the accessibility and availability of key digital infrastructure across communities, integrating data on both network coverage and Internet (WiFi) access. This index offers a nuanced understanding of connectivity across different socio-economic and spatial contexts, helping to identify shortcomings and opportunities for improving access to basic information services.

Data on community and public WiFi hotspots were obtained from the Universal Service Foundation (USF), which implemented these networks to address internet access challenges. Community hotspots were primarily introduced in low-income areas known to lack sufficient broadband access, while public WiFi hotspots were installed in public spaces such as parks, hospitals, and community centres to promote greater digital inclusion.

The digital and cellular infrastructure data, including cell tower locations and coverage, were sourced from OpenCellID. OpenCellID is a large, open-source, and partially crowd-sourced database of global cellular towers. For the BIS Index, the data was accessed in rasterised form, provided through the World Bank Data Catalog. The World Bank downloaded the OpenCellID dataset on July 1, 2020, and rasterised it at a resolution of approximately 1 km to provide a grid-level count of cellular towers (irrespective of tower type). The dataset used in this analysis reflects the latest update from September 1, 2021.

This composite data was used to develop the BIS Index, combining core infrastructure metrics such as total cell towers per community, coverage area per unit of community space, and tower availability per capita. Supplementary metrics, including community and public WiFi hotspot counts, were incorporated to capture the level of public access to information services. Community hotspots were treated as indicators of broadband deprivation, with higher counts implying lower broadband availability.

Limitations of the index include the reliance on publicly available datasets that may not reflect real-time changes in infrastructure. The crowd-sourced nature of OpenCellID data introduces potential biases or omissions in cell tower coverage, particularly in remote or underserved areas where fewer users contribute to data collection. Additionally, the rasterisation process, while useful for spatial analysis, may mask local variations in coverage within the 1 km grid cells. Finally, hotspot data from the USF reflects only their specific interventions, which may not capture other informal or privately implemented WiFi networks in the same areas.

Despite these limitations, the BIS Index provides a valuable tool for identifying connectivity gaps and guiding policy interventions aimed at enhancing access to digital infrastructure across urban communities in Jamaica.

Indicator #8: Financial Inclusion

The Financial Inclusion Index (FII) was developed to measure disparities in access to and use of formal financial services across urban communities in Jamaica. Financial inclusion is widely recognised as a key enabler of economic empowerment and resilience, but its distribution often reflects broader patterns of spatial inequality. This version of the index focuses on both demand- and supply-side dimensions of financial inclusion, using indicators derived from customer-level and institutional data provided by the National Commercial Bank (NCB) of Jamaica.
The index draws on six per capita indicators that reflect both individual financial behavior and the availability of financial infrastructure within communities. These include:

1. The number of persons with a bank account
2. The number of persons using formal savings
3. The number of persons with access to credit
4. The number of persons using digital financial services
5. The monthly frequency of financial transactions
6. The number of banks present in the community

The first four indicators represent individual engagement with the formal financial system, while the final two reflect community-level access and activity. Together, these measures provide a multidimensional view of financial inclusion, capturing both opportunity and usage.

To address anomalies in the initial dataset—where the calculated per capita values for indicators 1 through 4 exceeded 1 in some communities—these values were capped at a maximum of 1. This ensures that no community is represented as having more financial service users than its total population, which would otherwise suggest overestimation or inconsistencies in denominators.

Each indicator was then normalised to a 0 to 1 scale using min-max normalisation, where 0 represents the lowest observed value across all communities and 1 the highest. This rescaling allows for meaningful comparisons across diverse community sizes and characteristics.

The final index score for each community was calculated using a specified weighting scheme that balances individual-level access with infrastructural and transactional capacity. Indicators 1 through 4 were each weighted at 15 percent, while indicators 5 and 6 were weighted at 20 percent each. This distribution reflects the view that while personal access is critical, the broader ecosystem of financial services, particularly transaction volume and institutional presence, plays an outsized role in facilitating true inclusion.

The result is a standardised Financial Inclusion Index score for each community, ranging from 0 (least inclusive) to 1 (most inclusive). These scores can be used to identify geographic disparities in financial access and to inform the targeting of interventions aimed at expanding financial services among underserved populations.

A limitation of this index is its reliance on data from a single financial institution. While NCB is the largest commercial bank in Jamaica and its data likely reflects dominant patterns, the absence of data from other institutions may underrepresent total service coverage in some areas. Future iterations of the index will seek to integrate additional data sources to strengthen coverage and improve the granularity of analysis.

Indicator #9: Safety

The Community Safety Index was developed using crime data provided by the Jamaica Constabulary Force (JCF), covering a 10-year period. This dataset included a range of crime types, such as Aggravated Assault, Break-ins, Larceny, Murder, Rape, Robbery, and Shooting, and was national in scope. For the purposes of the OneCity project, the crime data was geoprocessed to focus specifically on 173 urban communities located within Kingston, St. Andrew, St. Catherine, and St. James. Using Geographic Information Systems (GIS), the data was accurately geolocated, enabling the extraction of crime statistics that were pertinent to these specific communities.

To facilitate a meaningful comparison of crime rates across different categories, it was necessary to normalise the data. Min-Max normalisation was employed to scale each crime category's data to a range between 0 and 1. This normalisation process ensured that all crime types were brought onto a common scale, making them comparable before aggregation.

Given the varying impact of different crimes on community safety, weights were assigned to each crime category based on their perceived severity. For example, Murder was assigned a higher weight of 1.5, reflecting its significant impact on safety perceptions, while Larceny was given a lower weight of 0.3. The other crime categories were weighted accordingly, with Aggravated Assault and Rape both weighted at 1.0, Break-ins at 0.5, Robbery at 0.7, and Shooting at 1.2.

With the data normalised and weighted, the next step was to calculate a composite safety score for each community. This was done by multiplying the normalised value of each crime type by its assigned weight, and then summing these weighted scores to obtain an aggregate score for each community. Because higher crime rates correspond to lower safety, the aggregate score was inverted to produce the final Safety Index. The inversion ensured that higher Safety Index values corresponded to safer communities. The addition of 1 to the composite score was necessary to avoid division by zero in the inversion process.

Finally, the communities were ranked based on their Safety Index values, with higher scores indicating higher levels of safety. This ranking provided a clear comparative measure of safety across the urban communities included in the study.

Indicator #10: Street Structure

The Street Structure Index employed Space Syntax analysis which is one method used in urban planning to assess the spatial configuration of urban environments. It places focus on the layout of structures and spaces influence various outcomes. This was calculated using the key concepts of (local) integration and connectivity as measures of inclusion.

Integration depicts the degree to which a street is either integrated or segregated from the local urban system, defined by the number of steps away from each street. The most integrated streets are those from which all others are closest/shallowest, and the most segregated are those from which they are farthest/deepest. Connectivity is measured by the number of streets that are directly connected to a particular street. The underlying principle for examining spatial accessibility was to identify the correlation between integration and connectivity of street networks.

Central street lines were retrieved from OpenStreetMap (OSM), imported into QGIS and converted to DXF format. They were imported into DepthMapX for analysis and results exported to QGIS for interpretation and visualization. Community-level analysis was conducted to reveal the connectivity and integration average. An overall connectivity average was determined for each community.

Indicator #11: Environmental Hazards

The Environmental Vulnerability Index (EVI) was developed to assess cumulative exposure to environmental hazards across urban communities in Jamaica. Environmental vulnerability refers to the degree to which a community is exposed to environmental conditions that threaten human health, wellbeing, and the sustainability of livelihoods. In rapidly urbanising and climate-sensitive contexts like Jamaica, such vulnerabilities are often concentrated in marginalised communities that lack the infrastructure, services, and adaptive capacity to cope with environmental risks.

This index captures three core dimensions of environmental exposure at the community level:

- Flood Risk, represented by the Flood Risk Exposure Index (FREI), which measures population exposure to varying flood depths during a 1-in-100 year flood event.
- Air Quality, represented by the annual average concentration of fine particulate matter (PM2.5) derived from satellite-based estimates (V5.GL.04).
- Urban Heat, represented by the annual average daytime land surface temperature (LST) using MODIS v6.1 data.

The FREI was constructed from high-resolution global flood hazard maps developed by Rentschler, Salhab, and Jafino (2022), which estimate the number of people exposed to specific inundation depths. Four categories of flood depth were used—low (0–15 cm), moderate (15–50 cm), high (50–150 cm), and very high (>150 cm)—with weighted values assigned to each category to reflect increasing severity. The final FREI score was normalised to range from 0 to 1, representing the proportion of maximum possible flood risk exposure per community.

Air Quality was measured using globally calibrated estimates of PM2.5, a pollutant strongly linked to respiratory and cardiovascular health risks. Urban Heat was assessed using MODIS-derived land surface temperatures, which capture surface-level heat intensification associated with the urban heat island effect. These two indicators were extracted at the community level using geospatial averaging.

To ensure comparability, all three component indicators (FREI, PM2.5, and LST) were rescaled to a 0 to 1 scale using min-max normalisation, where 0 represents the lowest observed value and 1 the highest. This allows meaningful aggregation across variables with different units and magnitudes.

The final Environmental Vulnerability Index (EVI) score for each community was calculated as the unweighted average of the normalised Flood Risk, Air Quality, and Urban Heat scores. This approach assumes that each dimension of environmental vulnerability—hydrological, atmospheric, and thermal—contributes equally to overall exposure.

The resulting EVI scores, ranging from 0 (least environmentally vulnerable) to 1 (most environmentally vulnerable), offer a standardised metric for comparing environmental risks across urban Jamaica. Policymakers, planners, and resilience practitioners can use this index to identify high-risk communities, prioritise adaptation investments, and monitor progress in building urban environmental resilience.

A potential limitation of the index is that it focuses solely on exposure, without accounting for underlying social vulnerabilities or existing mitigation infrastructure (e.g., drainage, air purification, cooling spaces). Future versions may integrate socio-economic data, adaptive capacity metrics, and qualitative assessments to provide a more comprehensive measure of environmental vulnerability.

Indicator #12: Employment and Productivity

The Employment and Productivity Index was developed to provide a comprehensive measure of the economic vitality and productivity of communities, integrating multiple dimensions of socio-economic performance. The index combines three key variables: Employment Percentage, Income Proxy, and GDP Mean, each contributing a distinct perspective on the economic environment.

Data on Employment Percentage and Income Proxy for each community were sourced from the MonaGeoInfomatics Institute, offering insights into the levels of employment and an approximation of income levels, serving as a proxy for economic well-being. Data on GDP levels for each community were based on a global map of total economic activity, including both formal and informal economic activity. This data was derived from nighttime lights and the LandScan population grid, following the methodology outlined in the paper Shedding Light on the Global Distribution of Economic Activity (2010). The original data was presented in raster grid format (approximately 1 km² resolution) and later vectorised into mean GDP values for each community using GeoQuery, a platform that provides spatially linked socioeconomic data.

To construct the index, each variable was normalised using min-max scaling to ensure comparability, resulting in values between 0 and 1. Weights were then applied to the normalised values to reflect the relative importance of each component. The final weighting scheme was determined through Principal Component Analysis (PCA), which revealed that the first component explained the majority of variance in the data. To ensure simplicity and practical interpretation, the weights were rounded to the nearest five, resulting in the following distribution: 50 percent for Employment Percentage, 30 percent for Income Proxy, and 20 percent for GDP Mean. The weighted normalised values were summed to produce the Employment and Productivity Index score for each community.

The Employment and Productivity Index has several limitations that should be noted. The reliance on GDP data from 2010 may not reflect current economic conditions, particularly in rapidly evolving communities. While nighttime lights and population grids provide innovative measures of economic activity, they may overlook nuances in informal sectors or misrepresent areas with non-economic lighting. The Income Proxy is a broad measure that may not fully capture income distribution or job quality. These factors highlight the need to use the index alongside other data sources for more well-rounded policy decisions.

Indicator #13: Physical Access to Healthcare

The Physical Access to Health Index (PAHI) was developed to assess disparities in geographical accessibility to healthcare services across urban communities in Jamaica. Physical access to health refers to the ease with which individuals can reach essential healthcare facilities, including both general health centres and hospitals, via walking or motorised transport. In spatially uneven urban environments, particularly where vulnerable populations reside on the peripheries of infrastructure investment, challenges in reaching healthcare services contribute significantly to health inequities.

This index captures four core dimensions of physical accessibility at the community level:

- Walking Time to Healthcare, which reflects the estimated average duration required to reach the nearest health facility on foot.
- Motorised Time to Healthcare, which reflects the estimated average travel time via motorised transport to the nearest health facility.
- Health Centres, representing the availability of public primary care clinics within or immediately adjacent to the community.
- Hospitals, representing the presence of major secondary or tertiary healthcare facilities.

The Walking Time and Motorised Time indicators are derived from global accessibility models developed by Weiss et al. (2020), which estimate travel times to the nearest healthcare facility using a multi-modal cost–distance algorithm that incorporates road networks, terrain, and land cover. These data were accessed from the global dataset published in Nature Medicine (Weiss et al., 2020).

As shorter travel times indicate better accessibility, both time-related indicators were inverted prior to normalisation to ensure that higher scores reflect more favorable access. The Health Centres and Hospitals indicators were obtained from the Humanitarian Data Exchange (HDX), and represent the presence or count of healthcare facilities within each community polygon, based on open datasets describing Jamaica's public health infrastructure.

To ensure comparability across components, all four indicators were rescaled to a 0–1 scale using min-max normalisation, where 0 corresponds to the least favorable condition (e.g., longest travel time or no facility present) and 1 to the most favorable (e.g., shortest travel time or presence of facility). This approach enables meaningful aggregation of variables with different units and magnitudes.

Two composite scores were computed, but the version used in this analysis is the Custom Weighted PAHI, which assigns:

- 35% weight to Motorised Time to Healthcare (inverted and normalised),
- 35% weight to Walking Time to Healthcare (inverted and normalised),
- 15% weight to Hospitals (normalised), and
- 15% weight to Health Centres (normalised).

This weighting reflects the assumption that proximity and ease of travel play a larger role in enabling timely access to healthcare—particularly in urgent or emergency situations—while the presence of infrastructure still contributes meaningfully to broader service accessibility.

After aggregation, the resulting composite scores were further normalised to a 0–1 scale to facilitate comparison across communities. Final scores range from 0 (least physically accessible) to 1 (most physically accessible).

These scores offer a standardised, spatially granular view of physical access to healthcare services across urban Jamaica. Policymakers, health planners, and community organisations can use the PAHI to identify underserved areas, guide investment in healthcare and transport infrastructure, and monitor improvements in accessibility over time.

A key limitation of the index is that it captures only physical proximity and presence of facilities, without accounting for other barriers to access such as service quality, operating hours, affordability, or social discrimination. Future iterations of the PAHI may incorporate additional layers, such as digital access, health worker availability, or community-level demand-side constraints, to provide a more holistic view of healthcare accessibility.

Indicator #12: Employment and Productivity

The Civic Engagement Index (CEI) was developed to measure the extent and intensity of civic participation across urban communities in Jamaica. Civic engagement—encompassing both electoral participation and grassroots involvement in community affairs—is a foundational component of democratic life and an essential driver of inclusive urban development. However, like many social goods, opportunities for meaningful civic participation are unevenly distributed, often mirroring broader patterns of social and spatial marginalisation.

This index captures two core dimensions of civic engagement at the community level:

- Electoral Participation, represented by the average voter turnout across the last three general elections (2011, 2016, and 2020)
- Community-Based Participation, represented by a composite score based on the status of the Community Development Committee (CDC) and the number of active and partially active Community-Based Organisations (CBOs)

The Electoral Participation sub-score provides a consistent measure of formal civic involvement through the electoral process. In contrast, the Community-Based Participation sub-score reflects more localised and sustained forms of engagement, including collective organisation, grassroots advocacy, and community self-governance. Communities with active CDCs and higher numbers of functioning CBOs are considered more civically organised and participatory in this regard.
To ensure comparability, both sub-scores were normalised to a 0 to 1 scale using min-max normalisation, where 0 represents the lowest observed value and 1 the highest. This rescaling enables meaningful aggregation despite differing units and scales across the input indicators.

The final Civic Engagement Index score for each community was calculated by taking the unweighted average of the normalised Electoral Participation and normalised Community-Based Participation scores. This approach assumes equal importance of formal and informal civic participation in contributing to a community's overall civic vitality.
The resulting CEI score, ranging from 0 (least engaged) to 1 (most engaged), provides a standardised metric for identifying disparities in civic life across urban Jamaica. These scores can help policymakers and civil society organisations understand where engagement is strong and where greater support for community participation may be needed.

A potential limitation of the index is that it does not capture the quality, frequency, or political efficacy of civic actions, only their presence and institutional form. Additionally, voter turnout data, while standardised, may be affected by broader national dynamics that do not reflect community-level mobilisation. Future iterations of the index may incorporate qualitative assessments, measures of youth involvement, and digital participation to provide a more nuanced view of civic engagement.

The Urban Integration Index

The Urban Integration Index (UII) was developed to measure the extent to which urban communities in Jamaica experience inclusion across a broad set of infrastructural, social, economic, and environmental dimensions. Integration in this context refers to a community's embeddedness in the systems and structures that support equitable development and well-being such as access to essential services, secure tenure, safety, and opportunities for civic engagement.

The UII responds to the persistent fragmentation of urban development, where some communities, often informal or historically marginalised, are excluded from the benefits of planning, infrastructure investment, and governance. This exclusion manifests spatially in gaps across multiple domains of urban life.

To quantify these dynamics, the index draws on all 14 indicators that reflect core aspects of urban integration. These indicators were drawn from a mix of national, geospatial, and open data sources, and collectively capture a community's connectivity to infrastructure, exposure to environmental risks, availability of social and economic services, and opportunities for meaningful civic participation.

Each indicator was first normalised to a 0–1 scale using min-max normalisation, where 0 represents the least favourable condition and 1 the most favourable. To ensure consistent interpretation across the dataset, negatively coded indicators, those for which higher values signify disadvantage, were inverted using the transformation, so that higher values uniformly reflect

better integration outcomes.

Once all indicators were rescaled and aligned, they were summed for each community to create a Total Integration Score. This approach treats each component as contributing equally to integration. The resulting composite scores were then normalised again to a 0–1 scale to facilitate cross-community comparison. Final index values range from 0 (least integrated) to 1 (most integrated).

This methodology provides a flexible and transparent framework for measuring urban integration across Jamaica's diverse urban landscapes. By capturing spatial inequalities across multiple sectors, the UII offers a practical tool for planners, policymakers, and advocates to identify areas of exclusion, direct resources more equitably, and monitor progress over time.
While the UII captures multiple structural dimensions of integration, it does not reflect qualitative or subjective experiences such as stigma, social cohesion, or trust in institutions. Moreover, the index relies on available data, and missing values for certain indicators may influence individual community scores. To address this, scores were computed using all available indicators for each community rather than excluding cases with partial data.

Future versions of the UII may incorporate indicator weighting, participatory inputs, or additional layers—such as perceptions of belonging, housing quality, or digital connectivity—to provide a more holistic view of urban inclusion.

Appendix 3: Methodology of the Index

The development of an Urban Integration Index for Jamaica's urban centres aims to address the socio-spatial inequalities prevalent in these areas. More than an academic exercise, the project consolidates data from various sectors and agencies into a unified, practical tool. This index enables stakeholders, policymakers, and planners to pinpoint disparities and design targeted interventions that enhance access to services and opportunities.

This section outlines the methodology for creating the index, detailing the rationale, data collection and analysis processes, and the integration of fragmented datasets into a comprehensive composite index that captures the realities of urban life in Jamaica.

Data Collection and Inter-Agency Collaboration

Identifying Relevant Data Sources

The process of data collection began with a scoping exercise to identify existing datasets across various agencies and sectors. This review involved examining existing literature, policy documents, and reports to determine the availability and quality of data related to the 14 proposed indicators of urban integration.

The identification of data sources required consideration of the different formats, methodologies, and scopes of data collected by various agencies. For instance, while the Jamaica Constabulary Force (JCF) provided comprehensive data on violent crime locations, other agencies, like the Jamaica Power Service (JPS), the National Solid Waste Management Authority (NSWMA), and the Universal Service Fund (USF) provided specific data on infrastructure and service access. This multi-pronged data collection approach ensured a well-rounded understanding of urban integration.

Negotiating Data Access and Ensuring Data Quality

Accessing the data required negotiating formal agreements with multiple agencies, addressing concerns about confidentiality and proper use. Building trust and ensuring compliance with data protection laws were key to securing these agreements.

Data quality also had to be addressed. Since agencies used different collection methods, a review was done to check for accuracy, completeness, and relevance. Meetings with stakeholders helped standardise methods and ensure consistency across the dataset.

Data Analysis and Standardisation

Data Cleaning and Preparation

The data was cleaned to eliminate inaccuracies and inconsistencies that could distort the findings. Data cleaning included removing duplicate entries, correcting errors, and handling missing values. For example, statistical imputation techniques were applied to estimate missing values based on patterns observed in the existing data, thereby maintaining the integrity of the dataset.

The data was then prepared for by identifying relevant components for each indicator. For example, in assessing access to education, components such as the percentage of the population with basic education (measured by CSEC passes) and the quality of educational facilities were considered. This detailed breakdown allowed for a nuanced analysis of each indicator, ensuring that all relevant aspects were captured.

Standardising Data

Standardisation ensured that the diverse data collected from various sources could be meaningfully compared and aggregated. This involved normalising the data, such as through z-scores or min-max normalisation, to create standardised scores for each indicator. Standardisation ensured that all indicators, regardless of their original scales or units, contributed equally to the composite index.

This process also included the consideration of weighting each indicator in the final index. A panel of in-house experts was convened to deliberate on the relative importance of each indicator, ensuring that the composite index reflected a balanced view of urban integration. A transparent weighting process involved input from a wide range of stakeholders, including urban planners, community representatives, and academics.

Creation of the Composite Urban Integration Index

Aggregation and Weighting of Indicators

The final stage in the creation of the Urban Integration Index involved aggregating the standardised scores of the 14 indicators. The aggregation process required consideration of the appropriate weights to assign to each indicator. This was achieved through a multi-criteria decision analysis (MCDA) approach, where the indicators were evaluated based on their relevance and impact on urban integration. A consensus-driven approach ensured that the weights assigned were reflective of the broader goals of the study.

The weighted indicators were then aggregated to form the composite index, providing a comprehensive measure of urban integration across the study areas. This composite index was not merely a sum of its parts but a nuanced reflection of the

complex interactions between different aspects of urban life. The final index was validated through a series of checks and balances, including cross-validation with independent data sources and feedback from stakeholders, ensuring its robustness and accuracy.

Validation and Refinement

The validation process was an ongoing effort throughout the creation of the Urban Integration Index. Stakeholder feedback contributed to refining the index, addressing any discrepancies, and ensuring that the final product was both accurate and useful. This iterative process involved multiple rounds of review and adjustment, with stakeholders providing insights that helped fine-tune the indicators and the overall index.

Moreover, the validation process included a comparison with other established indices and benchmarks to ensure consistency and relevance. This benchmarking helped to position the Urban Integration Index within the broader context of global urban studies, ensuring that it adhered to international standards and best practices. The iterative nature of the validation process also meant that the index could be continuously improved, adapting to new data and emerging trends in urban development.

Creation of the Composite Urban Integration Index

The spatial representation of the Urban Integration Index was a key component of the study, providing a visual depiction of the levels of urban integration across different areas. Using Geographic Information Systems (GIS), the study mapped the standardised scores for each indicator and the composite index, highlighting spatial disparities in access to services and resources.

GIS tools enabled the detailed mapping of urban integration, revealing patterns and trends that might not be evident through numerical data alone. Spatial analysis techniques, such as hotspot analysis, were employed to identify areas with particularly high or low levels of integration. These visualisations provided an intuitive understanding of where interventions were most needed and helped to prioritise policy actions.

The maps are envisioned as tools for engaging with stakeholders, including local governments, community organisations, and the public. They provide a clear and accessible way to communicate complex data, making it easier for non-experts to understand the study's findings.

The visual nature of the maps also facilitates discussions around potential interventions and the allocation of resources, supporting more informed decision-making processes.

Dissemination and Application of the Urban Integration Index

The Urban Integration Index was designed not just as a research output but as a practical tool for guiding urban development policies and practices. The dissemination phase focused on ensuring that the findings reached a broad audience and were utilised effectively. The study's findings are documented in a public-facing dashboard. The dashboard, an interactive online platform, allows users to explore the data and visualisations in detail, making the information accessible to a wider audience.

Stakeholder engagement is a component of the dissemination strategy, through public forums, workshops, and participation in conferences to present the findings and discuss their implications. These events provided a platform for dialogue and collaboration, enabling stakeholders to share their perspectives and explore ways to implement the study's recommendations. The engagement process also helped to build support for the index and its findings, ensuring that they were taken into ac-

count in urban planning and policy-making.

Practical Applications and Future Directions

The Urban Integration Index serves as a tool for urban planners, policymakers, and community advocates. It provides a baseline for assessing urban integration and tracking progress over time, helping to identify areas that require targeted interventions. The index can be used to inform resource allocation, guiding investments in infrastructure, services, and social programmes to address identified gaps.

Looking ahead, the study's findings and the index itself will continue to be relevant as Jamaica and its urban centres evolve. The methodology and framework developed can be adapted and expanded to include new data and indicators, ensuring that the index remains current and comprehensive. Additionally, the index can serve as a model for other cities and regions facing similar challenges, contributing to a broader understanding of urban integration and the Right to the City.

The creation of the Urban Integration Index marks an achievement in the field of urban studies and a step toward more equitable and sustainable urban development in Jamaica. By consolidating fragmented data, fostering inter-agency collaboration, and employing rigorous analytical techniques, the study provides a robust and comprehensive measure of urban integration. The index not only offers valuable insights for policymakers and urban planners but also serves as a powerful tool for advocating more inclusive, equitable, and sustainable urban development. As a living document, the index will continue to evolve, providing a dynamic and responsive measure of urban integration that can guide future efforts to improve the quality of life for all urban residents.

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Notes

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