Hawkers and Hawking Space in Malaysia: A Case Study

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Summary

Hawkers have been integral to Malaysia's socio-economic landscape since pre-independence, providing essential goods and services to rural and urban communities. Historically, hawkers emerged as low-capital self-employment opportunities for individuals with limited formal skills, thriving amidst economic fluctuations. Over time, they have adapted to urbanisation, offering accessible goods while preserving cultural traditions.

This discussion paper has two objectives: (i) to review the historical context, economic significance and role of hawkers in employment and livelihoods, and (ii) to analyse hawking spaces in Malaysia using spatial satellite datasets, focusing on their distribution and evolving role in urbanised environments.

Hawkers play an important role in Malaysia, accounting for almost 15% of the workforce in the informal sector in 2023, with over 73% concentrated in urban areas. They provide diverse, affordable food options to all income levels, bridging gaps in underserved areas and supporting working populations. Spatial analysis reveals hawker stalls are clustered in urban centres such as Selangor and Kuala Lumpur, with notable hubs in Petaling, Johor Bahru and Kota Setar. High-density regions benefit from stronger consumer demand and institutional support, while lower-density areas face weaker infrastructure and limited economic activity.

The physical diversity of hawker stalls, from permanent structures in economically robust states to semi-permanent setups in lower-income regions, reflects varying levels of investment and entrepreneurship. Rising incomes and female workforce participation have increased the demand for convenient food options, positioning street food as a culturally significant and affordable choice across income groups.

Despite their contributions, hawkers face regulatory challenges, limited financial access and competition from formal sectors. Addressing these issues through targeted policies, such as improved licensing, capital support and urban planning, is essential to sustain the hawking culture in Malaysia's evolving economy. Hawkers remain vital to the informal economy, bridging economic necessity with cultural heritage and contributing significantly to local economic development.

Contents

1. Introduction

Hawkers have long been integral to Malaysia's socio-economic landscape since before independence. As a cornerstone of the informal economy, hawkers provide accessible and affordable goods and services, catering to households across income levels [1]. These micro businesses operate in diverse settings, from temporary street stalls to organised market spaces, forming an essential component of local economies. Their economic significance extends beyond trade, offering pathways for employment and entrepreneurship, particularly for marginalised groups lacking access to formal employment opportunities[2].

The role of hawkers in Malaysia's economy is deeply rooted in history, reflecting migration, urbanisation and cultural integration patterns. Historically, hawkers have served as a mechanism for socio-economic mobility, especially among Bumiputeras, and have provided a safety net during economic downturns by absorbing retrenched workers from formal sectors[3]. Additionally, as urban and rural landscapes rapidly evolve, hawking settings have diversified beyond traditional street stalls to include modern formats such as food trucks, semi-permanent spaces and other innovative setups.

As these businesses play a vital role in local economies by supporting low- and middle-income households through entrepreneurship, shifts in household expenditure patterns highlight how the informal economy, including hawkers, may have contributed to the growth of food-away-from-home spending in recent years. For example, in 2022, households allocated more than half of their total income to necessities, with food expenses comprising a significant portion. Notably, higher-income groups have shown slower growth in food-at-home spending while exhibiting higher growth in food-away-from-home expenditure[4]. This trend highlights the importance of informal food vendors in addressing evolving consumption patterns and providing affordable meal options.

Despite their enduring role in Malaysia's economic and cultural fabric, hawkers face many pressing challenges threatening their long-term viability and sustainability. Increasing urbanisation has led to gentrification, reducing affordable spaces for hawkers, while stringent regulations often restrict their ability to function in prime locations [5]. At the same time, competition from formal retail businesses, food delivery platforms[6] and chain restaurants has shifted consumer preferences[7], negatively impacting hawkers' traditional customer base.

Furthermore, the informal nature of hawking businesses often excludes them from formal financial systems, making it difficult for hawkers to access credit for expansion or upgrading their operations[8]. Additionally, concerns over food safety, hygiene practices and waste management raise questions about compliance with regulatory standards, potentially alienating more

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[1] Lam (1982)
[2] Halim (1981)
[3] Ibid.
[4] KRI (2024a)
[5] See for example Zhang, Zhou, and Zhang (2022); Radomskaya and Bhati (2022); Smart (1986)
[6] Nungsari et al. (2024)
[7] Ru (2020)
[8] Ru (2020); Nungsari et al. (2024)

discerning customers[9]. These challenges are exacerbated by the lack of institutional support and fragmented policies, which create inconsistencies in licensing, enforcement and governance[10].

The Kuala Lumpur Structural Plan 2040[11] emphasises the importance of expanding business opportunities in the informal sector and encouraging informal business development areas by 2040. Initiatives under this plan highlight efforts to enhance the informal sector's contribution by supporting small and micro businesses, potentially creating an estimated 57,700 jobs, particularly in trade and services. Such an outcome would result from various initiatives, including providing affordable and accessible business spaces targeting low-income groups and home-based enterprises and proposals to utilise public spaces for temporary informal business like recreational and vacant areas, with an emphasis on clean, safe and orderly spaces. These strategies highlight a growing recognition of the informal sector's role in employment creation and inclusive economic development. However, the effective implementation of such plans requires addressing underlying issues hawkers face, which ties in with urban planning constraints.

Given hawkers' pivotal role in providing affordable food options and employment opportunities, especially for vulnerable groups, addressing these issues highlighted above is timely for promoting inclusive economic development. As Malaysia navigates shifts in consumer behaviour, urban development and food security, this study explores hawkers' structural and operational challenges in the Malaysian context. This paper aims to:

a) provide a review of the hawker landscape in Malaysia, exploring their historical context, economic significance, and role in employment and household livelihoods; and
b) utilise spatial satellite datasets to examine the distribution and characteristics of hawking spaces in Malaysia, shedding light on the evolving role of hawking culture in an increasingly urbanised Malaysia. This analysis incorporates macro-level spatial patterns for a deeper understanding of the hawking sector.

This paper is organised into several sections to provide a structured topic assessment. The first section outlines the background of hawkers in Malaysia, tracing their historical and economic significance and highlighting their role in local economies. The second section reviews existing data and information, focusing on the informal economy and the contributions of hawkers to the economy and employment. The third section discusses the methodology employed in this study, detailing the data collection process and the analytical techniques applied to assess hawking spaces in Malaysia. The following section presents key findings, offering insights into hawkers' economic contributions, spatial distribution and structural characteristics. Finally, the paper concludes with recommendations aimed at enhancing the sustainability and resilience of hawkers, ensuring their continued relevance in Malaysia's economic landscape.

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[9] Toh (2000); Chik et al. (2016); Toh (2000)
[10] Aziz and Sulaiman (2014)
[11] DBKL (2023)

2. Background: Hawkers in Malaysia

Hawkers have long been an integral part of Malaysia's socio-economic fabric, dating back to pre-independence times. Historically, hawkers emerged as a component of urban life, also extending their reach to provide goods and services to communities in both rural and urban settings (see Figure 1 for hawkers' culture in Malaya during the early 19th century). Migration patterns, colonial economic structures and the development of urban areas shaped their activities. The hawking culture in Malaysia mirrors broader trends observed across developing countries, where informal economies serve as critical sources of employment and income generation[12].

2.1. Historical Context

The early development of hawkers in Malaysia was closely tied to urbanisation, as cities grew and attracted workers seeking livelihood opportunities outside the formal economy[13]. Over time, hawkers diversified their offerings, ranging from food and beverages to household goods and clothing, catering to local demands[14]. This adaptability has allowed them to thrive amidst economic uncertainties as hawking becomes a safety net for retrenched workers during economic downturns[15].

According to Seng (2019), the origins of hawkers' economy can be traced back to the mid-19th century, when itinerant hawkers were a common sight in the Straits Settlements of Penang, Melaka and Singapore. However, informal trading activities likely predated the colonial era, existing in Malay states as a form of grassroots entrepreneurship.

Street hawking initially gained popularity among locals and immigrants as a means of self-employment which required minimal capital[16]. As such, the low barriers to entry attracted individuals who were unemployed or lacked formal skills, enabling them to earn a livelihood through small-scale trading. Over time, hawkers adapted to evolving urban and economic landscapes, diversifying their offerings to meet the needs of expanding communities.

By the early 20th century, hawkers became indispensable to daily life, particularly in urban centres. Historical records suggested that hawkers operated in several categories, with food vendors forming the majority[17]. These food hawkers were essential for the urban labourers, clerical workers and travellers, providing affordable and convenient meals. Other groups of hawkers included small-scale farmers who sold surplus produce such as vegetables, eggs and poultry, and street vendors who distributed perishable goods supplied by wholesalers. Additionally, hawkers who sold household sundries and provided essential services—such as locksmiths, cobblers and barbers—helped meet the everyday needs of the working-class population[18].

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[12] FAO (2007)

[13] Ratna (2012)

[14] Marimuthu and Hassan (2016); Nungsari et al. (2024)

[15] Bhowmik (2005)

[16] Chin and Othman (2015)

[17] Chong (2019)

[18] Ibid.

Figure 1: Hawkers in the early 19 century

(a) A scene in 19th century Malaya shows customers eating from roadside hawker stalls.

(b) A group of Malay and Indian street hawkers in Malaya during the turn of the 20th century.

(c) Most hawkers walked the streets while carrying their goods in baskets attached to shoulder yokes.

(d) A Chinese hawker selling a variety of daily necessities.

(e) A Malay hawker selling satay.

(f) A scene in Malaya during the late 19th century showing fruit hawkers in Ipoh.

Source: Photos excerpted from Seng (2019)

2.2. Regulation and Formalisation of Hawkers

The formalisation of hawkers began in 1970, marking a turning point in their role within the economy[19]. The Kuala Lumpur City Hall (DBKL) initiated licensing programs in response to resistance from fruit vendors who refused to relocate to Pasar Seni. The government has recognised the economic importance of hawkers as a means of income generation and employment and implemented measures to regulate and support their activities.

The issuance of licenses in 1970 provided hawkers with legal recognition and reduced conflicts over urban space usage[20]. This initial step laid the groundwork for structured governance, leading to subsequent policies that formalised hawking activities. By 1986, the establishment of the Department of Hawkers and Petty Traders (DHPT) marked a significant milestone. This department oversaw licensing, infrastructure improvements and support programs for hawkers.

In 1987, the National Policy on Hawkers[21] was introduced, further strengthening regulatory frameworks and promoting the integration of hawkers into the urban economy. The impact of these initiatives was evident, resulting in a sharp increase in licensed hawkers, as shown in Figure 2. From fewer than 5,000 licensed hawkers in 1970, the number rose to over 38,000 by 2000, reflecting the growing acceptance and recognition of hawkers as legitimate economic actors[22]. Despite these trends, unlicensed hawkers persist, with an estimated 12,000 operating without formal approval in 2000.

Figure 2: Number of licensed hawkers in Kuala Lumpur by ethnicity, 1970 – 2000
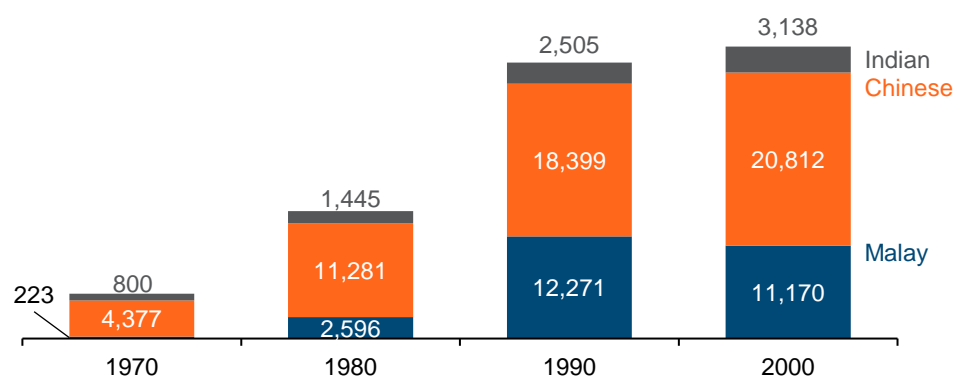
Source: Norhaslina Hassan (2003); Bhowmik (2005)

The distribution of informal businesses in Kuala Lumpur in 2020 shows that most operate at night markets, comprising 34.9% (11,208 units) of the total informal businesses (Table 1). This is followed by roadside stalls, which represent 16.2% (5,204 units) and markets with buildings, accounting for 18.8% (5,378 units). Together, these three categories form the bulk of informal

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[19] Bhowmik (2005); Sukaimi, Rahman, and Yaakob (2021)

[20] Norhaslina Hassan (2003)

[21] Article 95A of the Federal Constitution provides for the establishment of the National Council for Local Government (MNKT) as the highest authority for formulating policies and laws related to local government. Any matters involving policies and legislation concerning local government are subject to the approval of the MNKT. For the purpose of uniformity, the MNKT approved several By-Laws (UUK) in the late 1980s, including the Hawkers By-Law in October 1987. Source: KPKT (2023)

[22] Bhowmik (2005)

businesses, heavily relying on permanent and semi-permanent market setups for commerce activities.

Other notable categories include the KL Pavilion temporary license businesses, which comprise 8.6% (2,897 units) and open markets, which contribute 9.7% (3,114 units). Smaller segments, such as mobile hawkers, food trucks and recreational park permits, reflect more niche operations but collectively highlight the diversity of informal economic activities. The varied distribution may suggest that these businesses cater to different customer groups and operational needs, with night markets and roadside stalls being particularly dominant forms of trade.

Table 1: Type of informal businesses in Kuala Lumpur, 2020

Type	Units	%share
Late night bazaar	851	2.6%
Food truck	95	0.3%
Locked stalls	108	0.3%
Roadside stalls	5,204	16.2%
Kiosk	80	0.2%
KL Prihatin temporary license	2,697	8.4%
Market with buildings	5,376	16.7%
Wholesale market	438	1.4%
Night market	11,208	34.9%
Open market	3,114	9.7%
Mobile hawkers	63	0.2%
Temporary permit	280	0.9%
Recreational park temporary permit (bicycle)	31	0.1%
Temporary permit for recreational & recreational park hawkers (F&B, toys)	18	0.1%
KLCH hawkers centre	1,361	4.2%
Private hawkers centre	404	1.3%
Restricted time	235	0.7%
Restricted time (RMCO)	556	1.7%
Total	**32,119**	**100.0%**

Source: DBKL (2023)

The government acknowledges the importance of hawking as a source of employment, particularly for low-income groups, offering a pathway for individuals to start their own businesses [23]. Several initiatives have been implemented to support this sector, including providing access to credit facilities, training on food handling and safety, and relocating street vendors to more organised and regulated environments such as markets or food trucks[24].

Recently, through the Ministry of Entrepreneur Development and Cooperatives (MECD), the government launched the Hawkers and Small Traders Development Policy 2030 (D3PKN2030)[25] to empower hawkers and petty traders in the country. In addition, the establishment of D3PKN2020 is to complement the Hawkers and Small Traders Development Plan (P3PK) 2023–2027[26], where it serves as a key policy that drives the longer-term vision for the development of hawker sectors and small traders in Malaysia.

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[23] Siwar and Jani (2007)
[24] DBKL (2023); KPKT (2023)
[25] KUSKOP (2024)
[26] KUSKOP (2023)

P3PK functions as an action plan that is more specific and detailed for the first five years and focuses explicitly on strategic actions to enhance the sustainability and legitimacy of hawking activities while fostering economic inclusivity. Recognising the critical contribution of hawkers and small traders to supply chains and retail, the plan emphasises the need for business transformation to enhance their competitiveness in navigating future business challenges.

Despite these efforts, the hawker and small trader landscape continues to face significant challenges, including the lack of a systematic policy framework to support their ecosystem, the absence of a comprehensive database for hawkers and small traders, limited access to financial assistance and support, and the need to adapt to current trends such as technological advancements, innovation and digitalisation (Figure 3). These issues highlight the importance of addressing structural gaps and creating targeted strategies to overcome barriers hindering the growth and sustainability of this vital sector[27].

Figure 3: Challenges faced by hawkers and small traders
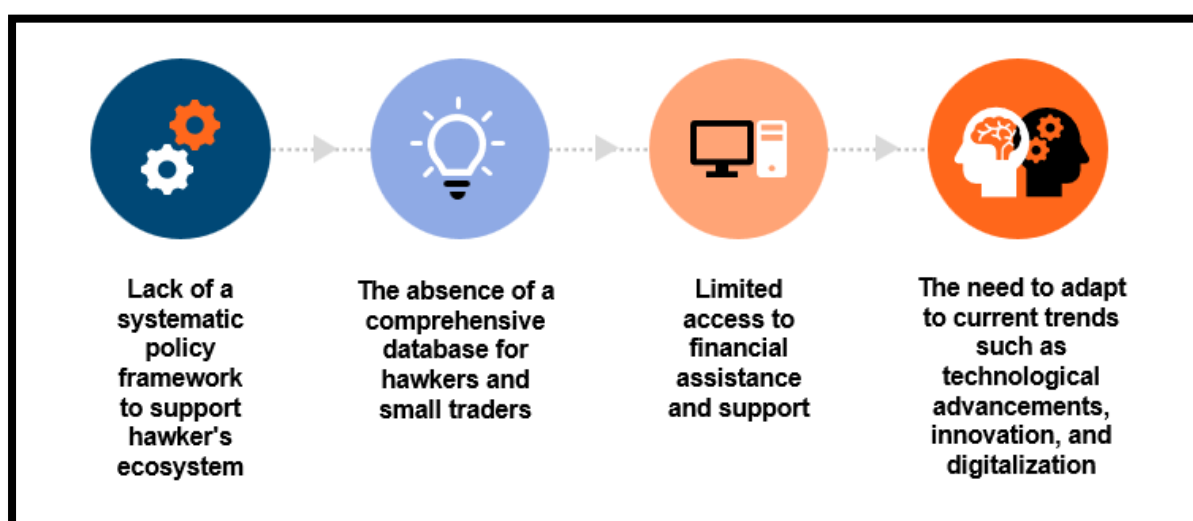
Source: KUSKOP (2024)

Furthermore, informality remains the most significant challenge for hawkers. Many street vendors operate without licenses or proper monitoring, leading to various public issues. These include concerns over hygiene and food safety, as unregulated vendors may lack access to clean water, waste management and proper facilities, increasing the risk of food contamination and health hazards[28]. To add, unlicensed hawking contributes to urban planning challenges such as traffic congestion, pedestrian safety and townscape management, as informal setups often encroach on public spaces[29]. As such, these issues impact urban aesthetics and strain local authorities attempting to balance economic inclusivity with public safety and order.

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[27] KUSKOP (2024)
[28] See for example, Sukaimi, Rahman, and Yaakob (2021); Norhaslina Hassan (2003); Chik et al. (2016); Toh (2000)
[29] Junaidi and Othman (2021)

Box 1: Characteristics of Hawkers and Small Traders

Hawkers and small traders refer to a part of micro-enterprises that conduct business in goods or services, either at permanent premises, temporary premises, mobile setups, or at home KUSKOP (2023). They can be characterised by the following:

1. Small traders who carry out hawking activities either in a static or mobile manner (low scale) at locations such as stalls, retail shops, houses, *warongs*, sidewalks, business complexes/arcades, restaurants, markets, night markets, farmers' markets, day markets, and others (Local Government Department, 1995).

2. Small traders (static or mobile hawkers) who have low capital and offer goods such as food and beverages, clothing, agricultural produce, fresh goods by the roadside, sidewalks, markets, night markets, municipal stalls, and food courts (Universiti Utara Malaysia, 2019).

3. Informal workers involved in economic activities that are not legally or practically covered by formal regulations (DOS, 2022).

Source: Direct excerpted from KUSKOP (2023)

2.3. Hawkers – A Landscape within the Informal Sector

Hawkers continue to make significant contributions to the economy, particularly in urban areas that form a crucial part of the informal labour market. It offers affordable, accessible and culturally substantial food options. Their contributions span six key aspects[30]:

1. **Economic Necessity**: Hawkers represent a "safety valve" for employment, providing a means of livelihood for individuals with limited capital, education, or formal skills. Their role in addressing poverty and creating income opportunities, especially for low-income urban households, is essential in addressing economic inequality.
2. **Accessibility and Affordability:** Hawkers play a significant role in providing fresh and cooked food at affordable prices to diverse income groups. Their offerings, ranging from fresh produce to ready-to-eat meals, cater to lower—and higher-income households, making them essential in food supply systems.
3. **Complementary to Formal Retail:** Hawkers complement formal retail by addressing immediate consumer needs. They provide perishable goods and quick, ready-to-eat meals, making them indispensable in the broader retail ecosystem.
4. **Urban Economy Support:** Hawkers contribute to urban economies by offering low-cost goods with minimal overhead. Compared to formal retail options, their affordable and low-cost products make them an essential resource for consumers. They particularly benefit lower-income groups by providing accessible and budget-friendly choices.
5. **Flexibility and Mobility:** Hawkers' mobility allows them to meet consumer demand directly by operating in various neighbourhoods. This flexibility enables them to reach areas underserved by formal retail outlets, broadening their customer base and addressing gaps in food accessibility.
6. **Cultural and Economic Continuity:** Hawkers maintain the cultural tradition of street vending while adapting to urbanisation and economic development. Despite the rise of formal retail, they continue to thrive due to their critical role in the urban food supply chain, bridging tradition and modern economic needs.

Hawkers can be regarded as part of the informal economy based on the definition by the Department of Statistics Malaysia (DOS)[31]. Box 2 discusses the informal sector and informal entrepreneurship, framing hawkers as a significant component of the informal economy. It is often difficult to obtain accurate data on employment in the informal sector due to its unregulated nature. However, statistics provided by DOS offer a useful overview of the distribution and trends in informal employment.

The inclusion of hawking activities within the informal economy highlights their importance as an essential source of income and employment for marginalised communities. Furthermore, their adaptability and resilience align with the characteristics of informal entrepreneurship discussed in Box 2, putting hawkers as a key element in the broader narrative of the informal sector.

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[30] Author's compilation from various sources. See for example, Norhaslina Hassan (2003); Seng (2019); Toh (2000); Chik et al. (2016); Sukaimi, Rahman, and Yaakob (2021)

[31] According to DOS (2024a), the informal sector comprises informal enterprises that meet the following criteria: (a) the enterprise is not registered with the Companies Commission of Malaysia (CCM), professional bodies, or Local Authority (Sabah and Sarawak); (b) all or at least one goods or services produced are meant for sale or barter transactions; (c) the size in terms of employment is less than 10 persons and is not registered under specific forms of national legislation; and (d) all sectors include agriculture.

Therefore, for this study, hawking is treated as equivalent, focusing specifically on street retailing as the subject of discussion.

Figure 4: The Role of Hawkers as Informal Retailers

Source: Author's compilation

Figure 5 highlights that informal employment remains a significant component of Malaysia's labour market, accounting for nearly 10% of total employment in 2023. While this marks a notable decline from 11.4% in 2015, it indicates a gradual shift toward formal employment. However, it is essential to note that the share of informal employment has maintained above 9% since 2019, reflecting its continued relevance, particularly in urban areas and among groups engaged in small-scale businesses like hawkers. This trend suggests ongoing structural changes in the labour market, with efforts to formalise employment gaining traction. At the same time, the informal sector continues to serve as an essential source of livelihood for households.

Figure 5: Employment in the informal sector in comparison with total employment, 2015-2023
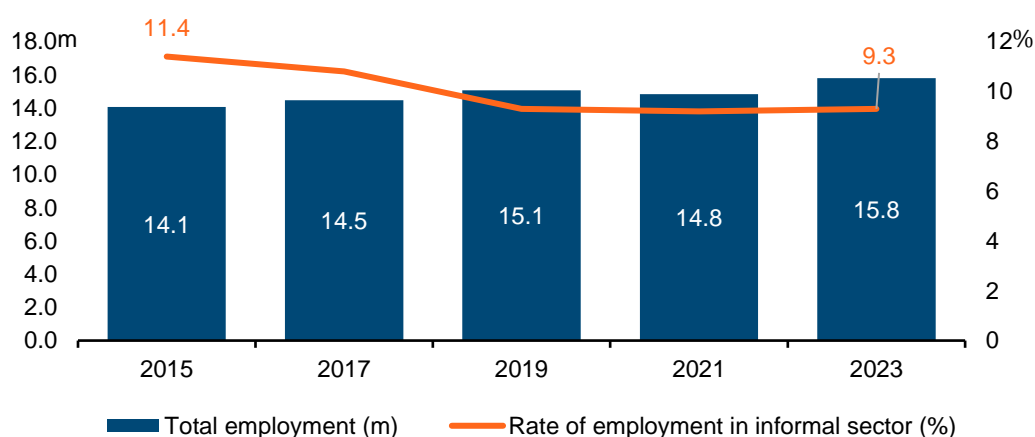
Note: The agriculture sector is excluded from the analysis due to its high informality based on the guidelines of ILO.
Source: DOS (2024a)

The same report also highlights the growing number of hawkers in markets and street stalls, reaching 342,000 in 2021, as shown in Figure 6. This represents approximately a third of the total employment in the informal sector for 2021. Urban areas dominate this employment pattern, with over 73% of hawkers based in cities. This trend features the role of hawking as a livelihood strategy in rapidly urbanising environments. The flexibility of hawking allows it to absorb unskilled and low-income workers, including women and migrants, who may struggle to access formal employment opportunities.

In 2015, approximately 15.1% of informal employment was concentrated in markets and street stalls, equating to 212,500 workers. The proportion remained stable at 19.4%, involving 243,900 workers in 2019 before a significant jump was recorded, with 27.7% of informal workers engaged in market activities, reaching 342,000 in 2021. However, employment in this category dropped to 14.2%, with 190,600 workers likely exhibiting shifts due to economic recovery post-pandemic and competition from formal retail sectors.

Additionally, employment in mobile setups without fixed locations increased from 259,000 in 2021 to 315,000 in 2023, after a declining trend from 2015. Employment in the informal sector in factories, offices, workshops and kiosks experienced growth, rising sharply to 302,900 workers in 2023. The growth for market and street stalls employment observed in 2021 may be attributed to pandemic-induced unemployment that pushed individuals into informal activities as a survival strategy[32]. However, the subsequent decline of market and street stall employment in 2023 suggests a partial recovery of formal employment options and informal traders' challenges in maintaining long-term stability.

Figure 6: Total employment in the informal sector by type of workplace, 2015 – 2023
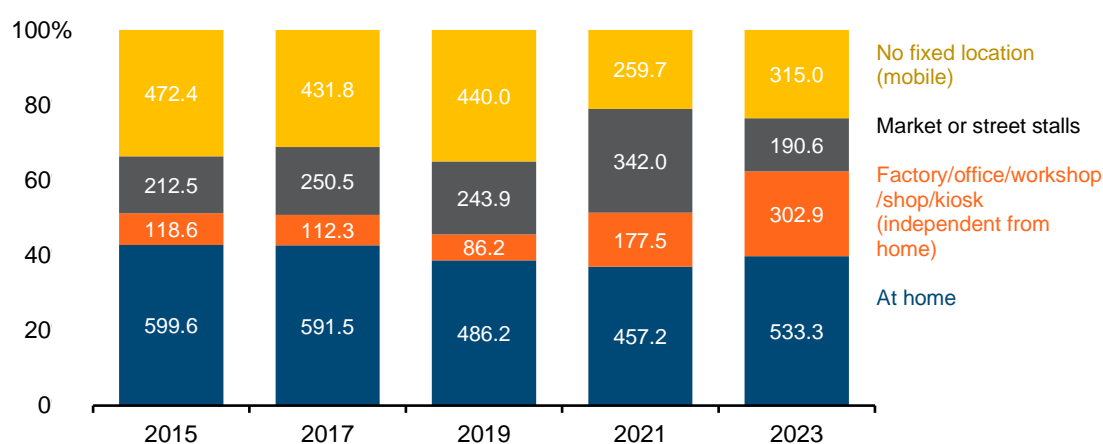
Note: The agriculture sector is excluded from the analysis due to its high informality based on the guidelines of ILO.
Source: DOS (2024a)

Figure 7 shows the sectoral distribution of employment in the informal sector in 2022, with nearly half of the informal workers concentrated in Wholesale & Retail Trade, Repair of Motor Vehicles & Motorcycles (358.8 thousand) and Accommodation and Food & Beverage (F&B) Service Activities (293.9 thousand). These two sectors dominate given their lower entry barriers

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[32] Nungsari et al. (2024)

and reliance on casual labour [33], reflecting trends observed in literature where hawkers, particularly street vendors and food stall operators, are heavily concentrated in retail and F&B services[34].

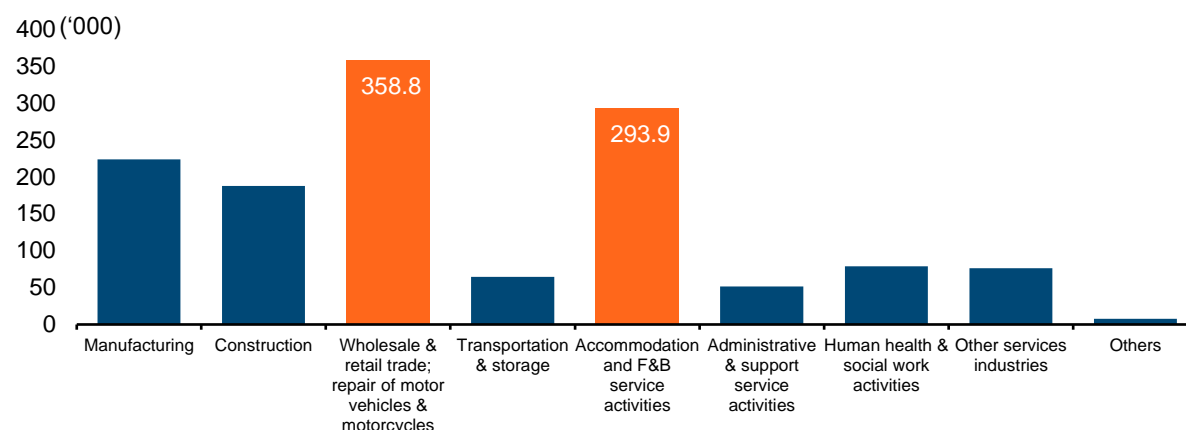**Figure 7: Employment in the informal sector by sector, 2023**

Note: The agriculture sector is excluded from the analysis due to its high informality based on the guidelines of ILO.
Source: DOS (2024a)

Figure 8 and Figure 9 illustrate the composition of employment in the informal sector by strata, highlighting the urban predominance in general informal employment and those explicitly working in markets and street stalls. Figure 8 reveals that approximately 80% of informal employment is concentrated in urban areas from 2015 to 2023, emphasising urban centres as focal points for informal economic activities due to better infrastructure, higher consumer demand and greater economic opportunities [35]. This trend highlights the reliance on urban environments to sustain informal livelihoods, driven by access to larger markets and commercial networks [36]. Meanwhile, rural informal employment remains relatively smaller, suggesting structural differences in economic activities and opportunities between urban and rural areas.

Similarly, Figure 9 highlights that informal workers operating in markets and street stalls are predominantly urban, accounting for nearly 80% of this segment. This implies that urban areas are essential in sustaining informal trade activities, particularly for hawkers and street vendors, who benefit from higher population density and urban mobility patterns. The high urban concentration accentuates the need for policies to formalise and support these informal enterprises, including affordable trading spaces, licensing schemes and improved infrastructure [37]. Addressing these needs can enhance productivity while preserving street markets' cultural and economic significance.

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[33] Casual labor refers to a type of employment arrangement where workers are engaged on a short-term, irregular, or ad hoc basis, often without the guarantee of consistent work hours, benefits, or job security. These workers are typically hired as needed, depending on the employer's workload or demand, and are paid on a daily, hourly, or task-based rate.
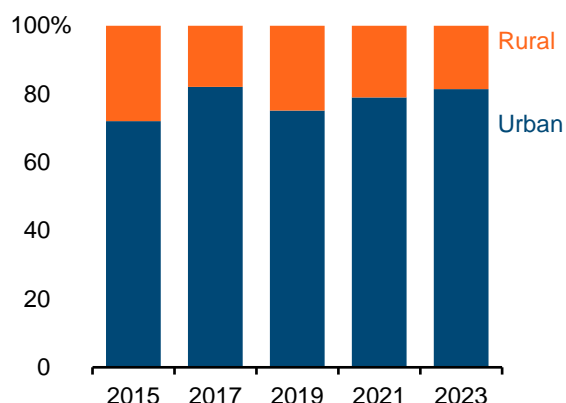[34] May and Latip (2021)
[35] Norhaslina Hassan (2003); Sukaimi, Rahman, and Yaakob (2021)
[36] Ratna (2012)
[37] Hassan (2003); Nungsari et al. (2024); Sukaimi, Rahman, and Yaakob (2021)

Figure 8: Employment in the informal sector by strata, 2015 – 2023

Note: The agriculture sector is excluded from the analysis due to its high informality based on the guidelines of ILO.
Source: DOS (2024a)

Figure 9: Employment in the informal sector working in market and street stalls by strata, 2015 – 2023
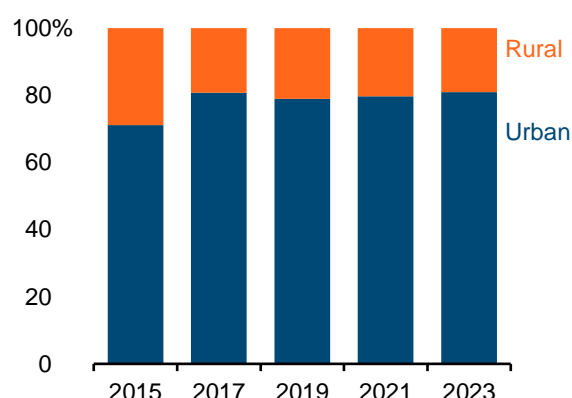
Note: The agriculture sector is excluded from the analysis due to its high informality based on the guidelines of ILO.
Source: DOS (2024a)

Another aspect to underscore the significant role of hawkers in our food ecosystem is by examining the growth of food away from home (FAFH) consumption. Hawkers provides affordable, convenient and diverse meal options, catering to households across all income levels. They particularly benefit lower-income groups that rely on them as an economical source of FAFH.

The trends are evidenced in Figure 10 and Figure 11, which highlights the trend of FAFH as a significant component of household expenditure. Over the years, expenditures on FAFH have consistently grown, both in nominal terms and as a percentage of total food expenditure, surpassing the share of food at home (FAH) (Figure 10). This trend reflects changing lifestyles, urbanisation and the growing convenience of eating out or purchasing ready-made meals. In the context of hawkers, particularly those operating in night markets, roadside stalls and open markets, represent an accessible and affordable option for households seeking FAFH. Their flexibility, variety of offerings and competitive pricing align well with consumer preferences, making them key players in the food ecosystem.

In addition, Figure 11 highlights the growth in real food expenditure by income decile and further highlights the importance of hawkers in our context. Higher-income households exhibit more substantial growth in FAFH spending, indicating a preference for diverse dining experiences. However, lower-income groups, for whom affordability remains key, likely rely more on hawkers as an economical FAFH option. Therefore, hawkers cater to a broad socio-economic spectrum, bridging affordability with convenience.

Figure 10: Nominal and percent FAH and FAFH expenditures of Malaysian households, 1993 – 2022
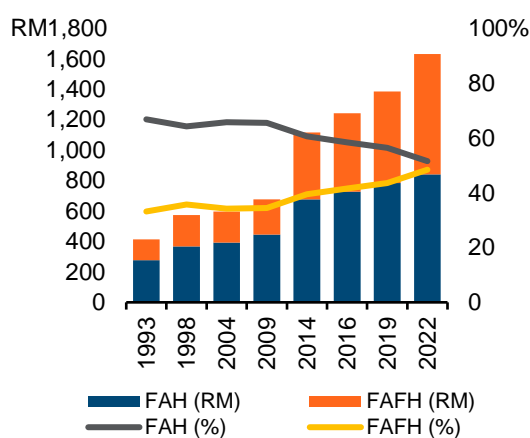
Source: DOS (2011); DOS (2015); DOS (2017); DOS (2020); DOS (2023) in KRI (2024a).
Note: Growth is calculated based on real expenditure expressed in 2015 prices.

Figure 11: Growth in real food expenditure by income decile, 2019/2022
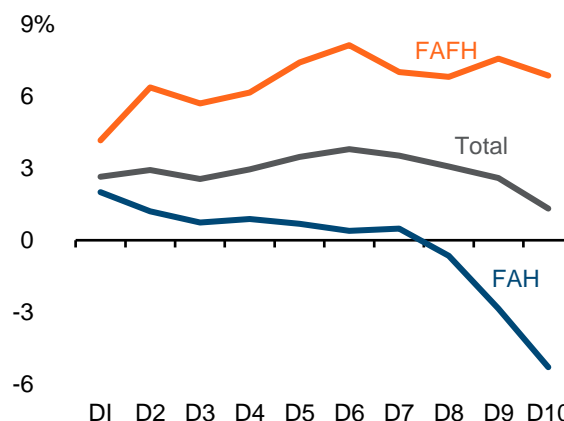
Source: DOS (2020); DOS (2023) in KRI (2024a)
Note: Growth is calculated based on real expenditure expressed in 2015 prices.

Box 2: Informal sector and informal entrepreneur

The informal sector encompasses a diverse range of activities and occupations, leading to multiple definitions of the term. Kuchta-Helbling et al. (2000) outlines two primary approaches to defining the informal sector: the definitional and behavioural approaches.

The definitional approach identifies the informal sector as including both legal and illegal market-based production of goods and services that are excluded from official GDP estimates[38]. Consequently, informal activities are omitted from measures like gross national product (GNP), gross domestic product (GDP) and national income accounts.

In contrast, the behavioural approach characterises the informal sector as activities that bypass the costs of legal compliance, with participants forfeiting the benefits tied to adhering to institutional frameworks and regulations[39], further attributes the significant growth of the informal sector in emerging economies to barriers that hinder individuals from entering the formal economy. These barriers often involve high transaction costs, such as obtaining business licenses, acquiring land titles, hiring workers, paying taxes and meeting government regulations.

Entrepreneurs within the informal sector often produce legitimate goods but lack legal recognition due to insufficient resources, burdensome compliance requirements and excessive regulations. Kuchta Helbling (2000) identifies several key features of the informal sector:

1. Participants operate independently;

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[38] Sookram and Watson (2008)

[39] Hassan (2003); Kuchta-Helbling et al. (2000)

2. Some are self-employed, engaging family members, while others hire non-family workers or apprentices;
3. The activities typically involve minimal capital, yield low incomes, provide unstable employment and often occur in unsafe working conditions.

Sookram and Watson (2008) offer two perspectives on the informal sector. The traditional view regards it as a source of income for the poor and marginalised, often characterised by low productivity. Conversely, a more contemporary perspective highlights its potential for fostering productivity and entrepreneurship, especially among micro-enterprises.

According to Williams and Nadin (2012), the informal economy is critical in sustaining livelihoods for disadvantaged populations and rural communities. For instance, Yotsumoto (2011) observes that many hawkers in Rizal Park, Manila, are women with limited education who have migrated from rural to urban areas. Interestingly, Williams and Gurtoo (2011) note that the informal economy also thrives in rural England, serving as a platform for entrepreneurial experimentation and business development.

Williams and Nadin (2012) define informal entrepreneurship as engaging in business activities—less than three years old—that involve monetary transactions not reported for taxation or benefit purposes but are otherwise lawful. This hidden enterprise includes registered businesses operating partially off the books and entirely unregistered businesses.

Williams and Gurtoo (2011) studied street entrepreneurship in India, categorising it within the informal economy. They define street entrepreneurs as stationary vendors occupying public or private spaces or mobile vendors using pushcarts or carrying goods in baskets.

3. Case Study: Hawkers and Hawking Space in Malaysia

Research on hawkers in Malaysia reveals essential gaps that need to be addressed. While micro-enterprises like hawking play a critical role in the economy, their unique characteristics and contributions remain underexplored. Existing studies often focus on Small and Medium Enterprises (SMEs) broadly, overlooking the distinct challenges hawkers face. Additionally, there is a lack of systematic macro-level analysis on hawking, with most research limited to specific regions or dated findings.
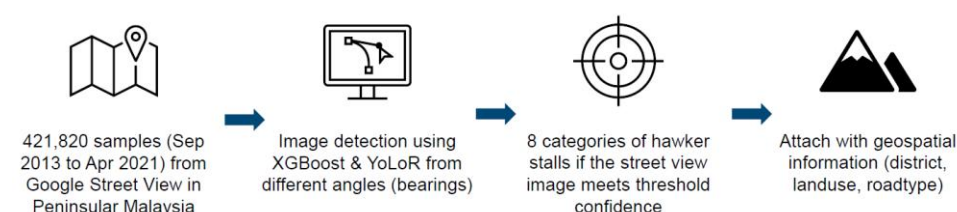
The next section presents a case study leveraging a spatial satellite dataset to address these gaps. The analysis examines the distribution and characteristics of hawking spaces across Peninsular Malaysia. This case study sheds light on the evolving role of hawking culture in Malaysia's rapidly urbanising landscape. By integrating geospatial data, the study offers a fresh perspective that captures macro-level spatial patterns, contributing to a deeper understanding of the hawking sector.

3.1. Data and Methodology

(a) Data Collection and Processing

This study utilised data from the Asia School of Business (ASB) to capture the distribution of hawker stalls across Peninsular Malaysia, where the data collection process is illustrated in Figure 12. The project collected primary data between September 2013 and April 2021, randomly drawing Google Street View images across Peninsular Malaysia. The Google Street View images were processed using the You Only Learn One Representation (YoLoR) [40] object detection algorithm to detect the existence of hawker stalls. The confidence scores from YoLoR were further refined using an Extreme Gradient Boosting (XGBoost) model trained on hand-labelled detections. If they met a certain confidence threshold, the hawker stalls detected would be classified into eight categories according to their physical settings [41]. Lastly, geospatial information, such as states, districts, land uses and road types, are attached to the data set using classifications from *Sistem Maklumat Gunatanah Perancangan Bersepadu* (I-Plan) [42] and OpenStreetMap (OSM)[43].

Figure 12: Data collection and processing method

421,820 samples (Sep 2013 to Apr 2021) from Google Street View in Peninsular Malaysia → Image detection using XGBoost & YoLoR from different angles (bearings) → 8 categories of hawker stalls if the street view image meets threshold confidence → Attach with geospatial information (district, landuse, roadtype)

Source: Author's illustration.

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[40] Wang, Yeh, and Liao (2021)

[41] Refer to Appendix A for more details on the categorisation of hawker stalls.

[42] I-Plan is a development initiative by the Town and Country Planning Department, Peninsular Malaysia (JPBDSM), State JPBD and Local Authorities (PBT) to store, manage, update, analyse and supply Peninsular Malaysia land use information and data.

[43] OpenStreetMap is an open-source geographic database updated and maintained by a community of volunteers.

The data set includes 421,820 samples, of which 31,047 hawker stalls were detected. Figure 13 illustrates the distribution of samples collected on the Peninsular Malaysia map, while Figure 14 shows the number of samples by state. The samples are highly concentrated in the Klang Valley and other major urban areas, with Selangor having the highest number of samples at 82,600, followed by Kuala Lumpur (72,341), Johor (49,097) and Kedah (45,196). This study does not cover less populated rural areas outside of Google Street View coverage due to data unavailability.

Figure 13: Distribution of samples collected

Source: ASB (n.d.)

Figure 14: Number of samples by state
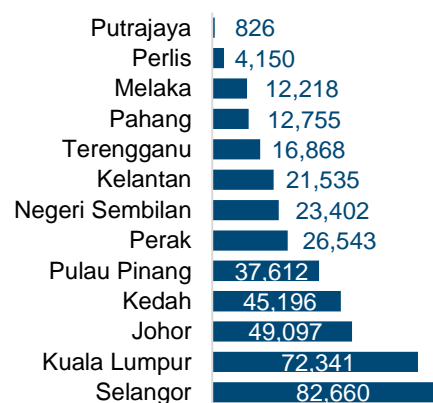
Source: ASB (n.d.)

Figure 15 further illustrates the time distribution of the samples, showing the year when the sample images were taken on Google Street View. It started in September 2013, when Google Street View began to capture imagery in the country[44], covering 9 years until April 2021. The number of samples fluctuated strongly over the years, showing a sharp decline in 2016 to only 5,857 and a peak in 2018 to 83,058. This fluctuation can be due to the irregularity of Google Maps' imagery collection. Due to the uneven time distribution within the samples, we are unable to perform any time series analysis using this data.

Figure 15: Number of samples by year captured
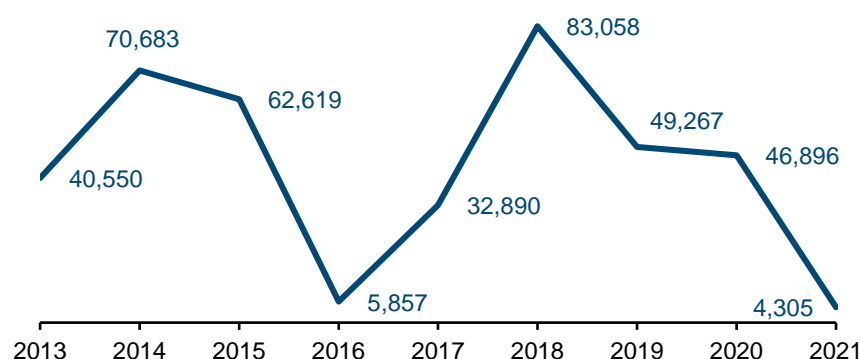
Source: ASB (n.d.)

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[44] Shazwan Mustafa Kamal (2014)

(b) Data Limitations

The data limitations should be fully recognised to provide the necessary context for interpreting the survey findings. The detailed limitations of our analysis utilising the dataset are as follows:

i. **Sampling bias**: As the project utilised Street View images from Google Maps, the sampling frame highly depends on its geographical coverage. Figure 16 illustrates the locations in Peninsular Malaysia where Street View is available. As the imageries were captured using cameras installed on cars, most street view images are concentrated along the public road system. This indicates that hawker stalls operating in rural areas with less developed road systems are not covered due to the lack of Street View coverage. However, it is safe to assume that Street View has covered most of the populated areas in Peninsular Malaysia, and most of the hawker stalls operate within the public road system as accessibility remains an important element in their services.

Figure 16: Google Street View coverage in Peninsular Malaysia

Source: Google Maps (n.d.)

In addition, this data excludes hawker stalls that operate during the evening and night, as Street View images were only captured during the daytime.

ii. **Time inconsistency**: Due to the nature of Google Street View, the project captures cross-sectional data on hawker stall distribution over different time periods (Figure 15). Given the mobile nature of this industry, it may not reflect the complete and up-to-date representation of hawker stall distribution due to the low barrier to enter and exit. The data also ignores the mobility of hawker stalls, where the same mobile hawkers might appear multiple times in different locations across time. In addition, the data accuracy is highly dependent on the timing of imagery collection. Hawker stalls without fixed structures might be excluded if the imageries were captured outside their operating hours, resulting in an underestimation of the number of hawker stalls.

iii. **Limited coverage**: The data only tracks hawker stalls' geospatial information and physical characteristics. It does not include activities within the hawker stalls, such as the transaction volume, types of goods sold and number of customers, which would help to understand their micro-characteristics.

3.2. Data Analysis

The analysis method in this report is primarily descriptive, involving basic statistical measures and graphical representation to discover the variables' patterns, characteristics and correlations. It aims to provide a snapshot of the landscape of microbusinesses and hawking culture in Malaysia.

The analytical process involved an initial exploratory data analysis to discover patterns and draw preliminary insights from the dataset using summary statistics and visualisations. Basic tabulation on frequency and distribution was used to infer the distribution of various variables. A literature review on hawkers was also conducted to supplement the findings and enhance the analysis. This preliminary analysis led to identifying three key themes—physical structure, urbanisation and accessibility—in which the following chapter will be organised. Deeper analysis was further conducted using correlation and spatial autocorrelation measures.

Correlation analysis

The paper utilised data from the Population Censuses and Household Income and Expenditure Survey (HIES)[45] provided by the Department of Statistics. Various socio-economic variables, such as household income, proportion of income group and age characteristics, were mapped to the district-level hawker stall data from ASB to identify potential correlations between variables.

Within the data coverage period in Figure 15, HIES was conducted three times after the study period: in 2014, 2016, 2019 and 2022. We use data from HIES 2019 in the correlational analysis as it is the most up-to-date pre-COVID data that can reflect the districts' socio-economic development without the impact of the pandemic. In addition, HIES 2019 may match the Hawker data better as more samples were taken in 2019 than in 2016.

(a) Spatial Autocorrelation

Exploratory Spatial Data Analysis (ESDA) was conducted to systematically detect the presence of spatial patterns among hawker stall density across districts. This paper utilised the concept of spatial autocorrelation, which describes the extent to which a variable is correlated with each other geographically. A positive spatial autocorrelation indicates that observations with similar values tend to be closer to each other (clustered). Meanwhile, a negative spatial autocorrelation indicates that observations with dissimilar values tend to be closer to each other (dispersed). A zero spatial autocorrelation indicates a random and independent distribution of data. This concept is closely linked to Tobler's First Law of Geography, where "everything is related to everything else, but near things are more related than distant things."[46]

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[45] The HIES presents statistics on the distribution of household income and expenditure in Malaysia. It was conducted twice within any period of 5 years.
[46] Tobler (1970)

Figure 17: Visualisation of spatial autocorrelation
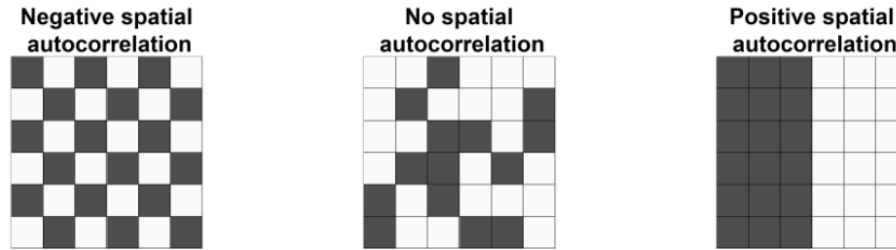
Source: Moraga (2023)

(b) Spatial weight matrix
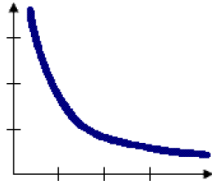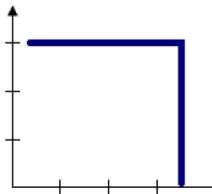
The spatial relationships between different features are defined through spatial weights (w_{ij}) and are structured into a spatial weight matrix (W). It is a n x n matrix which quantifies the spatial relationships among all features in the dataset. Spatial weights can take binary or variable form, depending on the spatial relationship model chosen in defining neighbours. A binary spatial weight matrix is often row-standardised, in which each neighbour weight is divided by the sum of rows to create standardised weights when features have different numbers of neighbours.
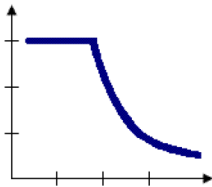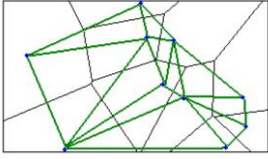
$$W = \begin{bmatrix} 0 & w_{12} & \cdots & w_{1n} \\ w_{21} & \ddots & w_{ij} & \vdots \\ \vdots & w_{ji} & 0 & \vdots \\ w_{n1} & \cdots & \cdots & 0 \end{bmatrix}$$

(c) Defining neighbours

Defining "neighbouring" features is also essential, as this may significantly impact the resulting interpretations. Neighbours can be contiguous polygons within a specific distance band or polygons with the same political or historical backgrounds. Table 2 compares a few spatial relationship models commonly used in spatial analysis.

Table 2: Spatial relationship models

Model	Description	Best use cases
Inverse distance	Diminishing influence over distance	• Continuous data • Processes where proximity increases interaction
Distance band (sphere of influence)	Polygons within a specified distance	• Point data • Significant variation in polygon sizes

Zone of indifference	Diminishing influence over distance after a defined threshold distance.	• When sharp boundaries are not representative • Small data set
Polygon contiguity (first order)	Polygons that share boundaries are included in computations	• Contagious process • Polygon size and distribution are similar
K-nearest neighbours	Fixed number of nearest polygons.	• Skewed value • Ensuring a minimum number of neighbours
Delaunay triangulation	Creating Voronoi triangles from point features	• Island polygons • Uneven distribution
Space-time window	Define relationships in both space and time	• Identifying space-time hot spots

Source: ArcGIS Pro (n.d.)

(d) Global Moran's I

The most common measure of spatial autocorrelation is the Moran's I statistic. It measures the linear relationship between a series' value and those located in a defined neighbourhood. In other words, it quantifies how similar each region is with its neighbours on average. The Moran's I is denoted as follows:

$$I = \frac{n \sum_i \sum_j w_{ij} (Y_i - \bar{Y})(Y_j - \bar{Y})}{(\sum_{i \neq j} w_{ij}) \sum_i (Y_i - \bar{Y})^2} \tag{1}$$

Where n is the total number of locations, Y_i and Y_j are the attribute values for areas i and j, $\bar{Y}$ is the mean of the attribute values and w_{ij} are the spatial weights that denote the spatial proximity between area i and j[47]. Under the null hypothesis of no spatial autocorrelation, I is asymptotically normally distributed with the mean and variance of:

$$E[I] = \frac{-1}{n-1} \tag{2}$$

$$Var[I] = \frac{n^2(n-1)S_1 - n(n-1)S_2 - 2S_0^{\,2}}{(n+1)(n-1)^2 S_0^{\,2}} \tag{3}$$

[47] Moraga (2023)

where

$$S_0 = \sum_{i \neq j} w_{ij}, S_1 = \sum_{i \neq j} (w_{ij} + w_{ji})^2, S_2 = \sum_k (\sum_j w_{kj} + \sum_i w_{ik})^2 \tag{4}$$

The Moran's I statistics take the range from -1 to 1. A Moran's I is significantly higher than $E[I]$ signifies a positive spatial autocorrelation, while Moran's I is significantly lower than $E[I]$ indicating a negative spatial autocorrelation. A Moran's I close to $E[I]$ suggests an absence of spatial autocorrelation. The significance of Moran's I can be assessed by two methods. One can compute the z-score for Moran's I when n becomes sufficiently large and approaches normal distribution (Equation 5). Alternatively, one can randomly permute the values across all regions to obtain a distribution of Moran's I by running a Monte Carlo simulation. The observed Moran's I is then compared with the permuted distribution to obtain a pseudo-p-value.

$$z = \frac{I - E[I]}{\sqrt{Var(I)}} \tag{5}$$

The Moran's I scatterplot is a good way to visualise spatial autocorrelation, where the spatial data is plotted against its spatially lagged variable (weighted average of neighbouring regions). It visualises how the value in each area is correlated to their neighbouring areas. The slope of the simple regression line represents the estimation of the global Moran's I statistics.

Figure 18: Moran's I scatterplot
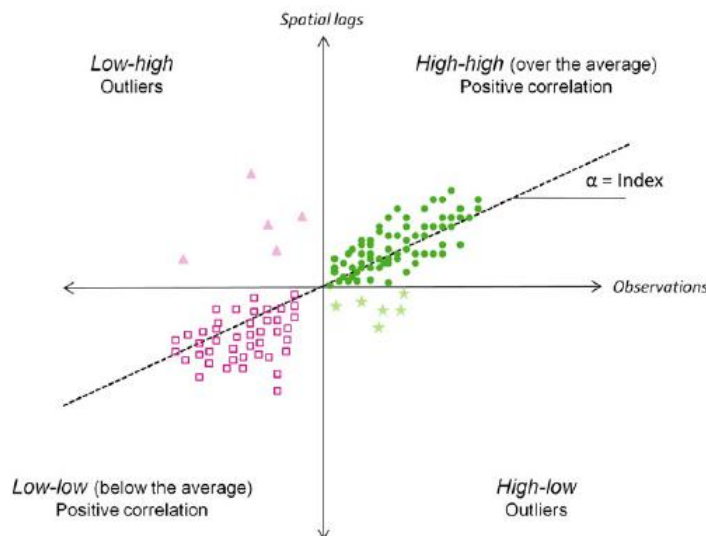
Source: Gomez, White, and Wulder (2011)

(e) Local Indicators of Spatial Association (LISA)

Spatial autocorrelation can be interpreted globally and locally. Global spatial autocorrelation yields only a single statistic summarising the study area, assuming homogeneity across all regions. When global spatial autocorrelation is present, the Local Indicators of Spatial Association (LISA)

allows the decomposition of global indicators into the contribution of each observation[48]. It can be used to examine the local variation of spatial autocorrelation, identifying influential observations and outliers in the data. One of the most common LISA measures is the local Moran's I, which is denoted below:

$$I_i = \frac{n(Y_i - \bar{Y})}{\sum_j (Y_j - \bar{Y})^2} \sum_j w_{ij} (Y_j - \bar{Y}) \qquad (6)$$

Similar to the global Moran's I, the local Moran's I range from -1 to 1. A high value of I_i indicates that the region is surrounded by regions with similar values (clusters), while a low value of I_i suggests that the region is surrounded by regions with dissimilar values (outliers). Similarly, the expected value, variance, z-score and p-value can be computed to assess the significance of the local Moran's I. Running a Monte Carlo simulation will also result in the pseudo p-value.

The Moran's I scatterplot is also useful for identifying clusters of high or low values and outliers surrounded by opposite values. In Figure 18, the upper-right quadrant represents high-high cases, where their values and their neighbours' average values are higher than the mean. Similarly, the bottom left quadrant represents the low-low cases, with lower-than-mean values for themselves and their neighbours. Meanwhile, observations in the upper left (low-high cases) and bottom right quadrants (high-low cases) indicate outliers with negative local spatial autocorrelations, having opposing values to their neighbours.

3.3. Findings

(a) Physical Structure: Insights into Micro-Entrepreneurship

Hawking provides employment opportunities for large populations due to its low barrier to entry[49]. Hawking is generally small in size and requires a low skill level and minimal capital expenditure. They also provide opportunities for high return on investment and flexible working hours, ideal for individuals with low educational attainment and family responsibilities[50]. The informal hawking sector, hence, plays a vital role in providing a means of income and jobs for people in urban areas, especially during economic downturns[51].

The physical structure of hawker stalls can provide some implications for local entrepreneurship development. A high prevalence of larger and permanent settings of hawker stalls such as metal stalls, large stalls and hawker restaurants may reflect significant capital investment or strong business performance due to a conducive business environment. This favourable investment decision can be attributed to high access to capital, including formal and informal credits, and strong institutional support from the local government[52]. It also indicates a high intention to stay in business long-term, as these permanent structures take longer to break even. On the other

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[48] Anselin (1995)
[49] Winarno and Allain (n.d.)
[50] Chong (2019)
[51] Bhowmik (2005)
[52] Nguyen (2021)

hand, smaller settings such as one piece and table suggest a lack of capital access or low intention to stay in the business, as these structures are semi-permanent and can be easily disassembled.

Figure 19 shows the number of hawker stalls by their categories. Metal stalls appear to be the most prevalent setting among hawker stalls in Peninsular Malaysia, accounting for 8,826 or 31% of the total hawker stalls. This is followed by large stalls (5,984), one-piece (5,839), tables (3,620) and hawker restaurants (3,347). This high prevalence of large and permanent settings suggests significant fixed asset investment and high intention to stay in the business. This can be attributed to strong government support, as Malaysia is one of the few Asian countries that provides some form of recognition to street vendors[53]. Meanwhile, the low number of food trucks (678) and wheeled stalls (260) reveals a preference for permanent settings over mobile settings of hawker stalls. As only a few hawker stalls are organised and clustered in markets (168), most hawker stalls in Peninsular Malaysia are scattered across different locations.

Figure 19: Number of hawker stalls, by category
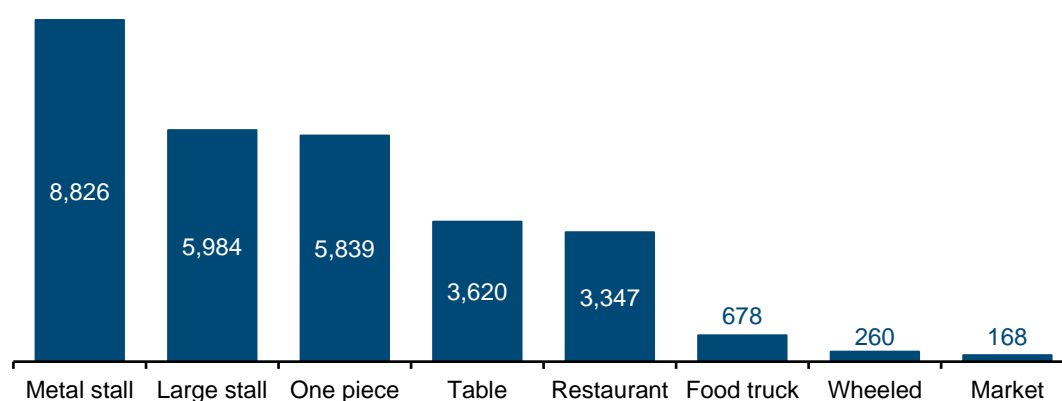
Source: ASB (n.d.)

There is a variation in hawker stall composition across states. Figure 20 shows the share of hawker categories by state, where the highest proportion of metal stalls are observed in Kuala Lumpur (39.4%), Johor (37.2%), Perak (34.5%), Pulau Pinang (34.1%) and Selangor (33.7%). Interestingly, these states are also among those with the lowest share of one-piece stalls, such as Kuala Lumpur (9.9%), Selangor (11.9%), Johor (16.7%) and Perak (18.0%). On the other hand, states which recorded a high proportion of one-piece hawker stalls include Kelantan (32.7%), Kedah (32.6%), Terengganu (28.9%) and Perlis (25.6%).

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[53] Bhowmik (2005)

Figure 20: Share of hawker stall categories by state
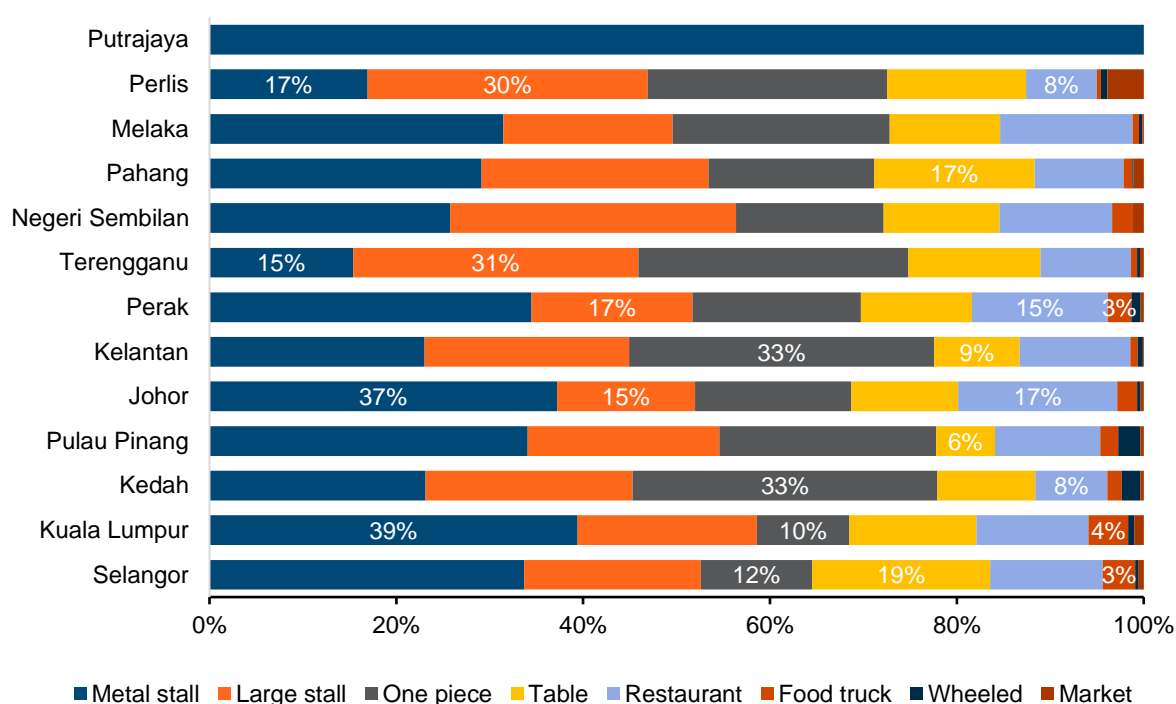
Source: ASB (n.d.)

Figure 21 shows the relationship between the proportion of different hawker stall categories and the GDP level in each state. States with high proportions of metal stalls are associated with higher GDP, while the reverse is true for one-piece stalls. Similarly, we observe a similar trend in the food truck category, where states with high GDP tend to have more food trucks. This stark contrast further highlights the vital role of the economic environment in influencing business performances and investment decisions among micro-entrepreneurs. For example, hawkers in strong economic states can generate higher returns, allowing them to make significant investments in their premises, such as switching to more organised forms of premises (metal stalls and food trucks), which requires higher capital costs. Therefore, strong consumer demand and high customer purchasing power are essential factors in achieving a high profit and capital investment level for these micro-entrepreneurs.

Figure 21: Proportion of hawker stall categories and state GDP, 2019

(a) Metal stall

Y-axis: State GDP (RM thousand), 0 to 400
X-axis: 0% to 60

Selangor (~38, 345)
Kuala Lumpur (~40, 232)
Johor (~36, 135)
Pulau Pinang (~34, 95)

(b) One Piece

Y-axis: 0 to 400
X-axis: 0% to 40

(~12, 345)
(~10, 232)
(~18, 135)
Pulau Pinang (~23, 95)
Terengganu
Kedah (~33, 48)
Perlis
Kelantan

c) Food truck

Y-axis: 0 to 400
X-axis: 0% to 6

Selangor (~3.5, 345)
Kuala Lumpur (~4.3, 232)
Johor (~2.2, 135)
Pulau Pinang (~2.3, 95)
Perak (~2.6, 77)
Negeri Sembilan (~2.3, 48)

X-axis label (b): Proportion of hawker stall category

Source: ASB (n.d.); DOS (2024)

One state that stood out is Pulau Pinang, which recorded a high proportion of metal stalls and one-piece hawker stalls at 34.1% and 23.3%, respectively. This suggests that other factors might come into play in explaining the physical structure of hawker stalls. Further analysis reveals similar characteristics in the composition of hawker stalls among states in the same region. For example, states with the highest proportion of wheeled stalls were dominated by states from the Northern region. This suggests that other than the economic environment, historical and cultural elements, such as food culture that cannot be quantified, also play a significant role in the preferences of hawkers.

(b) A Convenient and Affordable Option for All

Following an increase in income level and female workforce participation rate, the time cost of acquiring and preparing food at home has increased over the past decades[54]. Considering the opportunity cost of their time, people increasingly turn to food away from home, such as dining

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[54] Teoh (2024)

out and food delivery, which are relatively quicker and more convenient. In this context, street food provides an accessible and convenient option, especially for the working population.

Figure 22 depicts the number of hawker stalls and the proportion of the middle-aged population in each district. Their positive relationship highlights the role of hawking culture in providing accessible options for working adults who face time constraints in preparing food at home. Figure 23 further illustrates the share of hawker stalls by their land use. Most of these hawker stalls are located in commercial areas (34%) and residential areas (31%), often along the main roads or near offices, neighbourhoods, schools and public places[55]. This suggests that hawker stalls are concentrated in locations with higher customer volume. At the same time, customers can easily purchase diverse and accessible products and services they offer. This mutually beneficial arrangement underscores the vital role of hawker stalls in the socio-economic fabric of Malaysian society.

Figure 22: Number of hawker stalls (natural log) and proportion of middle-age population by district, 2020

Source: DOS (2024b); ASB (n.d.)
Note: Middle-age population refers to the population aged between 15-64, or the working-age population according to DOS.

Figure 23: Share of hawker stalls by land use
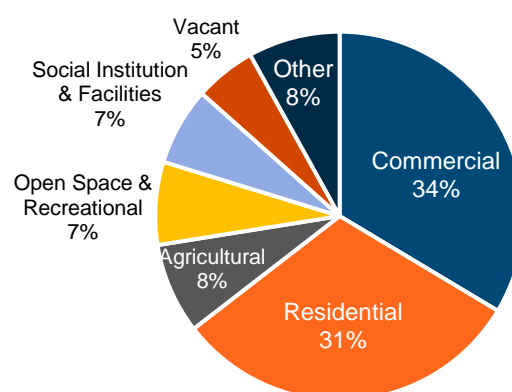
Source: ASB (n.d.)
Note: Land use is classified according to iPlan's classification.

Affordability also remains an essential element in hawking culture. Due to the customers' limited purchasing power and intense competition, hawkers charge relatively low mark-ups on street food. They also benefit from lower rent and capital expenditure, allowing them to price significantly lower than their formal counterparts[56]. This provides a low-cost yet nutritious alternative to keep the cost of urban living low, especially for low-income urban households[57].

Figure 24 shows the number of hawker stalls against the proportion of different household income categories by district. The number of hawker stalls is positively associated with the proportion of T20 and M40 households, while negatively related to the proportion of B40 households. This suggests that hawkers are strategic in choosing their locations, prioritizing areas with large customer bases and sufficient purchasing power. Therefore, the potential for profitable sales (prospective market) is a key determinant of where hawkers decide to operate.

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[55] Ahmad Raflis Che Omar and Suraiya Ishak (2016)
[56] Winarno and Allain (n.d.)
[57] Norhaslina Hassan (2003)

This analysis challenges the perception that street food is only for the poor. High- and middle-income households also benefit from the low prices and diverse options hawker stalls offer. Street food in Malaysia has transcended its traditional role as a low-cost alternative to a cultural phenomenon—a lifestyle choice embraced by all segments of society. As street food has become an indispensable part of the Malaysian diet, availability and accessibility, rather than income level, seem to determine street food consumption patterns in Malaysia.

Figure 24: Number of hawker stalls (natural log) and proportion of households by income level, 2019

(a) T20

(b) M40

(c) B40
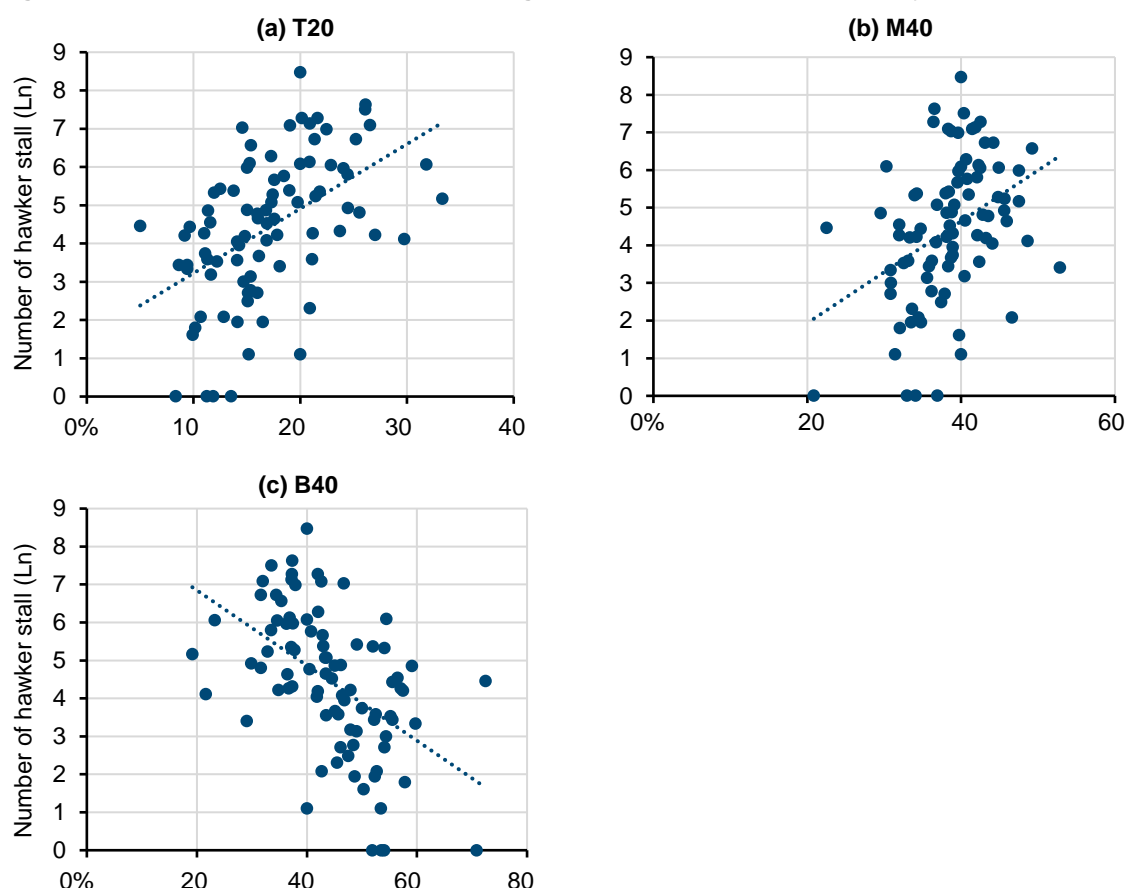
Source: ASB (n.d.); DOS (2023)
Note: Household income is classified based on state-level household income threshold.

(c) Urbanisation and the Spatial Dynamics of Hawking Culture

Hawking culture results from urbanisation, as evident in many parts of the world [58]. The distribution of hawker stalls across states and districts in Peninsular Malaysia is mapped out to examine the relationship between hawking culture and urbanisation. Our analysis reveals that Selangor has the highest number of hawker stalls at 4,882 (Figure 25). This is followed by Kuala Lumpur (4,765), Kedah (4,375), Pulau Pinang (3,258) and Johor (2,690). Figure 26 further demonstrates the spatial distribution of hawker stalls at the district level. Following Kuala Lumpur, Petaling has the second-highest number of hawker stalls (2,047). Other districts that have high numbers of hawker stalls include Johor Bahru (1,813), Kuala Muda (1,441), Kota Setar (1,439), Kinta (1,248) and Kota Bharu (1,201). The concentration of hawker stalls in the economic

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[58] Winarno and Allain (n.d.)

centres across Peninsular Malaysia reveals the emergence of hawking culture due to rapid urbanisation, highlighting their roles in supporting local economic development.

Figure 25: Number of hawker stalls by state

State	Number
Putrajaya	3
Perlis	437
Melaka	585
Pahang	745
Negeri Sembilan	1,121
Terengganu	1,710
Perak	1,735
Kelantan	2,396
Johor	2,690
Pulau Pinang	3,258
Kedah	4,357
Kuala Lumpur	4,765
Selangor	4,882
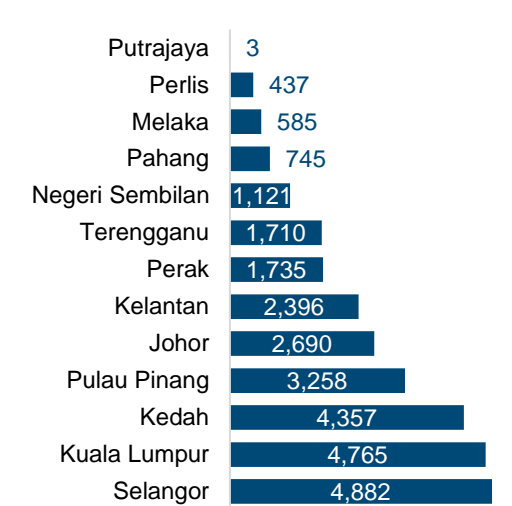
Source: ASB (n.d.)

Figure 26: Number of hawker stalls by district

Kota Setar 1,439
Kuala Muda 1,441
Petaling 2,047
Kuala Lumpur 4,765
Johor Bahru 1,813
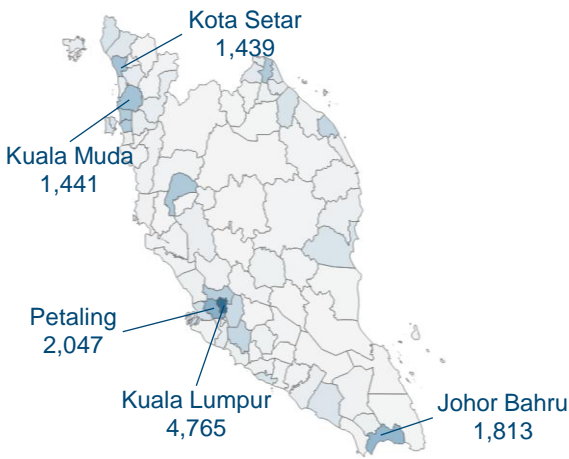
Source: ASB (n.d.)

Figure 27 plots the number of hawker stalls against each district's population density, further highlighting the positive relationship between hawking culture and urbanisation. This indicates that urbanisation acts as a catalyst for hawking culture, as high population density increases the demand for affordable and convenient food options, which these hawker stalls can cater to.

Figure 27: Number of hawker stalls (natural log) and population density (per km^2) by district, 2019
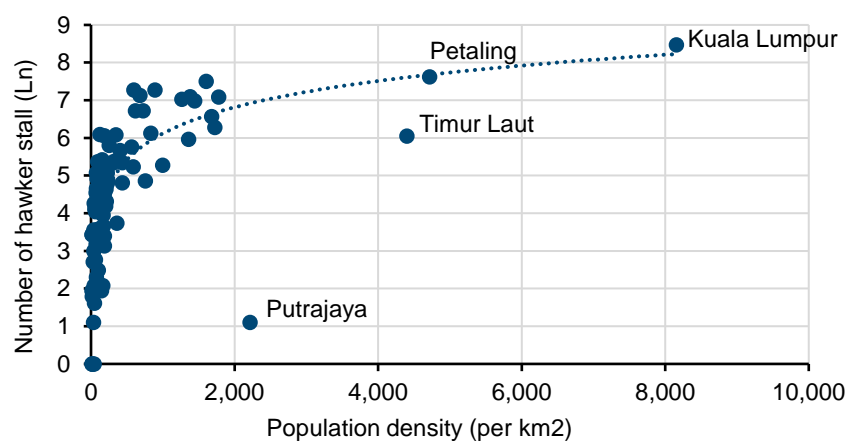
Source: DOS (2024b); ASB (n.d.)

Income level can be another indicator of urbanisation due to the positive relationship between per capita income and the urbanisation rate in Malaysia[59]. Figure 28 shows the number of hawker stalls against mean and median household income at the district level. The positive relationship

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[59] KRI (2024b)

between them signifies that hawker stalls tend to be clustered in areas with high purchasing power, highlighting the vital role of hawking culture in contributing to local economic development and promoting economic self-sufficiency[60].

Figure 28a: Number of hawker stalls (natural log) and median household income by district, 2019

Figure 28b: Number of hawker stalls (natural log) and mean household income by district, 2019

Source: ASB (n.d.); DOS (2023)

Source: ASB (n.d.); DOS (2023)

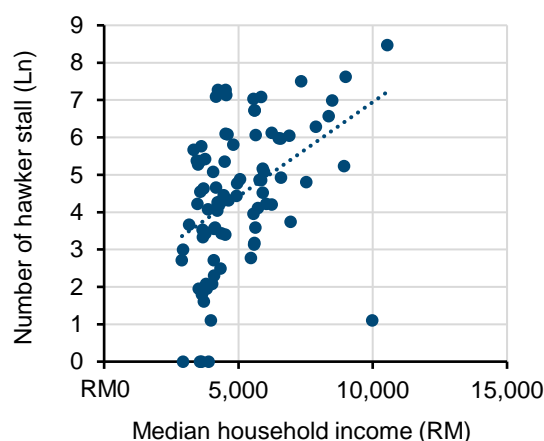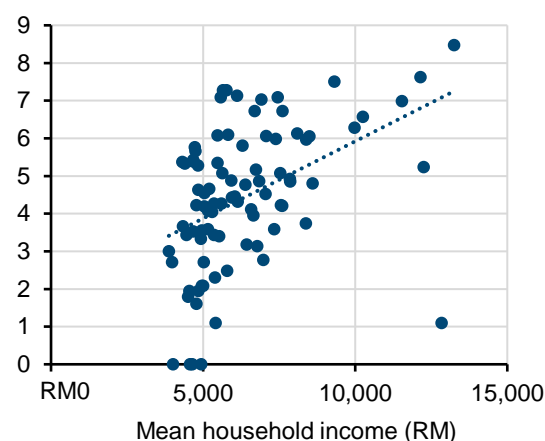The absolute number of hawker stalls might not represent the prevalence of hawker stalls in each region, as the differences in population might distort the analysis. A district, for example, might have the exact prevalence of hawker stalls but a higher absolute number just because of a larger population. Therefore, we further analyse the density of hawker stalls, represented by the number of hawker stalls per thousand population, in each region to normalise the population effect.

Figure 29 shows the number of hawker stalls per thousand population by state. Among all states, Kuala Lumpur still tops the chart at 2.40 hawker stalls per thousand population. Notably, Kedah and Penang are high-dense areas at 2.04 and 1.87 hawker stalls per thousand population, respectively. On the other side of the spectrum, Putrajaya has the lowest density of hawker stalls at 0.03, followed by Pahang (0.47) and Melaka (0.59).

Figure 30 reveals an uneven distribution of hawker stall density at the district level. Notably, two large clusters emerge—the Northern cluster in Kedah, Pulau Pinang and Perlis, and the East Coast cluster in Terengganu and Kelantan. Kedah appears as a highly concentrated state, having eight districts that fall under the fourth quartile[61]—Kota Setar (3.85), Yan (2.81), Kuala Muda (2.64), Pendang (2.28), Langkawi (1.86), Baling (1.51), Kubang Pasu (1.39) and Pokok Sena (1.32). It is accompanied by Pulau Pinang, with a high concentration in Seberang Perai Utara (3.32), Seberang Perai Tengah (2.82) and Barat Daya (1.64). On the east coast, hawker stall is highly concentrated in Besut (2.87) and Kuala Terengganu (2.21) in Terengganu, and Kota Bharu (2.16), Bachok (2.02) and Pasir Puteh (1.60) in Kelantan. Other notable districts include Kuala Lumpur (2.40), Cameron

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[60] Winarno and Allain (n.d.)

[61] As the data is highly skewed, all districts are categorised into four equal-size quartiles according to their hawker stall densities. The first quartile represents districts with the lowest concentration while the fourth quartile represents districts with the highest concentration.

Highlands (1.56) and Kinta (1.40). Meanwhile, most of the districts in other states have relatively low hawker stall concentrations below one per thousand population.

Figure 29: Density of hawker stalls by state (per 1000 population)

State	Density
Putrajaya	0.03
Pahang	0.47
Melaka	0.59
Johor	0.67
Perak	0.70
Selangor	0.70
Negeri Sembilan	0.93
Kelantan	1.34
Terengganu	1.49
Perlis	1.53
Pulau Pinang	1.87
Kedah	2.04
Kuala Lumpur	2.40
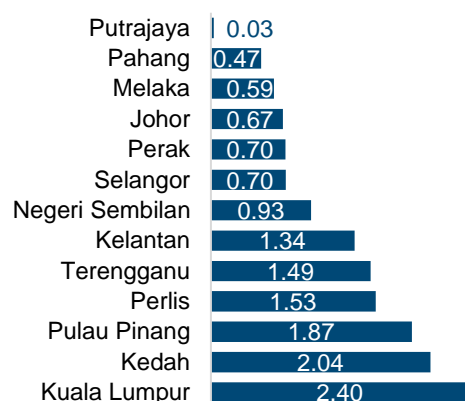
Source: DOS (2024b); ASB (n.d.)

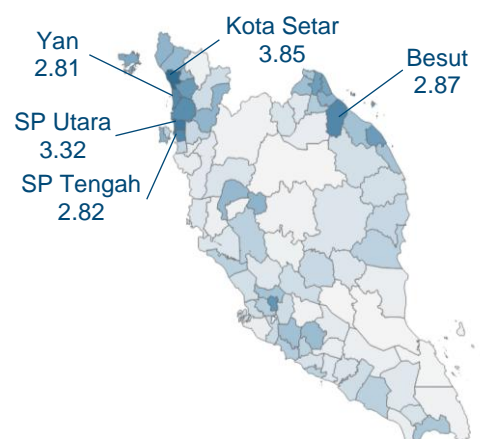**Figure 30: Density of hawker stalls by district (per 1000 population)**

Yan 2.81
Kota Setar 3.85
Besut 2.87
SP Utara 3.32
SP Tengah 2.82

Source: DOS (2024b); ASB (n.d.)

A spatial analysis of hawker stalls in Peninsular Malaysia

To systematically identify the hawker density cluster, this paper utilises spatial autocorrelation models to examine the spatial distribution and spatial dependence of hawker density across districts. One crucial step is defining the neighbourhood relationship using suitable spatial relationship models, as outlined in Section 3.3.(a). Since spatial clustering in hawker density arises from external factors that take various forms, we use three different spatial relationship models—contiguity-based, distance band and K-nearest neighbours—for result validation. For the distance band model, the critical threshold was computed at $\delta=71.43$km, the minimum threshold that yields at least one neighbour for all districts. For k-nearest neighbour, k was selected at 4—the mode number of neighbours in the contiguity-based model—to yield comparable models. The connectivity graphs and connectivity histograms, which illustrate the spatial relationship across districts, are shown in Figure 31. These three models are also commonly used spatial relationship models in the literature.

Figure 31: Connectivity graph by spatial relationship models

Contiguity-based

Distance band (δ=71.43km)
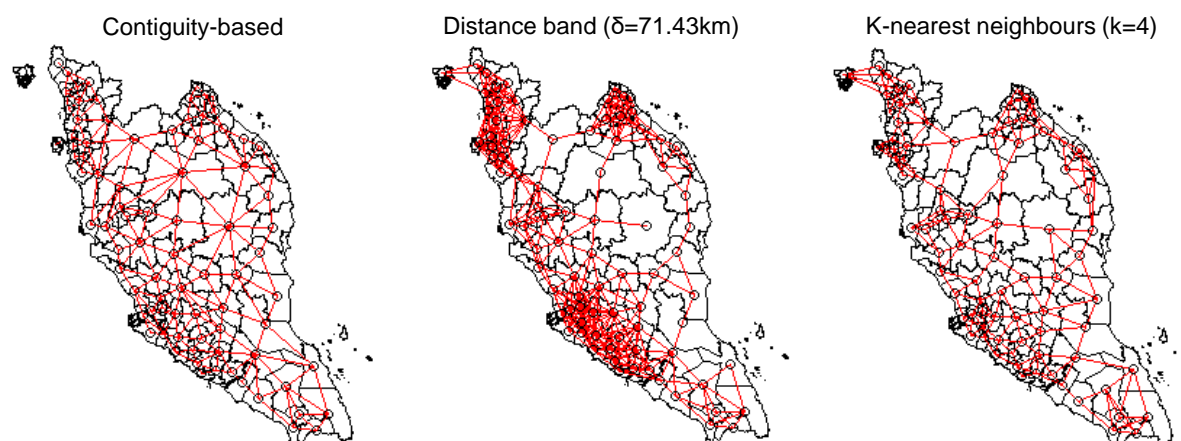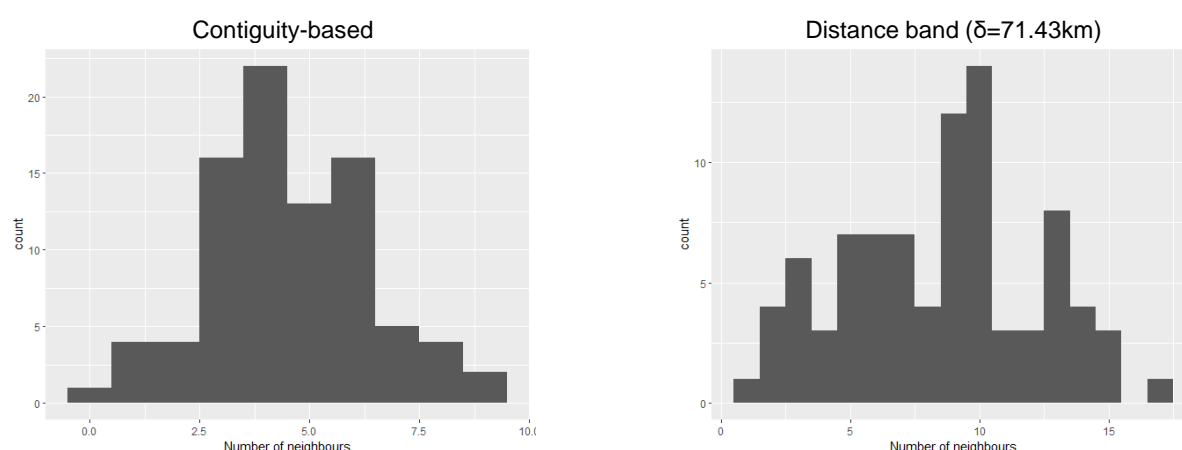
K-nearest neighbours (k=4)

Figure 32: Connectivity histogram by spatial relationship models

Source: DOS (2024b); ASB (n.d.) and author's calculation.
Notes:
- The connectivity histogram of the k-nearest neighbour is not interpretable as the number of neighbours is the same across districts.
- In the contiguity-based model, Langkawi is removed from the analysis due to the lack of a contiguous neighbour.

Our analysis using the spatial autocorrelation model yields statistically significant and positive Moran's I statistics across all spatial relationship models, ranging from 0.33 to 0.46 (Table 3). The positive spatial autocorrelation indicates that hawker density appears to be clustered spatially across districts. This shows that districts with similar hawker stall densities tend to be clustered together spatially. This resemblance might be attributed to external factors such as historical events, food culture, job market conditions, income level and local urban planning policies, which influence the regional development of hawker stalls over time. In simple terms, hawker stalls are influenced by a mix of culture, economics and government planning, leading them to naturally "group together" in certain areas rather than being evenly distributed.

Table 3: Summary of Moran's I statistics

Spatial relationship model	Moran's I	E[I]	Var[I]	p-value rand.	p-value resampling
Contiguity-based	0.4508	-0.0118	0.0055	<0.001	0.001
Distance band	0.3259	-0.0116	0.0031	<0.001	0.001
K-nearest neighbour	0.4608	-0.0116	0.0047	<0.001	0.001

Notes:
- In the contiguity-based model, Langkawi is removed from the analysis due to the lack of a contiguous neighbour.
- p-value resampling is obtained from 999 random Monte-Carlo simulations of Moran's I.

We further our analysis by examining the spatial autocorrelation locally using Local Indicators of Spatial Association (LISA). Figure 33 illustrates the Moran plots of hawker stall density by different spatial relationship models, where the average density of neighbouring districts is plotted against the density in each district. Influential observations on the linear relationship are also labelled in the Moran plots. The Moran plots across different spatial relationship models show upward-sloping fitted lines, indicating a positive spatial autocorrelation of hawker stall density. Influential observations that appear in all three of Moran's plots include Kota Setar, Yan, Besut, Seberang Perai Utara and Seberang Perai Tengah. Additionally, the four quadrants in

Moran's plots categorise every observation into high-high, low-low, high-low or low-high cases[62]. This categorisation is helpful for the following interpretation of local Moran's I.

Figure 34 shows the districts with statistically significant local Moran's I ($p < 0.05$) under the Monte-Carlo simulation. Similar to our analysis in Figure 30, two clusters with high hawker stall density appear—one on the Northern Peninsular and another on the East Coast. Particularly, hot spots (high-high category) are identified in Yan, Kuala Muda, Pendang, Kota Setar, Langkawi, Kubang Pasu and Pokok Sena in Kedah, Seberang Perai Utara and Barat Daya in Pulau Pinang, and Perlis. These districts have high hawker stall densities and are surrounded by high-density districts. Other hot spots on the East Coast include Pasir Puteh and Tumpat in Kelantan and Setiu in Terengganu.

On the other hand, cold spots (low-low category) are made up of districts in the central region of Peninsular Malaysia, such as Rompin, Bera, Jerantut, Temerloh, Maran, Bentong in Pahang, and Mersing, Segamat, Kluang and Tangkak in Johor. Our analysis also reveals some outliers, having opposite density with its neighbouring districts—Kulim, Sik and Timur Laut have low hawker stall density despite being surrounded by high-density districts (low-high category). In contrast, Johor Bahru has high density despite the low density of its neighbouring districts (high-low category).

Figure 33: Moran's plot of hawker density by spatial relationship models
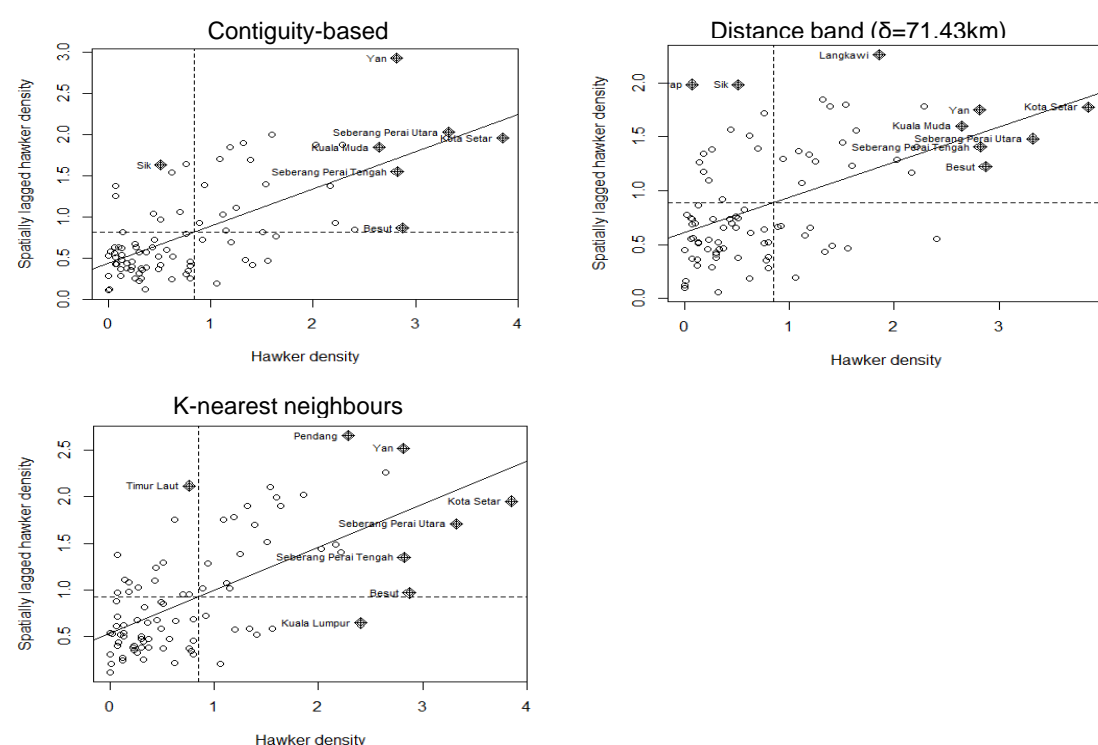
Source: DOS (2024b); ASB (n.d.) and author's calculations
Note: In the contiguity-based model, Langkawi is removed from the analysis due to the lack of a contiguous neighbour.

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[62] The upper-right quadrant represents high-high category, where those districts have higher than mean density, while also being surrounded by districts with higher than mean density. The bottom left quadrant represents the low-low category, having lower-than-mean density both for districts and their neighbours. Meanwhile, districts in the upper left (low-high) and bottom right quadrants (high-low) have density that is different from their neighbours.

Figure 34: Spatial clusters of hawker stall density (per 1000 population)

| Contiguity-based | Distance band (δ=71.43km) | K-nearest neighbours (k=4) |

Category
- High-High
- Low-Low
- Low-High
- High-Low
- p>0.05
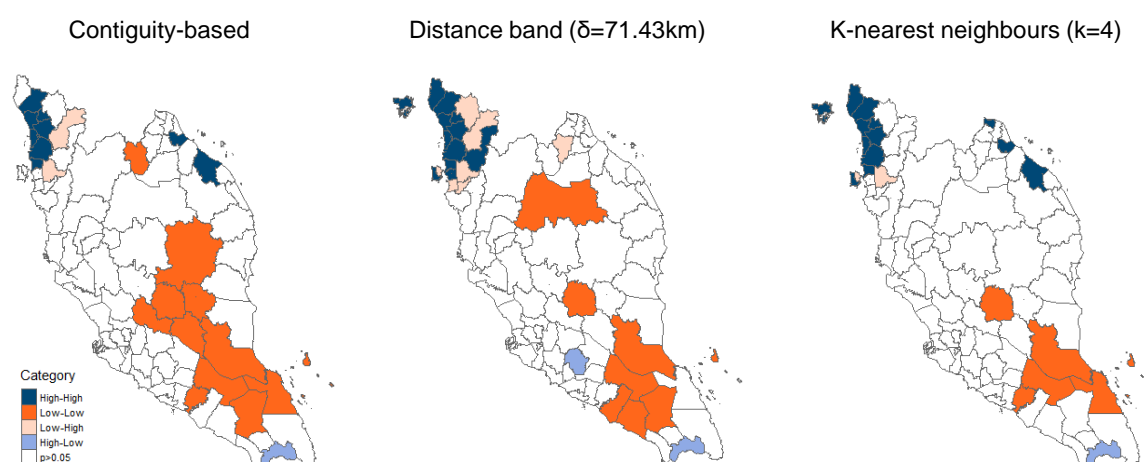
Source: DOS (2024b); ASB (n.d.) and author's calculations.
Note:
- Spatial clusters are identified through local Moran's I. Districts highlighted represent those with significant local Moran's I ($p<0.05$).
- In the contiguity-based model, Langkawi is removed from the analysis due to the lack of a contiguous neighbour.

In response to the result, we hypothesise several reasons that can explain the positive spatial autocorrelation across districts.

1) **Economic environment and labour market condition**: A favourable economic environment might foster higher purchasing power and more substantial consumption, which drives the demand for street food and supports the development of the hawking industry. Additionally, a weak labour market associated with high unemployment may force more people to temporarily work in the informal food sector due to its low barrier of entry[63]. Since economic development and structural change are contagious, districts close to each other tend to have a similar pattern in hawking culture.

2) **Population and urbanisation**: Urbanisation is strongly related to the hawking culture. It ensures a concentrated population base, high foot traffic and a diverse customer base that creates favourable conditions for street food vendors. Meanwhile, hawkers provide diverse, accessible and affordable food options for all population segments, especially among working adults who have limited time to prepare food at home. This effect is evident in our findings that hawker stalls are highly concentrated in urban areas.

3) **Government policies**: Supportive government policies, such as access to capital, MSME grants and streamlined licensing procedures, encourage the growth of hawking culture. Since the local governments govern hawkers, districts under the same authorities might have a similar regulatory environment.

4) **Cultural significance**: Hawking has a strong cultural tie with local food heritage, social relationships and societal identity, which are heterogeneous across regions and can be transmitted through space.

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[63] Bhowmik (2005)

4. Discussion and Conclusion

Hawkers have long been integral to Malaysia's socio-economic fabric, dating back to pre-independence times. Emerging as a critical component of urban life, hawkers provided essential goods and services to rural and urban communities. Their activities were shaped by migration patterns, colonial economic structures and urbanisation trends, mirroring informal economic practices across developing countries.

The objectives of this study are two-fold: (i) to provide a review of the hawker landscape in Malaysia, exploring their historical context and economic significance; and (ii) to utilise spatial satellite datasets to examine the distribution and characteristics of hawking spaces in Malaysia, shedding light on the evolving role of hawking culture in an increasingly urbanised Malaysia.

A review of the hawker landscape in Malaysia

Historical Context

Hawkers initially gained prominence as low-capital self-employment opportunities, especially among migrants and individuals with limited formal skills. By the mid-19th century, hawkers were prevalent in the Straits Settlements and Malay states, offering diverse goods such as food, household items and essential services. Their adaptability allowed them to survive economic downturns and serve as a safety net for retrenched workers during crises. By the early 20th century, hawkers were indispensable to daily urban life, catering to employment and low-income households, particularly in the food supply.

Regulation and Formalisation

The formalisation of hawkers began in 1970 when Kuala Lumpur City Hall introduced licensing programs to address urban space conflicts. The establishment of the Department of Hawkers and Petty Traders (1986) and the National Policy on Hawkers (1987) further institutionalised hawking activities. While licensing increased legitimacy and organisation, unlicensed hawkers persist, reflecting challenges in formalisation. Recent initiatives, such as the Hawkers and Small Traders Development Policy 2030, aim to enhance the sector's sustainability, inclusivity and competitiveness.

Hawkers in the Informal Economy

Hawkers are an essential segment of Malaysia's informal sector, contributing to employment, accessibility and affordability. They operate as part of the urban economy, providing affordable food and goods to diverse income groups. Their mobility enables them to cater to underserved areas, filling gaps left by formal retail.

Hawkers play a significant role in Malaysia's informal economy. In 2023, informal employment accounted for nearly 10% of the country's workforce, with hawkers comprising a notable portion of this sector (about 15% in 2023). Additionally, over 73% of hawkers are concentrated in urban areas, reflecting their dependence on city environments to sustain their livelihoods. The growing household expenditures on FAFH further highlight the importance of hawkers in providing affordable and convenient meal options, particularly for lower-income groups who rely on them as an economical source of nourishment.

Hawkers serve as a "safety valve" for employment, providing livelihoods for individuals with limited capital, education or skills, and addressing poverty and income inequality. By offering fresh and cooked food at affordable prices, hawkers cater to diverse income groups, ensuring accessibility and affordability in food supply systems. They complement formal retail by meeting immediate consumer needs with perishable goods and ready-to-eat meals, making them

indispensable to the retail ecosystem. Their mobility and flexibility allow them to operate in underserved areas, bridging gaps in food accessibility. Additionally, hawkers support urban economies by offering low-cost goods with minimal overhead, benefiting lower-income households. Beyond their economic contributions, they preserve cultural traditions while adapting to urbanisation and modern economic demands, making them an essential part of Malaysia's urban food ecosystem and informal sector.

Despite their importance in the economy, hawkers face significant challenges that hinder their growth and sustainability. Key issues include regulatory constraints, limited access to financing and increasing competition from formal retail sectors. These challenges are compounded by fragmented policies and insufficient institutional support, leaving many hawkers excluded from formal economic systems. Additionally, the lack of regulation for some vendors raises concerns about hygiene and food safety, as inadequate access to clean water, waste management and proper facilities increases the risk of food contamination and health hazards. Unlicensed hawking also contributes to urban planning difficulties, such as traffic congestion, pedestrian safety concerns and encroachment on public spaces, which affect townscape management. These issues impact urban aesthetics and place a strain on local authorities trying to balance economic inclusivity with public safety and order.

The distribution and characteristics of hawking spaces in Malaysia

Physical Structure and Entrepreneurship

Hawker stalls demonstrate diverse physical forms, from mobile setups to permanent structures, reflecting varying investment and business stability levels. Permanent structures, such as metal stalls and large hawker setups, are more prevalent in economically robust states, highlighting the influence of capital access and consumer demand. Conversely, less permanent setups, like tables or single-piece stalls, dominate in lower-income states, suggesting limited resources and short-term business intentions. Geographical and cultural factors also influence the composition of hawker stalls, as seen in Pulau Pinang and other northern states, where historical and food culture play a role.

Convenience and Affordability

Rising income levels and increased female workforce participation have elevated the opportunity cost of time spent preparing meals at home, driving a growing preference for food away from home, such as dining out and food delivery. In this context, street food offers a convenient and accessible alternative, particularly for the working population. Most hawker stalls are strategically located in commercial (34%) and residential areas (31%), such as near offices, schools and public places, ensuring easy customer access. A positive correlation exists between the number of hawker stalls and the middle-aged population in districts, reflecting their essential role in catering to time-constrained working adults.

Affordability is a key characteristic of hawking culture. By leveraging lower operational costs, hawkers offer competitive prices, making street food an economical choice for urban dwellers, especially for low-income groups. However, high- and middle-income households also benefit from the affordability and variety offered by hawkers, transforming street food into a cultural phenomenon embraced across all income levels. Availability and accessibility, rather than household income, have become Malaysia's primary determinants of street food consumption, solidifying its role as a staple in the national diet. This affordability contributes significantly to reducing the cost of urban living and supporting food security for diverse socio-economic groups.

Hawking Culture and Urbanisation

The spatial distribution of hawker stalls highlights their strong presence in urban and high-density areas, with Selangor and Kuala Lumpur leading in absolute numbers. District-level analysis reveals clusters of hawker stalls in economic hubs such as Petaling, Johor Bahru and Kota Setar, underscoring the influence of population density and urbanisation in driving demand for affordable and convenient food options. Urban centres like Kedah and Pulau Pinang demonstrate high hawker stall density, reflecting regional economic activity and cultural preferences.

Our spatial analysis further confirms the positive clustering of hawker stall density attributed to economic conditions, urbanisation, government policies and cultural significance. High-density districts benefit from greater consumer demand, accessibility and institutional support, while lower-density regions face challenges like weaker economic conditions and limited infrastructure. Government initiatives such as MSME grants and streamlined licensing have further encouraged hawking activities, particularly in regions with favourable regulatory environments.

The findings reveal that hawking culture not only meets the needs of urban populations by providing diverse and affordable food options but also serves as an accessible livelihood option, especially in regions with weaker formal employment opportunities. This cultural and economic phenomenon remains a critical component of Malaysia's informal economy, bridging economic necessity and cultural heritage.

Implications for policy

The findings from this study provide insights into the landscape of hawkers in Malaysia, highlighting their essential role in the informal economy as drivers of economic inclusion, employment creation and cultural preservation. It also sheds light on the spatial dynamics of hawking activities and their interactions with local economic conditions and household needs, offering an understanding of the policy development of hawkers in Malaysia:

i. **Enhancing formalisation efforts**
    The persistent challenge of unlicensed hawkers highlights gaps in formalisation. Regulatory reforms need to streamline licensing processes, offering accessible and affordable pathways for hawkers to legalise their operations. Simplifying compliance requirements and decentralising approvals to local councils could reduce bureaucratic barriers and incentivise formalisation.

ii. **Support for infrastructure and space allocation**
    With over 73% of hawkers concentrated in urban areas, space allocation emerges as a pressing concern. Urban planning policies must prioritise affordable, well-organised hawking spaces in high-demand areas like commercial and residential zones. Initiatives under the Kuala Lumpur Structural Plan 2040, which aims to expand informal business zones, could serve as a guide for replicating similar approaches nationwide.

iii. **Financial inclusion and credit accessibility**
    Limited access to financial resources remains a significant barrier for hawkers. It is important to provide access to microcredit schemes tailored to hawkers, facilitating investments in permanent structures and technology adoption. Collaborations with financial institutions and fintech platforms can provide innovative financing solutions for informal entrepreneurs.

iv. **Adopting digitalisation**
The integration of digital tools such as mobile payment systems, delivery platforms and online marketing could transform the hawker economy. In this regard, training programs to enhance digital literacy among hawkers are essential, ensuring they can leverage these tools to expand their customer base and streamline operations.

v. **Cultural and economic sustainability**
As urbanisation and formal retail competition grow, policies must balance modernisation and hawker culture's preservation. Establishing hawker zones with heritage status or creating incentives for traditional food vendors could help maintain the cultural essence of street food while boosting tourism and local pride.

vi. **Improving hygiene and food safety standards**
Hawkers (often unlicensed ones) often face criticism regarding hygiene and food safety. Government programs offering subsidised training on food handling, and access to clean water and waste management facilities could mitigate health risks while fostering public confidence in street food.

vii. **Regional equity in support programs**
The variation in hawker stalls across states, from permanent setups in high-GDP regions to makeshift stalls in lower-income areas, suggests the need for region-specific policies. States with limited economic resources require targeted interventions to uplift hawkers, such as state-level grants or market infrastructure investments.

viii. **Empowering women and marginalised groups**
Given hawking's role as a livelihood strategy for women and marginalised populations, gender-sensitive policies and capacity-building initiatives are essential. This includes providing support for women (e.g. childcare) and mentorship programs to nurture women entrepreneurs.

Implications for future study

This study provides a foundational understanding of the hawker landscape in Malaysia; however, there are promising directions for future research to expand on these insights. First, with the distribution of informal businesses in Kuala Lumpur showing that 34.9% operate as night markets (11,208 units) – and perhaps this would be the case at the national level, future studies could delve deeper into the landscape and role of night markets. Night markets represent a unique subset of hawking culture with significant implications for households. It serves as a hub for affordable goods and services and fosters social interactions, cultural expression and local entrepreneurship.

Second, this study's reliance on spatial satellite datasets offers valuable high-level observations of spatial trends but has inherent limitations in detailing the lived experiences of hawkers. Future research should complement this macro-level perspective with in-depth studies on the challenges faced by hawkers, particularly in terms of informality. Key issues to explore include:

i. Regulatory constraints: Understanding how licensing processes, zoning laws and other regulations affect hawkers' operations and sustainability;

ii. Access to financing: Investigating barriers to formal credit systems and how they limit investment in permanent structures or business growth;

iii. Competition from formal retailers: Assessing the impact of modern retail chains and e-commerce on hawkers' customer base and income stability; and

iv. Digitalisation and technological adaptation: Exploring the potential for hawkers to leverage digital tools such as mobile payment systems, online delivery platforms and

social media for marketing and customer engagement. Research could also assess barriers to adopting digital solutions, such as technological literacy, access to affordable digital infrastructure and perceived costs. Understanding how digitalisation could enhance hawkers' competitiveness and integration into the modern economy would be particularly valuable towards the push for digital transformation.

Finally, further research should explore the health, safety and urban planning concerns associated with hawking activities. These include:

i. Hygiene and food safety: Examining how limited access to clean water, waste management and proper facilities contributes to risks of food contamination; and

ii. Urban planning challenges: Addressing issues such as traffic congestion, pedestrian safety and encroachment on public spaces to identify sustainable ways to integrate hawkers into urban development.

In conclusion, while this study highlights the critical role of hawkers in Malaysia's socio-economic landscape, comprehensive, interdisciplinary research remains necessary to address these gaps. Such studies will not only enhance our understanding of hawking culture but also inform policies that support the sustainability and growth of this sector in our rapidly urbanising economy.

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6. Appendix A: Categorisation of Hawker Stalls

Hawker restaurant

Food truck

Hawker market

Large stall

Metal stall

One piece

Table

Wheeled