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Exploring Cork City's Tourist Scene: Sites, Facilities and Mobility

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DECLARATION

I, Lucky Sunday Ikani, certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or tertiary institution. All external references and sources are clearly acknowledged and identified within the contents. I have read and understood the regulations of University College Cork concerning plagiarism and intellectual property.

SIGNED



DATE

5/11/23

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ABSTRACT

Tourism is a significant contributor to the global economy and a vital source of revenue for many countries. As a multifaceted industry, it encompasses components such as tourist sites, hospitality facilities, and mobility, which all play a crucial role in shaping a destination's appeal and success. This study was aimed at providing a comprehensive understanding of the tourist scene in Cork city, with a focus on tourist sites, hospitality facilities and mobility. The factors that influence tourists' experiences in the city was examined by a conducting field survey. The spatial pattern and density of tourist sites and hospitality facilities in area, as well as the accessibility of the sites and facilities were investigated using spatial techniques such as nearest neighbor analysis, kernel density estimation, Origin-Destination matrix, and least cost path analysis. The research offered valuable insights on the current state of tourism in Cork city and potential avenues for improvement. The findings from the study revealed a random distribution of tourist sites, while the majority of hospitality facilities, such as bars, cafés, and restaurants, exhibited a clustered pattern, particularly around the city centre. The study also highlighted the importance of public transportation and wayfinding information in facilitating tourist mobility. This is especially true for the tourist sites located on the outskirts of the city centre, where most of the facilities were found. The study recommended improving public transportation options to the sites located outside the city centre, enhancing wayfinding alongside directional information, and investing in the quality of services provided by the hospitality facilities to enhance the tourist experience, improve accessibility to tourist sites, and promote tourism development in the study area.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Tourism is an economic activity of immense significance and widely regarded as one of the world's fastest growing industries (Pender, 2005). The World Tourism Organization (WTO) (1996), defined tourism as the activities of a person or group of persons travelling to a place outside their usual environment for less than a year and more than twenty-four hours, and whose main purpose of travel is other than the exercise of an activity remunerated from within the place visited. According to the World Travel and Tourism Council (WTTC), tourism directly generated about 719,000 jobs in 2008. Essentially, tourism has grown to become an effective tool for creating social and economic development through foreign exchange and job creation (Benavides 2001, as cited in Malleo and Mtengwa, 2018). Similarly, in 2005 the WTTC estimated that tourism generated around US \$6201 billion, further expected to grow to US \$10 678.5 billion by 2015 (Page, 2006).

Meanwhile, recent figures shows that the total contribution of tourism to the global gross domestic product (GDP) rose by 21.7 percent in 2021 following a decline due to the COVID-19 pandemic in 2020. The contribution of the tourism industry to the global GDP amounted to US \$ 5.81 trillion in 2021 (Statista, 2023). Tourism is a composite concept involving not just the temporary movement of people to destinations in which they are unfamiliar with, but also the conduct of their activities, and of the facilities and services that are necessary for meeting their needs during the visit (Page, 2006).

Tourism cannot survive without the hospitality industry and vice versa. Hospitality constitutes the most important segment of the tourism industry. The presence of hospitality facilities in an area represents the image of a tourism destination, as it is one of the basic requirements for tourists in their travel. Essentially, the hospitality industry is the supplier of the services for tourism (Poudel, 2013). The value that can be realised in tourism is conditioned by tourist satisfaction through the provision of adequate hospitality facilities in that area (Komppula, 2006). Therefore, the availability of hospitality facilities is highly critical for the success and development of tourist sites (Westcott, 2015).

The tourism industry predominantly involves the movement of individuals from their place of residence to temporary destinations of interest to them. It becomes apparent that mobility is integral to every tourism experience and influences the expectations of tourist satisfaction (Laws 1991, as cited in Tchervenkova, 2000). Before tourists embark on a visit to multiple potential sites, it is often the case that they have a plan of their intended visits especially for unfamiliar tourist sites (Abubakar, Idoko and Ocholi, 2017). Therefore, mobility represents an essential component of the tourist activity in the absence of which there is no tourism (La Rocca, 2015).

Consequently, tourism cannot be successful without accurate and reliable information about the destination, which is one of the main elements that attract tourists (Akukwe and Odum, 2014). The primary information that tourists seek, which greatly contributes to their decision-making process, can be provided using geospatial technologies. This helps tourists to locate places and activities of interest (Kim and Tussyadiah, 2013).

Geographic Information System (GIS) provides various tools for spatial analysis, and the end result provides tourists and tourism facility managers with valuable insights to make informed

decisions about their choice of attractions and preferred methods of movement (Jovanović and Njeguš, 2008). For example, Ojiako, et al. (2015) carried out a study on the spatial analysis of tourism facilities in Abuja municipal area council using GIS approach. The location of recreational centres, and other facilities of interest were acquired using a handheld Global Positioning System (GPS), whereas descriptive information on these facilities were obtained from direct field observation. The authors created a geodatabase to enable spatial query and the result of the query revealed that 41% of hotels in the area had 4 or 5-star rating. It was also observed that 81% of hotels operate 24 hours with constant supply of electricity, 67% of the eateries were within a distance of 500 meters from the hotels, while 89% of eateries were located 500 meters away from the roadside, with only one cinema in found in the study area. Although, this research demonstrated the application of geospatial technology in tourism, some questions were left unanswered, such as the distribution pattern of the facilities, the distance and optimal route between specific facilities.

Therefore, this study pursues to investigate tourist sites and hospitality facilities in Cork city using geospatial techniques. The information from this study will be beneficial to tourists and potential tourists as it will provide detailed maps showing the locations of tourist sites and facilities as well as the optimal routes between them. This will help guide the tourists in their movement and in choosing the sites and facilities to visit. Furthermore, the findings of the study will highlight inventory of the tourist sites and hospitality facilities in the area which will promote awareness, enhance patronage flow of these tourist sites and help in proper tourism planning.

1.2 Aim and Objectives

The aim of this research is to analyse tourist sites, hospitality facilities and tourist mobility in Cork city using geospatial techniques with a view to determine optimal routes between the sites and facilities. This will be achieved through the following objectives:

- i. Examine previous studies undertaken to explore tourism and hospitality, as well as tourist mobility using traditional literature review,
- ii. Determine important considerations of mobility to the tourists,
- iii. Identify and map tourist sites and hospitality facilities through data collection,
- iv. Examine the spatial pattern and density of the sites and facilities, and
- v. Examine route suitability between tourist sites and the facilities.

CHAPTER TWO

CONCEPTS AND LITERATURE REVIEW

2.1 Introduction

This chapter explains the relevant concepts within which the subject of this research work is considered, for better understanding of the different elements involved in studying tourist sites, hospitality facilities and tourist mobility. Relevant literatures related to this study were also reviewed for comparison and discussion. The review began by examining studies that investigated the distribution of tourist sites and facilities. Likewise, studies on route selection alongside mobility were reviewed to identify possible methods, and subsequently focusing specifically on least cost path, origin-destination matrix and the shortest path algorithm.

2.2 Concepts

2.2.1 Tourism

According to the United Nation World Tourism Organization (UNWTO) tourism is defined as comprising the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes (Benea, 2014). Several scholars have also offered numerous definitions of tourism. Hunziker and Krapf (1942) defined tourism as the totality of the relationships and phenomena linked with the stay of visitors in a given area, provided they do not occupy a major permanent or temporary remunerated activity. Generally, this definition was the accepted definition in the 40s up until the early 70s when other authors and tourism organizations attempted to refine the definition to include travellers restricted by the definition (Omare, 2016). The definition widely used by various scholars in the field of tourism is the WTO's definition which recognizes tourism as comprising the activities of persons travelling to and staying in places outside their

usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited (Omare, 2016).

Generally, it is a public opinion that the industrial revolution brought about the rise of modern tourism with the advent of mass tourism in the United Kingdom. Another important factor is the rise of middle class, and development of relatively speedy as well as inexpensive means of transportation, which contributed immensely to the expansion of international travel and to tourism development and growth of the industry (Murphy, 1985 as cited in Omare, 2016). The tourism sector is directly and indirectly responsible for about 8.8 percent of the world's employment, creating around 258 million jobs. The industry also contributes 9.1 percent of the world's GDP with US \$6 trillion, 5.8 percent of global exports at about US \$1.1 trillion, and 4.5 percent of the world's investment around US \$652 billion (WTTC, 2011).

2.2.2 Tourism in Ireland and Cork City

The Republic of Ireland, constitutionally known as Ireland is a small island country located in north-western Europe. Previously, one of Europe's poorest countries, more recently, Ireland has been transformed to a modern, trade dependent economy with an average growth of 6% in the period between 1995-2007 (Irish Census, 2008 as cited in Ryan, 2009).

The transformation in Ireland's economy can be attributed to many factors, including the Irish government's policy for attracting foreign direct investment. However, there is no doubt that tourism has played an integral role in contributing to the macroeconomic turnaround of the state (Deegan and Dineen, 2003). Since the 1990s, Ireland has experienced substantial growth as a tourist destination, and increasing its global share of world tourist arrivals (Horwath, Bastow Charleton, 2007 as cited in Ryan, 2009).

The number of out-of-state visitors to Ireland reached a record of 7.7 million people in 2007 and total revenue generated was €6.45 billion, €4.9 billion of which was generated in the form of foreign exchange earnings. It was also revealed that the estimated total number of people employed in tourism and hospitality industry was 322,000 (Fáilte Ireland, 2008). Meanwhile, the 2019 tourist expenditure from 9.2 million international arrivals amounted to about €5.6 billion. Additionally, a further €1.8 billion was spent by the overseas visitors on fares to Irish carriers, bringing the total foreign exchange earnings to €7.4 billion. Furthermore, domestic tourism expenditure amounted to €2.1 billion, making tourism a €9.5 billion industry (Fáilte Ireland, 2021).

On the other hand, tourism in Cork City can be traced back to the early 20th century when visitors began to explore the city's historic buildings and landmarks. The city's reputation as a tourist destination was further enhanced when it was named the European Capital of Culture in 2005 (Keohane, 2006). On top of that, Cork city was also named one of the top 10 places to visit for 2010 by the popular travel guide Lonely Planet (Kelleher, 2009). Since then, Cork City has continued to attract visitors from all over the world.

According to Cork Tourism Strategy (2016), Cork attracts approximately 17.5% of all overseas visitors who come to Ireland. Following the Irish government's commitment to welcome over 10 million overseas visitors to Ireland by 2025. Cork is geographically located uniquely within the two key experience brands developed by Fáilte Ireland. The Ireland's Ancient East and the Wild Atlantic. These experience brands are being marketed internationally and are expected to deliver in a significant uplift in visitor numbers to the state, from which Cork is positioned to benefit from especially.

2.2.3 Tourist

Several scholars and institutions have attempted to define the term tourist. One of the earliest definitions describes tourists as people on temporary trips away from home who also spend money derived from their location of origin on the place of visit (Shaw and Williams, 2004). Ghanem (2017) stated that the League of Nations in 1937 considered a tourist as an individual who travels for a period of 24 hours or more to a country other than that in which he usually resides. By this definition, travelers who did not spend a night at the destination were not considered tourists. Another implication is the lack of purpose in the definition, which meant every traveler that meets the time frame limitation was a tourist. However, in 1950 the UNWTO formerly known as the International Union of Official Travel Organizations (IUOTO) modified the previous definition to include students staying for less than a year as tourists.

According to Bowen and Clarke (2009) a visitor will only be considered a tourist upon fulfilling 24 hours minimum length of stay. Likewise, the UNWTO (2008) posits that individuals defined as tourists cannot spend beyond 12 consecutive months at the location of visit. Also, Bowen and Clarke (2009) differentiates between international tourists and domestic tourists. The major component differentiating these two classifications is the country of residence. On one hand, the international tourist spends time outside their usual country of residence. On the other hand, a domestic tourist will be spending time outside their usual environment but within their country of residence (UNWTO, 2008).

Evidently, defining a tourist is complicated due to the subjective nature of the components involved (Briones-Juarez, et al. 2009). However, Ghanem (2017) proposed a new definition of tourist as a person escaping from primary obligations and daily routine for a period of time,

through a specific displacement usually geographical, in search of unique experiences while seeking satisfaction and leisure. Therefore, it could be inferred that individuals visiting the tourist sites in Cork city can be considered tourists, thus for the purpose of this study, the definition of a tourist as stated will be adopted.

2.2.4 Tourist Sites

Tourist destinations are places where people travel to and choose to stay for a while in order to experience certain features and characteristics, habitually acting on a perceived attraction of the location (Leiper, 2004). Accordingly, tourist sites are specific human or natural feature that attracts visitors to an area (Nowacki, 2013). Fundamentally, a tourist site can be defined as a designated resource that is marketed and managed for the enjoyment, entertainment and education of the visiting public, which also generates revenue on occasionally (Middleton, 1996 as cited in Nowacki, 2013).

Keyser (2009), described tourist sites as a spatial area made up of a mix of tourism resources, created facilities and support services and infrastructure, which are managed, marketed and consumed as a single brand identity. Similarly, Elmazi, Pjero and Bazini (2006) defined tourist site as an area identified and promoted to tourists as a place to visit, and within which the tourist product is coordinated by one or several authorities. Furthermore, tourist sites can also be portrayed as a physical space containing cultural or historical characteristics and which is in the position to offer a tourism product (Framke, 2010). In view of the various definitions, tourist sites can be regarded as attractive destinations and the resources within, where tourists desire to travel to experience the place, people and environments, characteristically away from where they reside.

2.2.5 Hospitality Facilities

Hospitality, on one hand refers to the friendly and generous reception and entertainment of guests, visitors, or strangers. Hospitality facilities, on the other hand refers to a place such as, hotels, restaurants, entertainment centres, designed to render hospitality services (Lashley, 2000). Similarly, Reuland, Choudry and Fagel (1985) defined hospitality as an encompassing process involving provider or employee, the guest, and the transfer of services provided by the hospitality facility, including the behavior and attitude of the service providers. The guests bring physiological, social and psychological needs and expectations to the transaction.

Brotherton and Wood (2000), emphasised the importance of hospitableness around facilities that provide services such as food, drink and accommodation. Hence, this has translated to a preoccupation with customer service, service delivery and service quality. Hepple, Kipps and Thomson (1990) identified four characteristics of hospitality, it is conferred by a host on a guest who is away from home, it involves the coming together of a provider and receiver, it is comprised of a blend of both tangible and intangible factors, the host caters for the visitor's security, his physiological and psychological comfort. These characteristics helps to make the tourists feel at home.

The effective delivery of hospitality products and services critically involves the integration of a customer perspective, customers do not buy service delivery, they buy experiences, they do not buy service quality, they buy memories, they do not buy food and drink, they buy meal experiences (Hemmington, 2007). Thus, hospitality facilities such as entertainment centres, bars, cafés, resorts, hotels, shops, recreation centres and restaurants, whom all provide overlapping comforts now direct their focus on creating more unforgettable experiences for their

customers. However, for the purpose of this study hospitality facilities will be limited to bars, cafés, hotels, restaurants and shops.

2.2.6 Mobility

Mobility refers to the ability of individuals to move or be moved freely and efficiently from one place to another. Therefore, mobility is a crucial aspect of the modern society, especially as it enables people to access resources such as tourism and other opportunities (Dileep, 2019 as cited in Pellegrino, 2021). The ease with which an individual can move from their place of residence to a destination and around the tourist destination, greatly impacts their decision to visit that area. In other words, destinations with poor accessibility discourages both visits from foreign and local tourists (Vanhove and Vanhove, 2004).

Tourism is a major driver of mobility, as it relies on the ability of individuals to travel to and move between different locations of interest. Essentially, mobility enables tourists to access destinations and participate in tourism activities. Indeed, improvement in mobility has seen the transformation of tourism from a niche phenomenon to a mass phenomenon (Pellegrino, 2021). There are two main forms of tourist mobility. The first is generated by the need to reach the destination and involves international or local travel. Meanwhile , the second form of tourist mobility are generated by tourist activities at destination, such as the visit to various tourist sites and hospitality facilities (Kovačić and Milošević, 2016). However, for the purpose of this study the researcher is only concerned with the second form of tourist mobility.

2.2.7 Geospatial Technology

Geospatial technology refers to equipment or systems used to measure and analyze the Earth's surface and its features. Technology such as Global Positioning System (GPS), remotely acquired data such as satellite images, and GIS have emerged as complementary technologies

providing integrated and total solutions to most of the planning and development issues (Gao, 2002).

GPS is an important tool for measurement and mapping. It is the most prevalent of the Global Navigation Satellite System (GNSS). GNSS is a generic term that describes any satellite constellation that provides positioning, navigation, and timing services on a global or regional basis. GPS is based on a constellation of up to 30 satellites with 24 required operational and about 6 standby satellites that orbit the Earth at an altitude of approximately 20,200km. This system has become instrumental for geographical positioning and navigation on the surface of the earth (Chigbu, Nmerigini and Onukaogu, 2013). The satellites emit radio signals over a number of frequencies that can be picked up by receivers regardless of weather conditions, time of the day or position on the Earth. GPS receivers can retrieve the unique address of any position on the surface of the earth (Brimicombe and Chao, 2009).

GIS is a computerized information system with an important difference, all information in GIS must be linked to a position on the earth surface, using geographic coordinates (latitude and longitude). According to Mitchell (2005), GIS is an organized computer hardware, software, geographic data and personnel designed to efficiently capture, store, update, manipulate, analyze and display geographically referenced information. GIS has proved decisive due to its capability to represent and visualize both spatial and non-spatial data in an integrated platform (Church, 2002). This technology is widely recognized as a valuable tool for managing, analyzing, and displaying large volumes of diverse data pertinent to many local and regional planning activities. Essentially, it is an efficient tool for carrying out complex and sophisticated methods generally termed spatial analysis (Goodchild, 2005). Therefore, the application of GIS in tourism planning and management becomes imperative.

In essence, the application of geospatial technologies in this study included, capturing and mapping the location of tourist sites and hospitality facilities; examining the spatial pattern of tourist sites and hospitality facilities, alongside the density level of the sites and facilities; and determining suitable routes between the tourist sites and hospitality facilities.

2.3 Literature Review

2.3.1 Spatial Distribution of Tourist sites and Hospitality Facilities

The tourist site is the hub of the tourist activity. For both domestic visitors and international tourists, the desire to visit tourist sites is usually the main motivation for the trip. Tourist sites are the magnet that attracts tourists to a particular location. In other words, tourist sites are the main component of any tourism activity in an area (Gunn, 1988). Therefore, the location of tourist sites across space determines the level of accessibility to the sites and eventually the level of patronage. Besides, the likely impacts of tourists on tourist sites necessitates the need to appreciate how the sites are distributed. The strategy of having tourist sites evenly distributed across space produces a competitive advantage, whilst minimising possible impacts on the environment (Go and Govers, 2000).

Obong, et al. (2015) worked on the spatial analysis of tourism attractions and institutions for the regional development of the southern part of Nigeria. The researchers employed Nearest Neighbor Analysis (NNA) tool to examine the pattern of distribution of the attractions and institutions. The result revealed that the tourism attractions and institutions were randomly distributed in the region. However, the study did not examine the pattern of distribution of the tourism attractions and institutions separately. Furthermore, the authors failed to assess the level of concentration of these facilities across the area.

Odum, et al. (2018) applied NNA in determining the spatial distribution of ecotourism resources in Anambra State. The finding revealed a regular distribution pattern of the tourism resources in the study area. It was implied that, although a regular spatial pattern of the resources might be beneficial for an even distribution of job opportunities, and reduction of overcrowding in certain parts of the study area. There was also the challenge posed to the government in developing these resources individually, in contrast to when they are clustered in a particular location. However, the focus of the study was on ecotourism resources without attention to support facilities which play a critical role in tourism patronage and development.

Similarly, Amalu, et al. (2018) investigated the spatial distribution of ecotourism attractions in Enugu state, Nigeria using NNA. It was observed that the ecotourism sites were randomly distributed across the area. The authors concluded that proximity of attractions and support facilities were important for tourist visit and encourages the revisitation of the area. Although, the study failed to make a clear distinction between the attraction sites and support facilities in the study area.

In the study by Rengarajan, et al. (2014), the researchers explored ecotourism development in Smith Island, a region of North Andaman. The study investigated the level of clustering of tourist attractions in the region using NNA. The result of the analysis indicated that tourism sites were clustered in three major areas of the region (Port Blair, Mayabunder, and Diglipur). It was suggested that, there was need to avoid concentration of tourism sites and population pressure in particular areas, therefore prompting the promotion of tourism in other locations.

2.3.2 Spatial Distribution of Hospitality Facilities

Tourism sites are dependent on the presence of hospitality facilities to function. The spatial distribution of hospitality facilities across an area has great impacts on behaviour of tourists

and the level of their interaction with, and the use of these services. Meaning, tourists' cost becomes much greater with considerable distance between the hospitality facilities and tourist sites. It is noteworthy that spending on hospitality facilities have the greatest economic impact in the tourism industry, so that more than 60% of tourism costs are spent on these facilities (Law, 1996, as cited in Ebrahimzadeh and Daraei, 2014). According to Fáilte Ireland's survey of overseas travellers, the average international tourist spent about €530 per person in 2015. It was revealed that 33% of the total cost was attributed to expenditure on food and drinks, meanwhile 31% of the cost was spent on accommodation facilities, and 14% on shopping (Fáilte Ireland, 2016).

According to Thuermer (2000, as cited in Nordin, 2003), facilities tend to be concentrated in a given area to receive the benefits of an established infrastructure as well as an environment that supports and stimulates the latest thinking, attracts highly-skilled employees and offers the opportunity to form close relationships with local resource centres. Additionally, this also provides the tourists with an array of choices, and improves accessibility. In essence, the clustering of tourism-related services produces spatial dependence and scale effects at the macro level, which in turn provides tourists with more acceptable prices and convenient services (Ma, et al. 2022).

Eja, Anim, and Sylvester (2012) conducted a study investigating the spatial analysis of hotel strata in Calabar, Nigeria. The researchers captured the locations of 123 hotels and the spatial distribution of the hotels were shown on the basemap of the study area. It was revealed that Calabar municipality held 93.44% and 66.66% of the 3-star and 4-star hotels respectively. The result also showed that 77.23% of the hotels were found in Calabar municipality compared to 22.73% located in Calabar south. In a similar study, Adeyemi (2013) mapped the locational

patterns of hotels in Akure, Nigeria using ArcGIS software. The study revealed that hotels were found all over the town but were concentrated outside the central business district. Particularly, in the north eastern part of the study area where about 31.3% of the facilities were located. Although, the authors provided important insights on distribution of hotels across both areas. However, the studies failed to examine the pattern of distribution of the hotels as well as the pattern of distribution of the hotels in the different classes.

Eneyo (2018) examined the distribution of hospitality services in Uyo, Nigeria. The geographic coordinates of hospitality services including hotels, restaurants alongside bars, entertainment centres, and resorts were captured. The NNA was performed using the ArcGIS software. The result showed that the pattern of distribution of hospitality services in the study area exhibited a significant level of clustering around the city's centre. It was concluded that hospitality services were clustered around particular areas for easy accessibility to attract high demand which translates to increased profit. Furthermore, the study went on to investigate the spatial pattern of individual facilities. It was observed that the resorts and entertainment centres were dispersed across the area, while the restaurants and bars were randomly distributed. On the other hand, the hotels were revealed to be clustered.

Lee, et al. (2018) explored the relationship between the distribution pattern of hotels and amenities in the United States. The study employed Moran's I statistic to demonstrate that hotels in the study area were clustered. Revealing a spatial relationship between the location of hotels alongside social and natural amenities in the study area. The authors also suggested that urbanised areas, where constructed amenities such as hospitality facilities were more likely to be located, and more accessible in all likelihood were guaranteed to attract tourists

due to the presence of these facilities. Nevertheless, the authors did not attempt to examine the distance between the hotels and amenities or find out the optimal route between them.

Li, Liu and Wang (2020) carried out a study on the spatial distribution characteristics of the catering industry in Lhasa, a city in the region of Tibet, China. The ArcGIS software was used to conduct a NNA and kernel density estimation of the catering services. The catering providers included, restaurants, Cafés, beverage shops and hotels. The spatial distribution pattern showed catering providers were significantly aggregated in the vicinity of areas with developed transportation network or rich tourism resources. It was observed that restaurants showed the strongest aggregation, while the hotels showed the weakest. The agglomeration results provided by the kernel density estimation provided a visual presentation of the level of concentration of the catering services in certain locations throughout the study area.

He, et al. (2021) studied the spatial distribution of cultural and entertainment facilities in Beijing, China using similar methods. The result revealed that the facilities, such as bars, clubs, Cafés, cinemas, parks and leisure venues were generally concentrated around the central city with a strong or relatively strong level of clustering. Meanwhile, the kernel density method was used to show the distribution hotspots of the facilities around the six urban districts in Beijing. Despite the fact that, these studies have demonstrated the use of kernel density estimation to provide a graphical presentation of the concentration level of facilities, it may have also been a good idea to identify tourist sites and examine the distances between the sites and these facilities.

Lastly, Yannan, Lu and Xinhuan (2020) examined the spatial distribution of retail outlets in Urumqi, northwestern China. The paper employed the NNA to describe the agglomeration pattern of the retail features in the area. It was indicated that the retail outlets exhibited an

obvious aggregative distribution under the 1% significance level. The study observed that the distribution of the facilities were favoured around the city centre compared to the periphery. The researchers credited this to the fact that customers in the city centre tend to have more buying power than their counterparts in fringes. Furthermore, it was emphasised that the agglomeration of retail outlets was attractive to customers by reducing uncertainty and search efforts, thereby increasing the overall benefits of the facilities.

2.3.1 Proximity and Mobility Between Tourist Sites and Hospitality Facilities

The distance between tourist sites as well as hospitality facilities is an important attribute influencing tourists' decision-making process (Larsen and Guiver, 2013). It is a well-known fact that distance is an attribute that all tourists have to overcome to get satisfaction from tourism destinations. Therefore, mobility is central to how tourist sites are encountered and perceived in tourism (Haldrup, 2004). At destinations, trips to tourist sites tend to be generated around areas with hospitality facilities (Lew and McKercher, 2006). Essentially, tourist mobility is an integral part of any tourist experience. For that important reason, the ease of movement between tourist sites as well as hospitality facilities at a destination plays a vital role in the satisfaction of tourism consumption (Larsen, 2001).

Tourism presents the problem of decision making and planning required to visit destinations. Tourists are usually new to an area and the wide range of potential activities available may present a major challenge to find places of interest to meet their preferences and constraints. This may also apply to tourists who know what they would like to do during their visits, but are often unaware of hospitality facilities to fulfill their desires. Moreover, repeat tourists may also want to explore new features of the destination they have not yet experienced. It is believed that most tourists stick to the popular tourist sites and do not venture to equally

interesting but lesser known tourist sites and hospitality facilities. Therefore, information about the tourist sites as well as facilities play an important role in the mobility decisions of tourists visiting an area (Dye and Shaw, 2007).

Ofobruku, Onabanjo and Iheabunike (2013) attempted to model the accessibility of tourist destinations and complementing tourism services in Victoria Island, Lagos using GIS network analyst tools. The authors applied the Origin-Destination (OD) matrix to assess the distance between tourist sites and hotels, which revealed a distance of 0.96 km between Didi Museum and Radisson Blu hotel, while the distance between Eko Atlantic resort and Laporch hotel was 1.28 km. The optimal route between selected streets was also simulated using the best route or shortest path analysis. It was observed that tourists will spend about 7 minutes to cover a distance of 7.5 km from one street to another. Meanwhile, a barrier was simulated on the route and an alternative route was generated covering about 10 km in 10 minutes. Although, for improved result, the study could have examined the distance between each of the tourist destinations and complementing facilities, and subsequently find out the optimum routes between them.

Correspondingly, Odedare and Alagbe (2014) conducted a study on the use of GIS in tourism management in Abuja, Nigeria. The closest facility analysis was performed to determine support facilities such as hotels, hospitals and police stations, nearest to the tourist sites. The result of the study revealed that the closest hotels to the Abuja Art and Culture centre were Nikon Luxury hotel and Sheraton hotel with a distance of 2.2 km and 4.2 km respectively. The study proposed to evaluate potential routes from the tourist sites to the facilities. However, the analysis and result was restricted to two hotels and one of the tourist sites.

Abubakar, Idoko and Ocholi (2017) studied the efficient tour planning of tourist sites visitation in Lokoja, Nigeria using GIS. The ArcGIS network analyst extension was used for the analysis. Optimal visitation sequences were performed to compare the consequences of time savings in relation to distance savings across multiple scenarios. The study revealed that where the site visitation sequence was optimised saved both time and distance remarkably compared to scenarios with a predefined site visitation sequence. It was also observed that shorter visitation durations were associated with time-optimised scenarios compared to distance-optimised ones, while shorter visitation distances were associated with distance-optimised scenarios, compared to time-optimised scenarios. Furthermore, the blockage of an important arterial route resulted in a striking increase in the optimal distance and time required to visit all the tourist sites in the area. Overall, the shortest cumulative travel time was 17.69 minutes, while the shortest travel distance was 15,897.20 meters. Nonetheless, the focus of the study was on tourist sites. There was no attempt to examine the hospitality facilities in the area. In reality, tourists do not simply go visiting from one site to another without interacting with hospitality facilities such as stopping for foods or drinks.

Ikani, Akpu and Usman (2019) examined the proximity between tourist sites and hospitality facilities in Lokoja, Kogi State. The researchers employed the OD cost matrix tool in ArcGIS to determine the distance from tourist sites in the study area to hospitality facilities, which was restricted to hotels. The result of the analysis showed that Saatof hotel was the closest facility to the first primary school in Northern Nigeria with a distance of 2.13 km, whereas Reverton hotel was the closest hospitality facility to the first prison yard in Northern Nigeria with a distance of 0.66 km. However, it may have been a good idea to include other hospitality

facilities such as bars, Cafés and restaurants. In addition, no attempt was made to investigate the preferred route between the sites and facilities studied.

Wolf, et al. (2015) demonstrated the use of Public Participation GIS (PPGIS) for park visitor management. The study employed GPS tracking to monitor mountain bikers frequenting national parks for tourism and recreation in the northern part of Sydney. Questionnaire-based surveys were administered to mountain bikers and analysed using Pearson's chi-square and Analysis of Variance (ANOVA). It was revealed that tracks between 10 km and 20 km in length were preferred by tourists of all skill-levels. The result also showed that the best rides, which lasted beyond 4 hours were more commonly mapped inside parks (56.4%), as well as riding less than once per month (48.4%). This indicated that bikers rode in parks to enjoy longer rides but did so less regularly. The study concluded that PPGIS approach was effective for engaging park tourists in complex and spatially explicit park planning process, it found general consistency between the GPS tracking information and PPGIS-mapped popularity of tracks in the area. The authors illustrated the importance of integrating qualitative methods alongside quantitative techniques for tourism and mobility assessment.

Hashim et al. (2018) employed the distance from one destination to another collected using the google maps software to find the shortest routes for tourists visiting eight of the most attractive destinations in Langkawi Island. These tourist destinations were selected based on recommendations acquired from the Ministry of Tourism Malaysia website. In addition, the authors only considered the tourist destinations that can be reached by road networks. The Nearest Greedy and Nearest Greedy Insertion methods were used for the study. This method was used to find the best solution and repeatedly visited the nearest places on the path until all destinations have been visited. It was revealed the Nearest Greedy Insertion method which

produced a total distance of 98 km was the best route, compared with the total distance of 108 km obtained from the Nearest Greedy method. Though, the computational steps for both methods differed in their scripts. However, the authors failed to provide any explanation for this distinction or the difference between both methods. Additionally, the study lacked additional details that could have been enjoyed from using maps to visualise their results. In light of the fact that, the study was conducted for the benefit of tourists, maps provide an easy and convenient way for them to view information about a destination.

Lutero et al. (2021) performed a study to determine the optimal day tours in Marinduque, Philippines, given time, and site preference constraints. The tour planning problem aimed to construct an approximately 8-hour day tour that maximised the total number of visited tourist spots. The binary integer programming model was used for the analysis. The model applied certain assumptions such as, traffic was assumed to be very light, and vehicles were specified to travel at 60 km/hour. The coordinates of the points were collected using OpenStreet Map (OSM) application. The distance between each point was calculated from OSM road network using the QNEAT3 plug-in in QGIS software. The results showed that the general tour started at Balanacan Port allowed 11 tourist spots to be visited within 7 hours, 29 minutes. Whereas, the nature-themed tour with Marinduque airport as the starting point covered 11 tourist spots in a time of 7 hours, 25 minutes, while the water-themed tour starting at the Balanacan point covered 9 spots in about 8 hours. However, different road types have varying specified speed limits. Therefore, the application of a generic speed limit for the study does not provide a realistic picture of the amount of time it might take to travel between the tourist spots.

In the study by Yang et al. (2014), the authors examined tourist tracks in at a world heritage site of Northwest Yunnan, China using a GIS approach. The study applied the Least Cost Path (LCP) modelling function to generate optimised hiking tracks for tourist use, and a sustainable environment. The process involved evaluation criterias such as physical, biological, and scenic landscape which were translated into spatially explicit cost surfaces. The result revealed four new tracks that link main entrances and scenic spots of the area after optimising all evaluation criterias. The total distance of the tracks was 51.9 km with an overall cost average of 17.2/km. The majority of the cost (61.1%) were associated with the biological criteria, while 38.9% were related to the scenic landscape. These tracks provided minimum environmental impacts and high landscape qualities, which represented a reasonable solution to balance tourist use and nature conservation. Although, the study demonstrated how cost surfaces can be used to determine routes to tourist sites. However, the authors pointed out a concern related to the data quality and data structure. Especially as LCP analysis relies on a large amount of spatial data, which usually have different primary data acquisition sources and different methods of derivation.

Similarly, Sandal and Yıldız (2020) carried out a study to map the most cost-effective route for nature and culture tourism in Göreme historical national Park, a protected area of Cappadocia region in Turkey. The landcover of the area were classified into areas such as, residential, agricultural, green areas, and water surfaces, which were the suitable locations. The park was chosen as the point of departure and Mustafapaşa settlement was the destination. However, the tourists were required to stop at 6 residential areas. The analysis was performed using the ArcGIS software using LCP analysis. The result showed the best route with the lowest cost

paths from the origin to the destination. The study further emphasised the value of applying LCP analysis to examine the optimum route between tourist sites through cost surfaces.

In conclusion, this literature review has examined the spatial distribution and accessibility of tourist sites and hospitality facilities using various spatial analysis techniques such as NNA, Kernel density estimation, LCP, shortest path analysis, and the OD matrix. This review has also demonstrated the significance of the spatial dimension in the study of tourism and hospitality facilities, including how spatial analysis can help us understand the location patterns of tourist sites and hospitality facilities, as well as the preferred route between them. The methods reviewed, provide effective tools for spatial analysis and have been applied successfully in many tourism and hospitality studies. However, none of the literatures has addressed the tourists' consideration of mobility, and applying these considerations to investigate the route suitability between tourist sites and hospitality facilities.

Therefore, this study will apply these methods to the case of Cork City, Ireland, to explore the distribution, spatial pattern and density tourist and hospitality facilities, as well as examining important considerations of mobility to tourists to determine route suitability of the sites and facilities. As a consequence, this study aims to contribute to existing body of knowledge in tourism and hospitality research and provide valuable insights for tourists, policy-makers, managers, and other stakeholders in the industry.

CHAPTER THREE

STUDY AREA AND METHODOLOGY

3.1 The Study Area

3.1.1 Location, Size and Climate

Cork city situated in the southwest of Ireland is the second largest city in Ireland, only behind the country's capital Dublin. The city is situated at the mouth of the River Lee, which flows west to east through the city, splitting in two to the west of the city centre, and merging again to the east of the city as it flows out to sea (McDermott and Surminski, 2018). According to the 2016 census, the city had a total population of 125,657 within an area of 187km² (Central Statistics Office 2017, as cited in Lambert, Cawkwell and Holloway, 2021). The more recent population census conducted in 2022 showed that the city had a population of 222,333. This rapid increase in population can be attributed to the 2019 extension of the city's boundary. The towns of Douglas, Rochestown, Ballincollig, Blarney and Glanmire were incorporated into Cork city, increasing the population of the city by 85,000 (Central Statistics Office, 2022). The climate of Cork city is identified by partly cloudy and comfortable summers. Meanwhile, the winters are long, very cold, wet, and mostly cloudy. It is common for the weather to be windy all year. During the course of the year, the temperature typically varies from 4°C to 19°C and is rarely below -0°C or above 23°C. The best time to visit Cork for warm-weather activities is from late June to early September (Weather Spark, 2022). Climate plays an important role in tourists' decision making and also influences the successful operation of tourism (Becken and Wilson, 2013). Cork city is administratively independent of the county with a thriving cultural life, with numerous tourist attraction sites such as, the English market, Glucksman gallery, the Butter museum, and St. Fin Barre's cathedral, to mention a few. Furthermore, the city is home

to the long-established Guinness Jazz festival (Ranelagh, 2023). The map of the study area is presented in Figure 3.1.

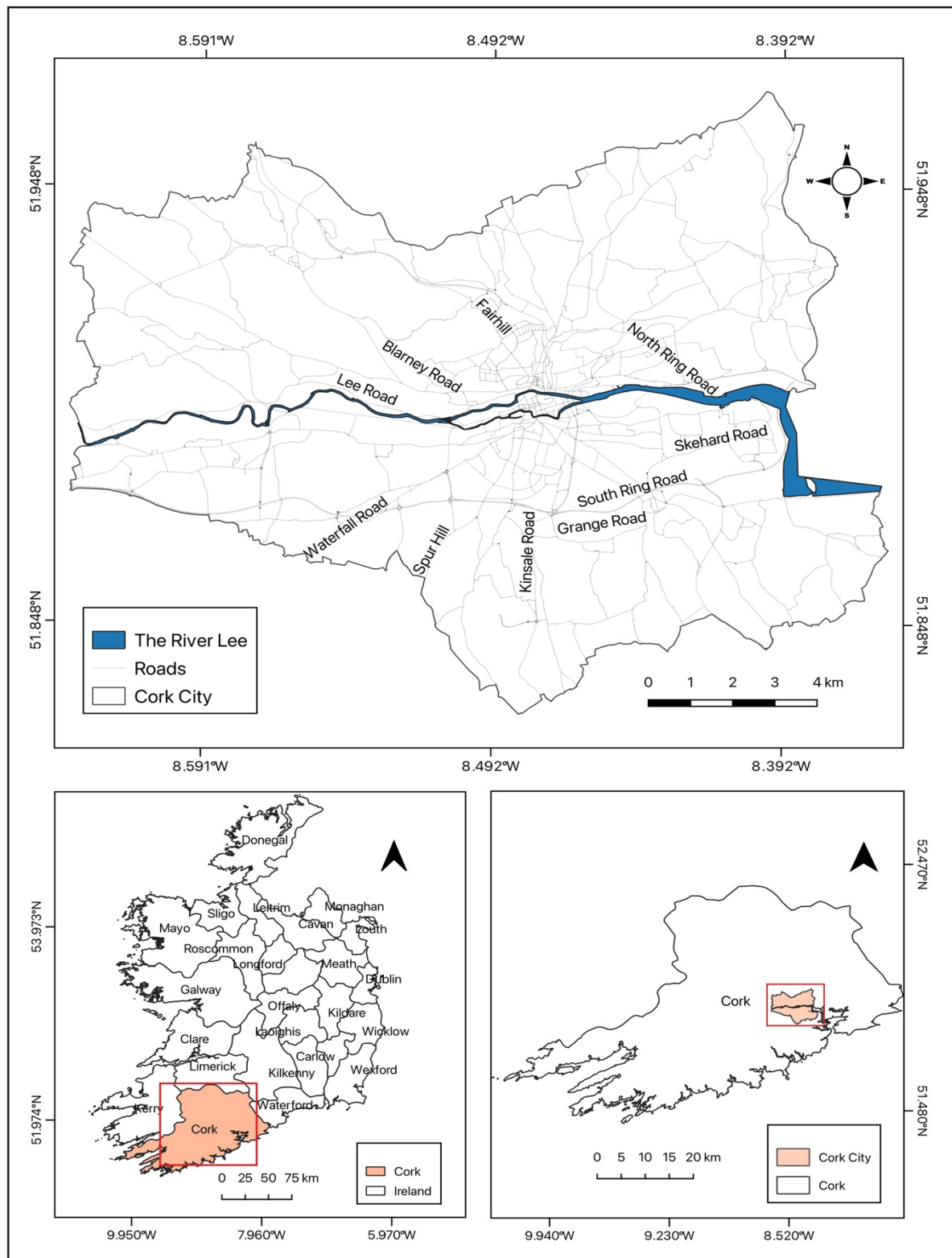


Figure 3.1: The Study Area

Source: Adapted from the Administrative Boundary of Ireland and Cork City (2022)

3.2 Methodology

This section shows the data required for the study, their sources, as well as the methods of data processing and techniques for analysis.

3.2.1 Required Dataset

The dataset used for this study include:

- i. Locations of the tourist sites and hospitality facilities
- ii. Administrative boundary spatial layer of Ireland and Cork city
- iii. Road network spatial layer of the study area
- iv. Tourists' consideration of mobility
- v. Bus network spatial layer of Cork city
- vi. Traffic signals and bus stops in the study area

3.2.2 Data Collection

The list of the tourist sites and hospitality facilities in Cork city were retrieved from the Cork City Council (Cork City Council, 2022a). The geographic coordinates (latitude and longitude) of the sites were then captured using a mobile device during a visit to the sites. At the same time, the geographic database OpenStreetMap (OSM) was used to compile the locations of the facilities (OpenStreetMap, 2022). The facilities that were not found on the OSM dataset were searched, and their location collected using Google Earth satellite imagery. Meanwhile, the administrative boundary spatial layer of Ireland was retrieved from Ordnance Survey Ireland (Ordnance Survey Ireland, 2022). The spatial layer depicting the boundary of Cork city was obtained from Cork City Council (2022b). The road network layer of the study area, alongside layer of the River Lee were derived from Prime2 Ordnance Survey national dataset for the Republic of Ireland (Ordnance Survey Ireland, 2020). Additionally, the information on

tourists' consideration of mobility was obtained through questionnaires administered to tourists found at the tourist sites visited. The layer showing the bus network of the study area was retrieved from the National Transport Authority (National Transport Authority, 2022). Furthermore, the data on traffic signals and bus stops, were retrieved from the OSM dataset (OpenStreetMap, 2022).

3.2.2.1 Questionnaire Development

When conducting a study, researchers have the option of using existing data or collecting new information through comprehensive field survey. This often involves conducting surveys using research instruments such as questionnaires, interviews and focused groups, which provides researchers with further information required for understanding the problem of study in more depth. These methods can be used to gather in-depth and nuanced information about participants' experiences, behaviours and considerations.

A questionnaire can be tailored to gather targeted information from respondents, which may not be accessible through current data sources or in cases where the existing data may be flawed, inadequate, or otherwise obsolete (Rubin and Babbie, 2009). Questionnaire surveys also provide control over the information collected through the careful design and structure of questions to ensure they align with the research objectives. The phrasing and ordering of questions can be carefully crafted to elicit the desired information (Fowler, 2013). By using a questionnaire survey, specific information is obtained directly from the relevant participants, enhancing the accuracy and quality of the data, whilst also enabling a more complete and contextualised understanding of the research objectives (Bryman, 2016).

Therefore, the questionnaire was employed to obtain information on tourists' consideration of mobility in Cork city. The questionnaire was designed and submitted to the Social Research

and Ethics Committee for ethical approval. This was approved with application log number of 2022-192. The questionnaire consisted of 44 closed and opened-ended questions. This can be found in Appendix 1. The questionnaire was organised into two parts with two sections each:

- Part 1, Section A (Question 1-7): Socio-demographic information of tourists
- Part 1 Section B (Question 8-17): Information about tourists' trip
- Part 2, Section A (Question 1-8): Tourists' knowledge of the tourist sites
- Part 2, Section B (Question 9-26): Information about tourists' mobility

3.2.2.2 Questionnaire Survey

To collect information on tourists' consideration of mobility in Cork city, it was decided that the data should be collected at the tourist sites. Therefore, the survey was carried out at all the tourist sites visited from 10th September to 26th October, 2022. The researcher introduced himself and invited tourists to participate in the survey. The tourists who were willing to partake were handed an information sheet which provided information about the project and how their information will be handled. Subsequently, the participants were required to sign a consent form before proceeding to fill out the questionnaire. A sample of the information sheet and consent form is shown in Appendix 2-3. In total, 50 questionnaires were collected across the tourist sites. One of the challenges of the survey was that, some of the tourists were not very receptive. Another was, due to limited time and cost constraints, combined with the fact that the researcher was working alone, it was not feasible to revisit the sites where no tourists were encountered during the time of visit. This will be discussed later in the limitation section of the dissertation.

3.2.3 Data Processing

3.2.3.1 Map Projection

Map projection is the process of integrating the spatial reference from different datasets into a common georeferenced framework for display and analysis through a defined coordinate system (Usery, et al., 2009). This transformation of geographic data is necessary to support GIS operations, such as measurement of distance, and other spatial analyses required for this study. Essentially, the accuracy of the resulting analysis is determined by the accuracy of the data. The dataset required for the study were collected from different sources in various coordinate system. Hence, there was need to project all the data into a common coordinate system. The dataset was projected using the Irish Transverse Mercator (IRENET95). This reference system was chosen because the study area is located within the system.

3.2.3.2 Digitisation

The spatial data required for this study were collected in vector format. The vector model represents geographic features as points, lines, and polygons. A point feature is represented as a single coordinate pair, while lines are defined by a connected series of coordinate pairs. By comparison, polygon features are represented as closed shapes defined by a connected sequence of coordinate pairs, where the first and last coordinate pair are the same and all other pairs are unique (Sabiu, et al., 2015). The road network of the study area was retrieved from the Prime2 dataset in polygon format. The Prime2 dataset was preferred to the OSM road network layer due to the confidence that all roads in the study area are represented in the Prime2 data. Therefore, there was a need to transform this layer to a line feature, in order for the researcher to carry out further analysis. This was done manually, through on-screen

digitising. The process required the author to trace the polygon layer to create a new road network made up of line features. Over 600 roads were digitised across Cork city.

3.2.3.3 Road Classification

To provide a more realistic result of the time it might take tourists to move from one place to another. The road segments in the area were classified according to speed limits specified by the Road Safety Authority (RSA) of Ireland. Table 3.1 shows the classification.

Table 3.1: Road Classification and Speed Limits in Ireland

	Road Classification	Speed Limit
1	Motorways	120 km/h
2	National Roads	100 km/h
3	Regional roads	80 km/h
4	Urban areas	50 km/h
5	Special limits (schools etc.)	30 km/h

Source: RSA (2023)

In addition, according to the RSA, a single or double deck bus or coach designed for carrying standing passengers can travel at a maximum speed of 65 kilometres an hour on all road type.

3.2.3.4 Road Network Model

The road network model of Cork city was required to carry out any analysis using the Network Analyst tool. This model is also known as a Network Dataset (ND) and is defined by ESRI (2021) as a collection of topologically connected network elements made up of edges, junctions and turns, used to represent the road network. The criterias used in building the ND included attribute fields such as, distance of the road segments in kilometers, speed limit for all road segments using the classification provided in Table 3.1, and drive time for each road segment. The drive time was calculated by dividing a road segment by the speed limit for that segment, and then divided by 60, which represented minutes. This is shown in Equation 3.1.

$$\text{Drive Time} = \text{distance/speed limit}/60$$

Equation 3.1

The traffic signals were also added as an impedance, so that road segments with more traffic signals had a higher cost than those with less signals.

3.2.4 Data Analysis

3.2.4.1 Determine Important Considerations of Mobility to the Tourists

The responses from the tourists surveyed were computed into an excel spreadsheet, and analysed using thematic analysis. Thematic analysis is a commonly used method for analysing qualitative data, including data obtained from questionnaire surveys. Mazurek-Kusiak (2020) used thematic analysis to analyse survey responses from Polish tourists on their preferences for selecting travel agencies. The researcher identified themes related to factors such as sources of information about the travel agency, determinants taken into consideration when choosing an agency, and the purpose of the tourist trip, which informed their analysis of the factors driving customer choice in this market. Similarly, Siripipattanakul, et al. (2022) applied thematic analysis to reveal that prices, facilities and services significantly influenced hotel customer loyalty in Thailand through the mediating effect of customer satisfaction. Therefore, thematic analysis was applied to tourists' responses in this study. Tables were used to present the frequency and percentage of socio-demographic as well as the economic characteristics of tourists. Also, information about the trip to the tourist sites, alongside their knowledge of the sites were disclosed. Furthermore, the information on choice of mobility and perception of the trip were also revealed.

3.2.4.2 Identify and Map Tourist Sites and Hospitality Facilities in Cork City

The geographic coordinates (latitude and longitude) of the tourist sites alongside hospitality facilities were entered into an excel spreadsheet and converted to comma separated value (CSV) format for exportation into the ArcGIS software. The excel spreadsheet was converted to CSV because it is often the best choice for importing a spreadsheet into a GIS environment. The imported point locations were then used to show the spatial distribution of the sites and facilities in Cork city.

3.2.4.3 Examine the Spatial Pattern of the Sites and Facilities

From the literatures reviewed, the techniques employed for examining the spatial pattern of features were predominately nearest neighbour analysis (NNA), as well as Moran's i and the kernel density estimation. The NNA and kernel density estimation will be adopted for this study. The NNA was chosen because it is the most effective tool for comparing different features in a fixed study area. Likewise, the kernel density estimation was selected to provide a visual representation of the density of the tourist sites and hospitality facilities across Cork city. The NNA measures the Euclidean distance between each point and closest neighbouring point to determine if pattern of the points are clustered, random or dispersed. The analysis was carried out using ArcGIS to determine the spatial pattern of the tourist sites alongside hospitality facilities in the study area. The formula is given in Equation 3.2.

$$R_n = 2\bar{d}\sqrt{N/A}$$

Where;

R_n = nearest neighbor value describing the point pattern

$\bar{d}$ = observed distance

N = total number of Tourist sites/Hospitality facilities

A = area of the map

Equation 3.2

The R_n value usually returns a range of values between 0-2.15, a value less than 1 indicates a significant clustering at 0.01 level of significance. Whereas, a value greater than 1 indicates a significant regularity or dispersal, while an R_n value of 1 indicates randomness (Akamagune, 2015). On the other hand, the kernel density method calculates hotspots and clustering of features based on the number of points in at a particular location. In essence, the more points within a given area, the higher the density (Holloway, 2023).

3.2.4.4 Examine Route Suitability Between Tourist Sites and the Facilities

This was achieved using the ArcGIS network analyst tools, Origin-Destination (OD) matrix and shortest path analysis. In addition, Least Cost Path (LCP) analysis was also applied in the study. The techniques applied are based on the Dijkstra's algorithm. Dijkstra's algorithm is designed to find the lowest cost route between two locations. To find this low cost route, the algorithm repeatedly examines the unvisited nodes neighbouring the current one, and compares the previously assigned tentative values with the values that can be achieved by using the current node. The node with the lowest value of the neighbouring set is then made the current node and the process is repeated until the target node is reached (Kang and Lee, 2017). OD matrix cost solver measures the distance along a transportation network from multiple origins to multiple destinations and ranks the destinations that each origin connects to in ascending order based on the distance required to travel from that origin to each destination (Saleh, 2013). This network analyst tool was useful for calculating the distance going from tourist sites to the hospitality facilities. The facilities with the shortest distance in kilometre from the tourist sites were ranked first. Consequently, hospitality facilities with the farthest distance from the sites were ranked last. This was also used to evaluate the closest bus stops to each of the tourist sites. Meanwhile, the shortest path analysis measures the best route from an

origin to a destination in minimum time or distance. Therefore, the best route could be optimised for distance which produces the shortest distance or optimised for time to give the quickest route. This was applied in this study to determine the shortest distance and quickest route between the tourist sites and the hospitality facilities. Finally, the LCP analysis provides users with the tool to find the cheapest route that connects two locations over a landscape using a cost surface determined by considering a criteria. This involves identification of one or more evaluation criteria relevant to the path problem, and translation of the criteria into spatially explicit cost surface used to determine the least-cost route between the locations (Effat and Hassan, 2013). However, a limitation of the model is that it assumes that individuals can move in any direction over the surface and not constrained by a road network. Therefore, this study explored an alternative approach to the LCP model proposed by Holloway (2023), which takes the road network into account to examine the fastest route to the tourist sites with each of the hospitality facility as a cost surface. This method works by first creating raster density maps using the cost layers, in this case the facilities. Subsequently, the raster outputs are standardised by setting a minimum value of 1 and maximum value of 100, with the higher value as desirable. This is used to create a new road network of the study area used for finding the LCP. Hence, the route with more hospitality facilities is the preferred route.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter deals with the presentation and discussion of the results obtained in the analysis of tourist sites, hospitality facilities and tourist mobility in Cork city. Figures and tables were used to display the results. Subsequently, the findings from the results were discussed.

4.2 Field Survey Results

4.2.1 Socio-Demographic Characteristics of Respondents

This shows the socio-demographic characteristics of the respondents, which includes their gender, age bracket, relationship status and household size. The result is shown in Table 4.1.

Table 4.1: Socio-Demographic Characteristics of Respondents

	Frequency	Percentage (%)
Gender		
Male	20	40
Female	30	60
Total	50	100
Age Bracket		
18-29	18	36
30-39	16	32
40-49	7	14
50 and above	9	18
Total	50	100
Relationship Status		
Single	24	48
Married	21	42
Others	5	10
Total	50	100
Household Size		
1-3	34	68
4-6	12	24
7-9	4	8
Total	50	100

Source: Author's Fieldwork (2022)

The result as displayed in Table 4.1 revealed that 60% of the respondents were female. This can be attributed to the fact that female respondents were more receptive and open to participating in the survey compared to the 40% of the respondents which were male. It was also observed that 68% of the tourists were within the age bracket of 18-39, in comparison to 32% that were 40 and above. Also, it was revealed that 48% of the participants were single, while 42% were married. The result also showed that most of the tourists (68%) were from a household size of 1-3, and 24% were from a family of 4-6.

4.2.2 Education and Economic Characteristics of Respondents

This section shows the economic characteristics of the respondents, such as their level of education, source of living and annual family income. The results are displayed in Table 4.2.

Table 4.2: Education and Economic Characteristics of Respondents

	Frequency	Percentage (%)
Level of Education		
Primary education	5	10
Secondary education	10	20
Tertiary education	32	64
Others	3	6
Total	50	100
Source of Living		
Employed	30	60
Self-employed	9	18
Unemployed	1	2
Student	6	12
Others	4	8
Total	50	100
Annual Family Income		
Under 30,000	21	42
30,000-40,000	16	32
Above 40,000	13	26
Total	50	100

Source: Author's Fieldwork (2022)

Table 4.2 revealed that most of the tourists were formally educated, 64% of the respondents had a tertiary education, while 30% had a primary or secondary education. Likewise, it was observed that majority of the participants were employed (60%), whilst another 18% were self-employed. It was also revealed that 12% of the respondents were students. Meanwhile, the result on the annual remuneration of the respondents shows that 58% of the tourists earned above 30,000, whereas 42% earn less than 30,000.

4.2.3 Information about Trip

This shows the information of the respondents' trip, such as their country of origin, whether they are resident in Cork city, number of visits to the city, and their temporary or permanent accommodation while in the study area . The reason for staying at the given accommodation was also retrieved. The results are displayed in Table 4.3.

Table 4.3: Information about Trip

	Frequency	Percentage (%)
Country of Origin		
Ireland	43	86
France	2	4
United Kingdom	2	4
Others	3	6
Total	50	100
Resident of Cork		
Yes	30	60
No	20	40
Total	50	100
Number of Visits to Cork city		
First time	6	30
2-4 times	10	50
Over 5 times	4	20
Total	20	100
Accommodation		
Private	30	60

Continued on next page

Table 4.3: Information about Trip (Continued from previous page)

	Frequency	Percentage (%)
Family and Friends	12	24
Hotels	8	16
Total	50	100
Reason for Choice of Accommodation		
Family	2	10
Proximity to the City centre	3	15
Inexpensive	7	35
Others	8	40
Total	20	100

Source: Author's Fieldwork (2022)

The results showed that 86% of the respondents were from within Ireland and 60% of these were resident in Cork. It was also revealed that 14% of the tourists were from countries such as France, United Kingdom, Spain, Germany and the Netherlands. Also, from the 40% of tourists who are non-resident in the study area, 50% were visiting the city for the second to forth time, while 30% were visiting for the first time. Furthermore, the results also showed that 24% of the respondents chose to stay with their family and friends which was inexpensive and allowed them to spend time with their loved ones, while 16% stayed at hotels for easy proximity to the city centre and convenience.

4.2.4 Knowledge of the Tourist Sites

This shows the information on tourists' knowledge of the tourist sites, including the purpose of their visit to the site, how they found out about the site, frequency of their visits, and whether they travelled alone or as group. The results are revealed in Table 4.4, where It was observed that 52% of the tourists were exploring the site and sight-seeing, while 36% were out for relaxation and leisure. The result also showed that 42% of the participants already knew about the site, while 22%, 18%, and 12% discovered the site through family and friends, the tourist information centre, as well as websites and magazines respectively.

Table 4.4: Knowledge of the Tourist Sites

	Frequency	Percentage (%)
Purpose of Visit		
Exploring and Sight-seeing	26	52
Relaxation	8	16
Leisure	10	20
Holidays and Fun	6	12
Total	50	100
Awareness of the Site		
Knew of the site	21	42
Family and Friends	11	22
Tourist Information Centre	9	18
Websites and Magazines	6	12
Others	3	6
Total	50	100
Frequency of Visit		
First time	28	56
Once in a month	3	6
Once in 3 months	5	10
Once in 6 months	4	8
Once in 12 months	10	20
Total	50	100
Nature of Travel		
Alone	37	74
Group	13	26
Total	50	100

Source: Author's Fieldwork (2022)

Additionally, It can be seen that 56% of the tourists were visiting the site for the first time, while 20% visited the site once in a year. Lastly, it was observed that 74% of the respondents travelled alone, with 26% travelling as part of a group.

4.2.5 Mobility to the Tourist Sites

This shows the information on mobility retrieved from the tourists such as, the method of transportation used to the tourist site, how they got the directions to the site, stops made enroute to the sites, and the reason for the stop. The results are displayed in Table 4.5.

Table 4.5: Mobility to the Tourist Sites

	Frequency	Percentage (%)
Method of Transport		
Private car	7	14
Walk	8	16
Bus	29	58
Taxi	6	12
Total	50	100
Directions to the Site		
Knew my way	25	50
Family and Friends	10	20
Navigation apps	8	16
Tourist Information Centre	7	14
Total	50	100
Stops Made		
Yes	24	48
No	26	52
Total	50	100
Reason for the Stop		
Coffee	4	16.67
Food	9	37.50
Drinks	4	16.67
Shopping and Grocery	5	20.83
Others	2	8.33
Total	24	100

Source: Author's Fieldwork (2022)

It was observed that 58% of the tourists used the bus to get to the tourist site, while 16% walked. Also, 14% of the respondents used a private car to the site and 12% used a taxi. The result also showed that 50% of the tourists already knew their way to the site. Whereas, 20% of the respondents received directions to the site through family and friends, while 16% and 14% of the tourists got directions from navigation apps and the tourist information centre respectively. Meanwhile, from the 48% of the participants that made stops on their way to the tourist site, about 37% of them stopped for food. It was also observed that about 21% of

them stopped for shopping or to pick up items from grocery stores, while about 17% of the respondents stopped for drinks and coffee respectively.

4.2.6 Perception of the Trip to Tourist Sites

This shows the respondents' perception of the trip including, what they enjoyed about the trip to the site, and their overall impression of the city. The results are displayed in Table 4.6.

Table 4.6: Perception of the Trip to Tourist Sites

	Frequency	Percentage (%)
Enjoyed about the Trip		
Ease of movement	34	68
Safety	3	6
Scenery	6	12
None	7	14
Total	50	100
What can be Improved		
Directions around the city	6	12
Bus times and information	11	22
More public transport options	7	14
Parking spaces	2	4
None	24	48
Total	50	100
Overall Impression of Cork city		
Beautiful and Pleasant	11	22
Quiet and Serene	21	42
Friendly people	8	16
Cultural	5	10
Fun	5	10
Total	50	100

Source: Author's Fieldwork (2022)

The result presented in Table 4.6 showed that the majority of the tourists (68%) enjoyed how easy it was to move around Cork city and get to the tourist site, while 12% of the respondents enjoyed the scenery. Also, 22% of the participants revealed that the real time display of bus time and information could be improved upon to reduce waiting times at the bus stops, while

14% and 12% wanted more public transport options and better directions around the city respectively. Lastly, it was observed that 42% of the tourists were attracted to the quietness and serenity of the study area. At the same time, 22% of the respondents found the city to be beautiful and pleasant, while 16% of the participants were impressed by the friendliness of the locals. Meanwhile, 20% of the tourists thought Cork city was fun and cultural.

4.3 Spatial Pattern and Density of Tourist Sites and Hospitality Facilities

The spatial distribution of tourist sites and hospitality facilities were analysed in this study. A total of 17 tourist sites, 24 hotels, 84 restaurants, 91 cafés, 110 bars, and 120 shops as well as supermarkets were identified and their locations were mapped. The spatial pattern, which explains the degree of clustering, randomness or dispersion of the features and concentration level of tourist sites and each type of facility were also examined. The results are presented in Tables 4.7. The mapping of the tourist sites and hospitality facilities provided for a visual representation of their spatial distribution and to identify areas with higher concentrations of the sites and facilities. The results are revealed in Figures 4.1-4.5.

Table 4.7: Summary of Nearest Neighbour Analysis

	Tourist sites	Bars	Cafés
Observed MD	1119.5207	124.0134	192.8542
Expected MD	949.5705	188.4813	305.4595
NN ratio	1.178976	0.657961	0.631358
Z-score	1.411723	-6.862817	-6.727547
Spatial Pattern	Random	Clustered	Clustered
	Hotels	Restaurants	Shops and Supermarkets
Observed MD	795.4811	107.0831	172.0437
Expected MD	887.2522	256.7711	376.5284
NN ratio	0.896567	0.417037	0.456921
Z-score	-0.969384	-10.221425	-11.381110
Spatial Pattern	Random	Clustered	Clustered

MD- Mean Distance (Meters), NN- Nearest Neighbour

Source: Author's Analysis (2023)

The study conducted an analysis of the spatial pattern of tourist sites and hospitality facilities in Cork city using nearest neighbor analysis (NNA). As revealed in Table 4.7, the NNA results showed that the observed mean distance between tourist sites was 1119.5207 meters, which was above the expected mean distance of 949.5705 meters, indicating a random pattern of distribution. However, the result showed that majority of the hospitality facilities exhibited a significant level of clustering. The bars were found to be clustered in the area, particularly around the city centre with an observed mean distance of 124.0134 meters in contrast to the expected mean distance of 188.4813 meters. Correspondingly, the cafés were also observed to exhibit a clustered pattern of distribution around the city centre, with an observed mean distance of 107.0831 meters between them. On the other hand, the hotels were randomly distributed across the city with an observed mean distance of 795.4811 meters between the facilities. Contrastingly, the restaurants were found to be concentrated around the city centre, with an observed mean distance of 256.7711 meters, and a nearest neighbor ratio of 0.417037 indicating a clustered pattern of distribution. Finally, the shops and supermarkets were also observed to exhibit a clustered pattern of distribution across the study area, with a higher concentration around the city centre. The result revealed an observed mean distance of 172.0437 meters compared to the expected mean distance of 376.5284 meters between the facilities. These results are illustrated through maps in Figures 4.1-4.6.

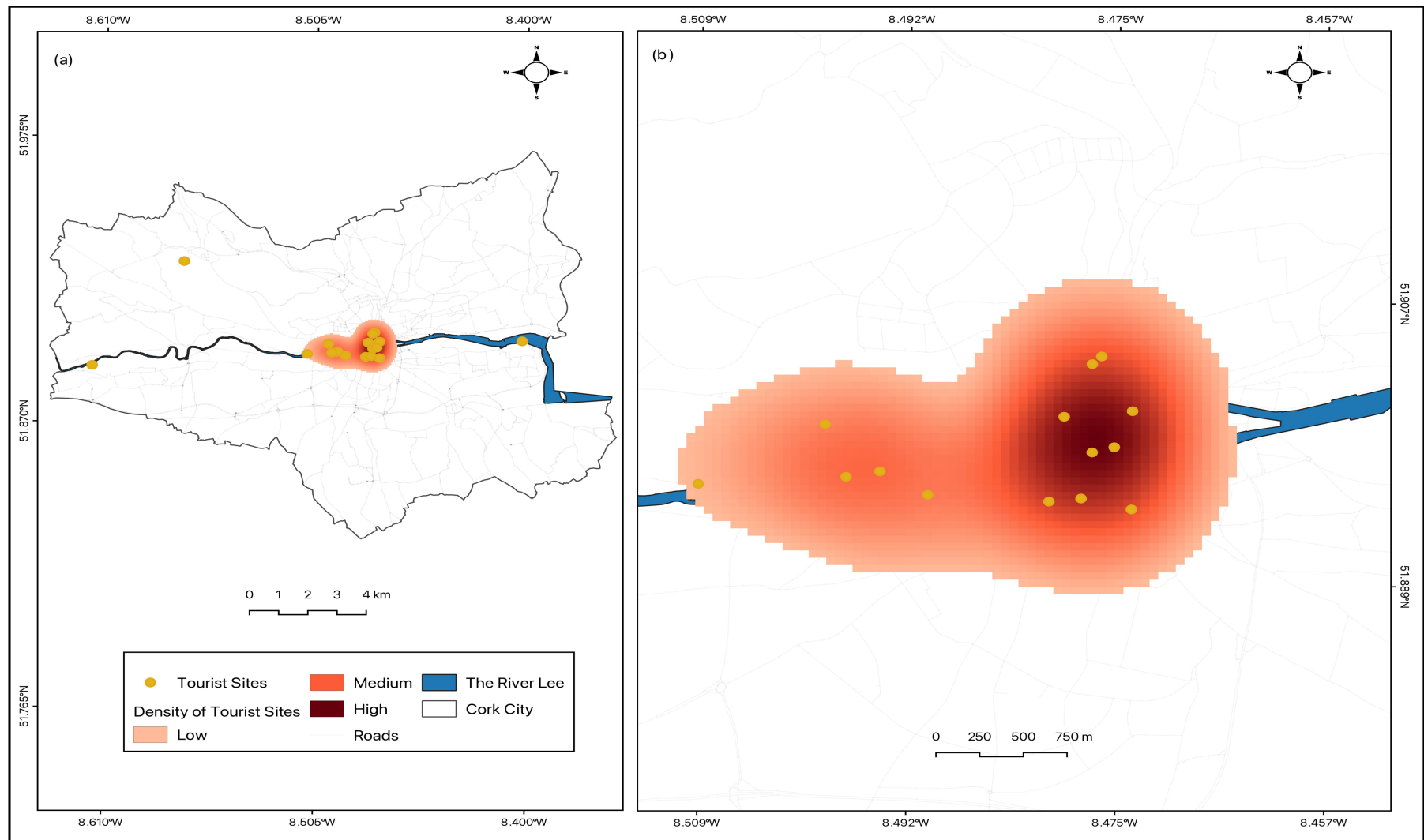


Figure 4.1: Distribution and Density of Tourist Sites in Cork City (a) City extent (b) City centre

Source: Author's Analysis (2023)

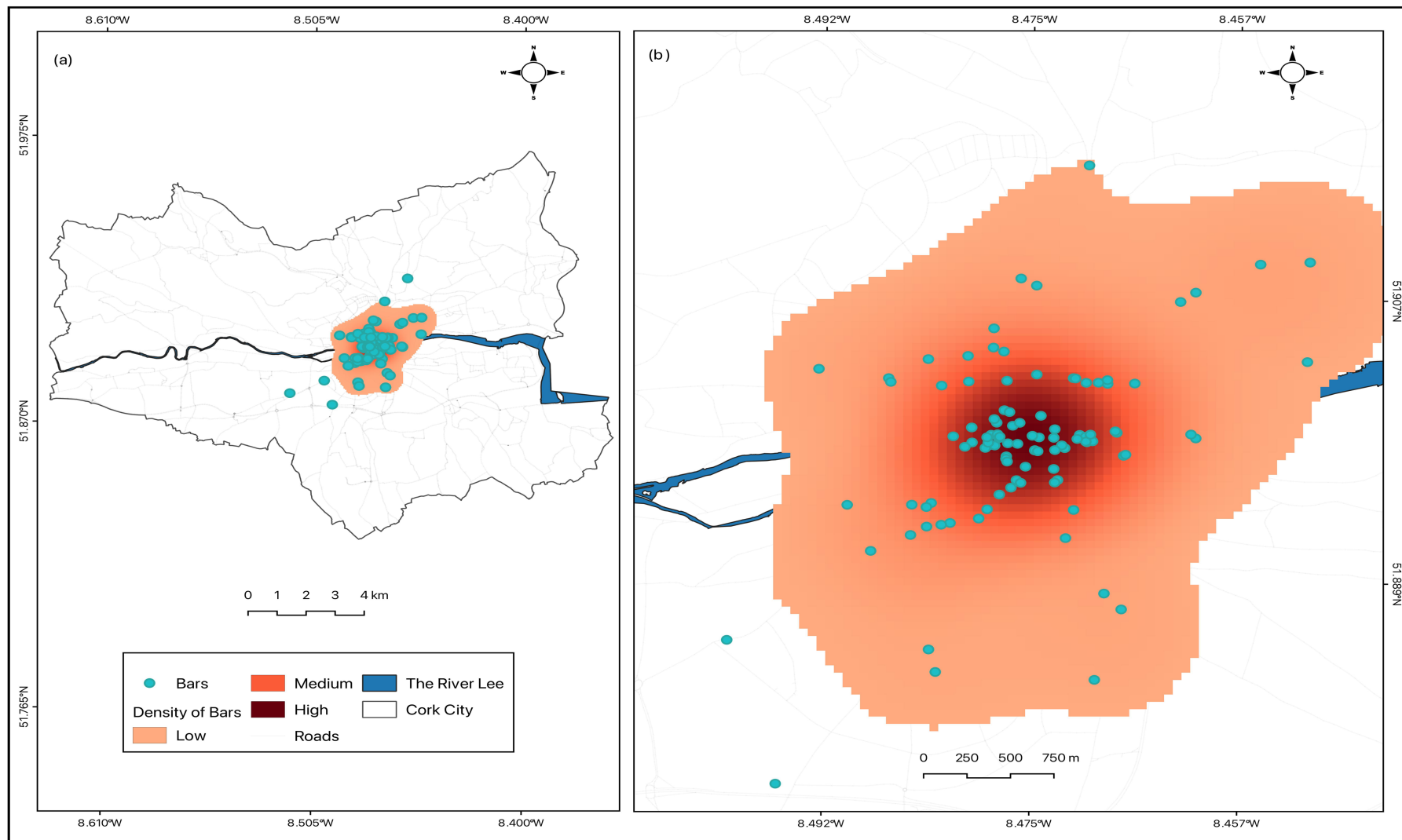


Figure 4.2: Distribution and Density of Bars in Cork City (a) City extent (b) City centre

Source: Author's Analysis (2023)

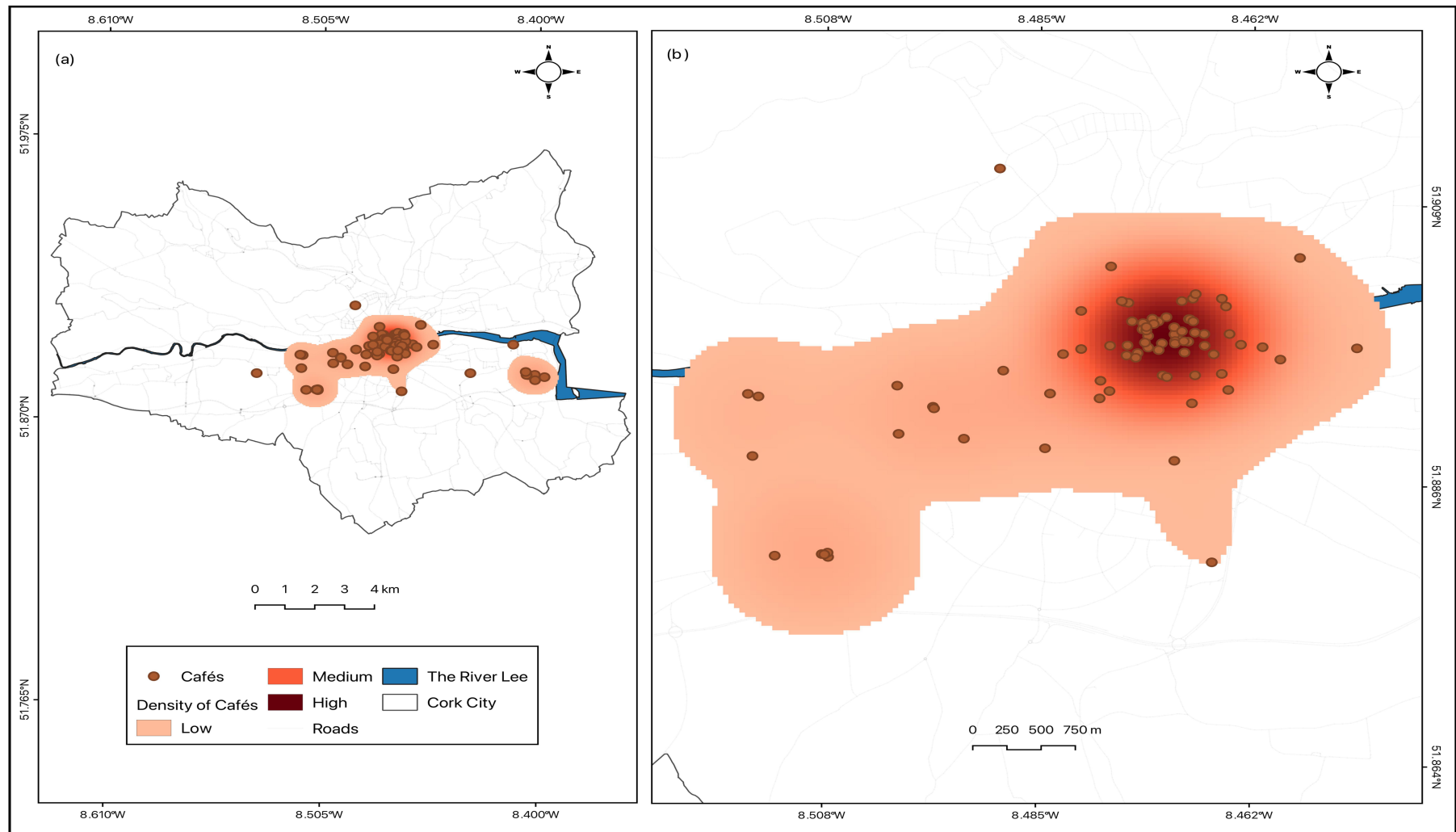


Figure 4.3: Distribution and Density of Cafés in Cork City (a) City extent (b) City centre

Source: Author's Analysis (2023)

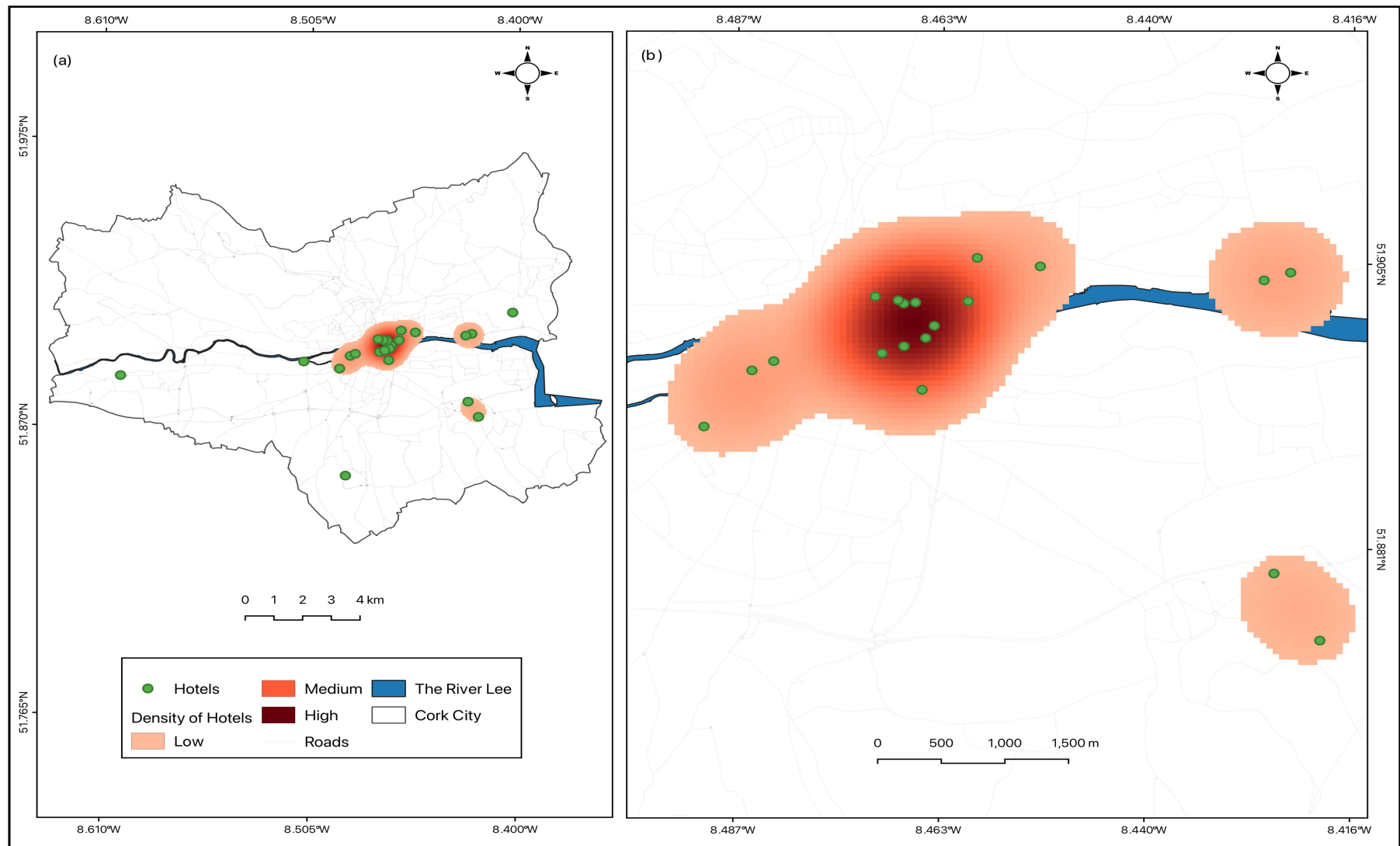


Figure 4.4: Distribution and Density of Hotels in Cork City (a) City extent (b) City centre

Source: Author's Analysis (2023)

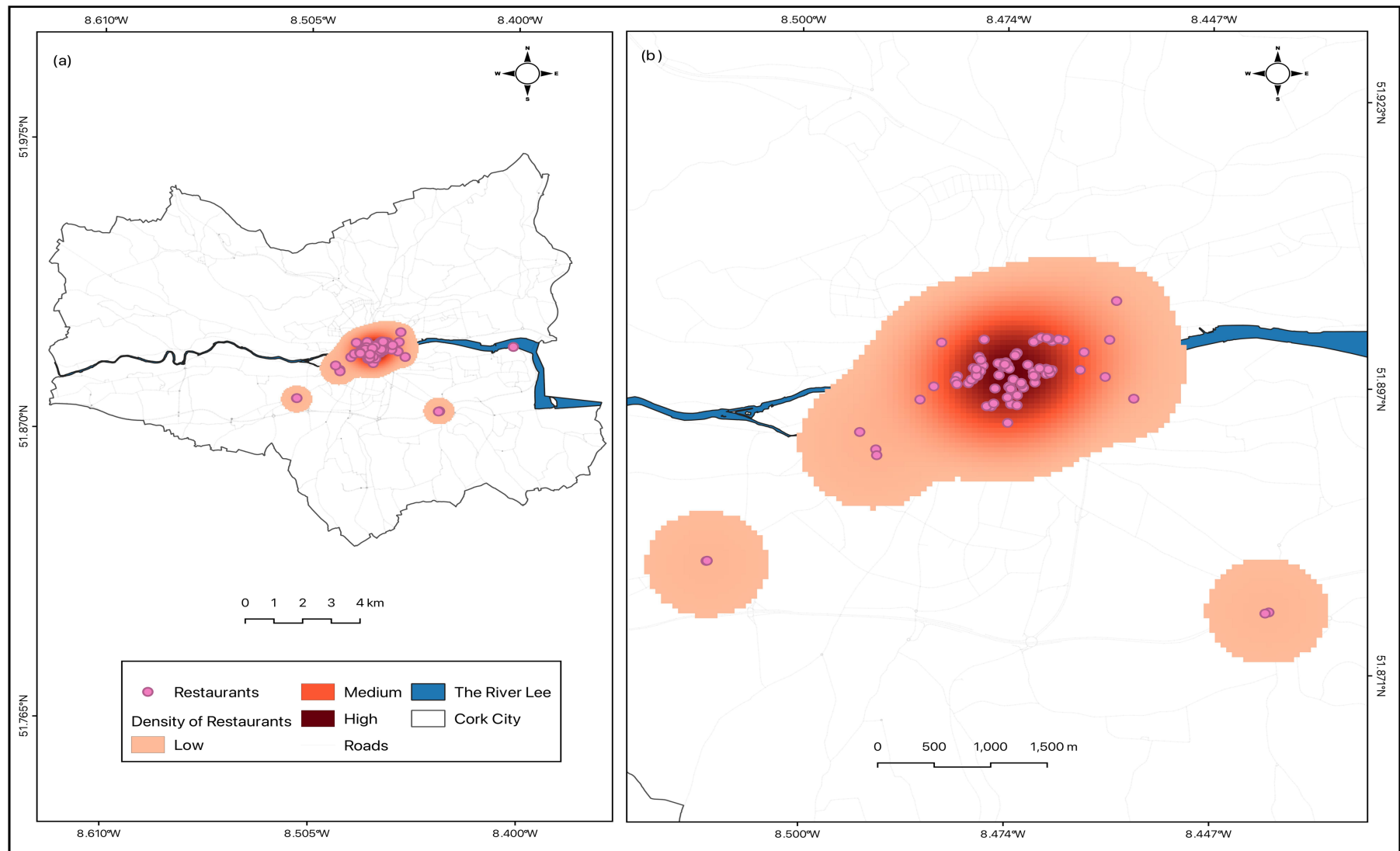


Figure 4.5: Distribution and Density of Restaurants in Cork City (a) City extent (b) City centre

Source: Author's Analysis (2023)

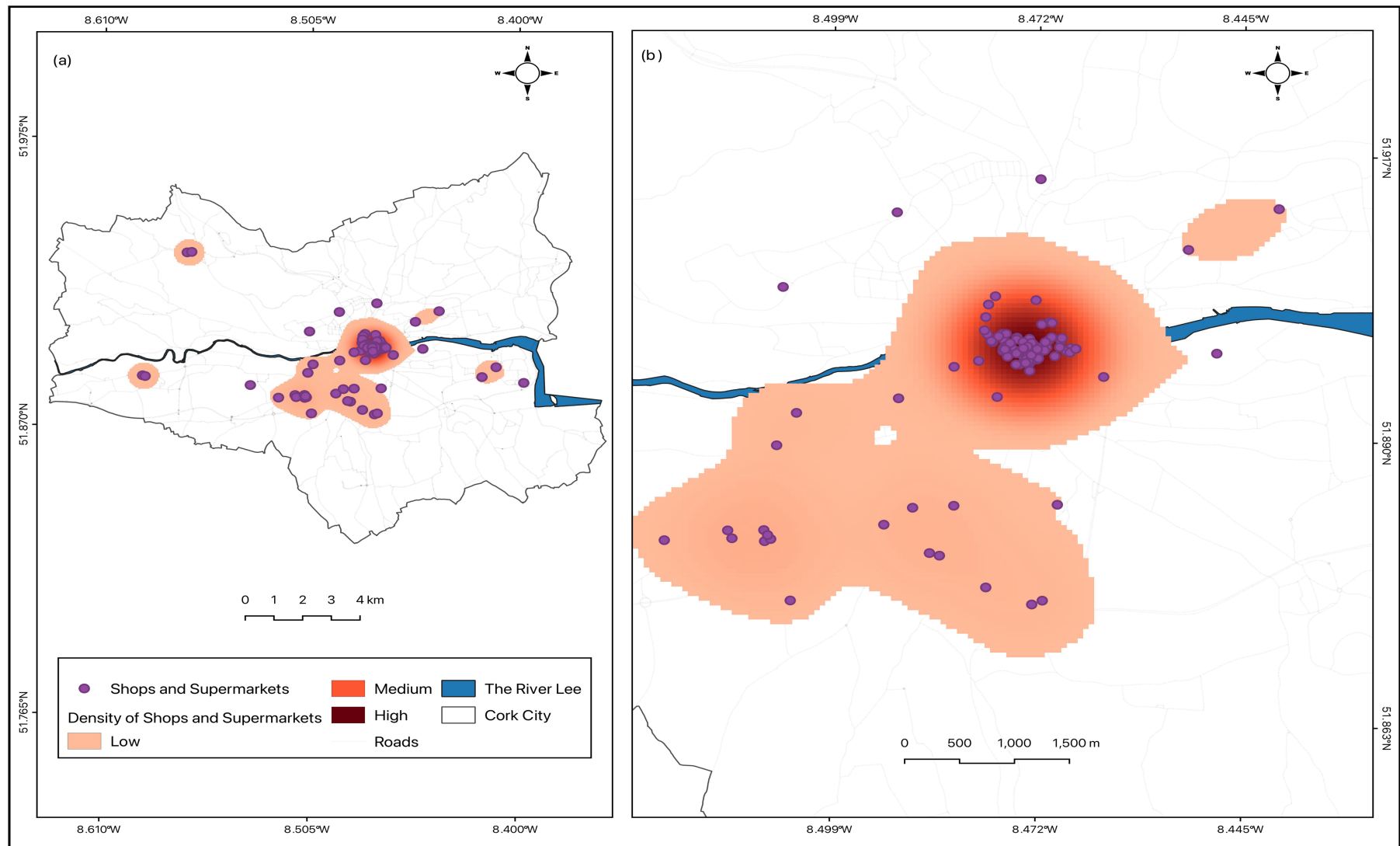


Figure 4.6: Distribution and Density of Shops and Supermarkets in Cork City (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.4 Route Suitability to the Tourist sites and Bus Stops

The result of the survey showed that 86% of the tourists travelled from within Ireland, while 58% got to the tourist sites and moved around the city using a bus. Also, it was observed that 18% of the tourists found out about the tourist sites and got directions to the sites through the tourist information centre. Hence, the train station, bus station and tourist information centre were chosen as the starting points for this analysis. The closest bus stops to the tourist sites were determined and the result is presented in Appendix 4. This will be beneficial for tourists visiting the sites using the bus, as is the case for majority of the participants surveyed. Accordingly, the shortest and quickest route from the starting points to the tourist sites and bus stops were mapped and shown in Figure 4.7, while Table 4.8 shows the overall distance and time taken to cover the distance between the tourist sites and each starting point.

Table 4.8: Routes to Tourist sites and Bus stops

	Tourist sites			
	Shortest (km)	Time (m)	Quickest (km)	Time (m)
Starting Point				
Bus station	34.13	58.86	41.71	40.04
Train station	34.50	59.95	46.96	40.01
Tourist information centre	34.03	60.81	46.12	39.76
	Bus stops			
	Shortest (km)	Time (m)	Quickest (km)	Time (m)
Starting Point				
Bus station	66.11	173.92	83.98	136.46
Train station	66.37	176.16	84.77	142.19
Tourist information centre	65.85	171.69	84.23	138.70

Km- kilometre, m- minutes

Source: Author's Analysis (2023)

The study conducted an analysis of the distance and time taken to travel between the bus and train stations, the tourist information centre, and the tourist sites as well as the nearest bus stops to the sites. The results showed that the shortest route from the bus station to the

tourist sites covered a distance of 34.13 km in 58.86 minutes, while the quickest route covered a distance of 41.71 km in 40.04 minutes. Likewise, the shortest route between the train station and tourist sites covered a distance of 34.50 km in 59.95 minutes, while the quickest route covered a distance of 46.96 km in 40.01 minutes. In comparison, the shortest route from the tourist information centre to the sites was 34.03 km in 60.81 minutes, with the quickest route covering a distance of 46.12 km in 39.76 minutes. Contrastingly, the study found that the shortest route from the bus station to the nearest bus stops to the tourist sites covered a distance of 66.11 km in 173.92 minutes, while the quickest route covered a distance of 83.98 km in 136.46 minutes. Similarly, the shortest route between the train station and bus stops was 66.37 km in 176.16 minutes, while the quickest route covered a distance of 84.77 km in 142.19 minutes. Finally, the shortest route from the tourist information centre to the bus stops was 65.85 km in 171.69 minutes, with the quickest route covering a distance of 84.23 km in 138.70 minutes.

Correspondingly, Figure 4.7 displays a map of the study area showing the shortest and quickest route from each starting point to the tourist sites alongside bus stops closest to the sites. The findings indicate a considerable overlap between the shortest and quickest routes within the city centre, in contrast to the routes leading to tourist sites situated on the periphery of the city centre, such as Ballincollig Regional Park and Gunpowder Mills, Blarney Castle, and Blackrock Castle Observatory. Additionally, it was observed that the routes to these peripheral sites were more direct compared to the routes within the city centre, where multiple options were available for reaching the same sites and bus stops

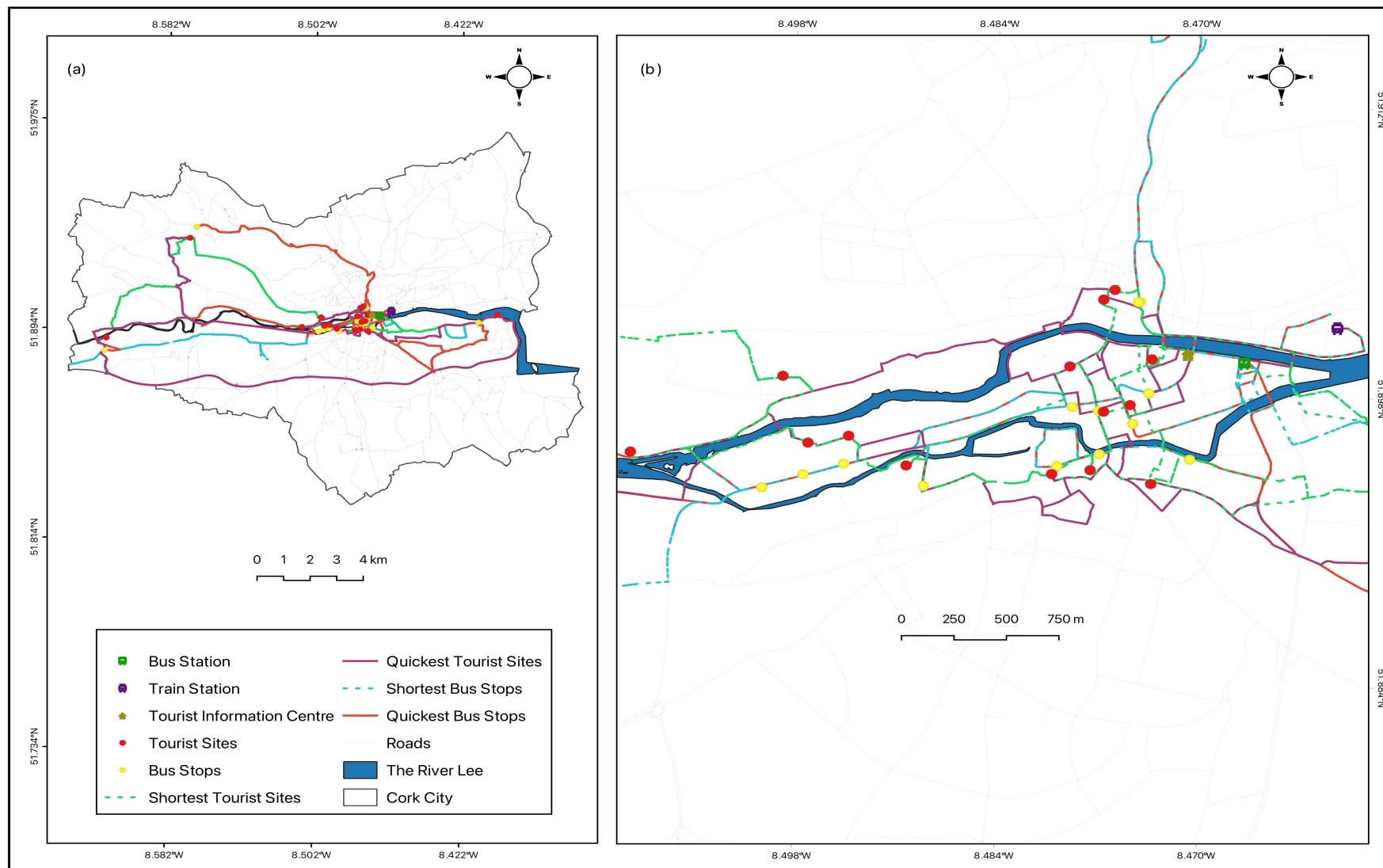


Figure 4.7: Routes to Tourist sites and Bus stops (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.5 Least Cost Path to Tourist Sites

This section shows the results of the LCP analysis from the starting points to the tourist sites using the hospitality facilities as a cost surface. The result of the field survey showed that about 37% of the tourists stopped for food, while about 21% stopped to shop or get groceries. It was also observed that about 17% of the respondents made a stop for drinks and coffee respectively. Additionally, it was also revealed that 16% of the participants stayed at a hotel during their stay. Accordingly, bars, Cafés, hotels restaurants, and shops/supermarkets, were chosen as the hospitality facilities for the purpose of this study. Therefore the best route to the sites is the route closest to the facilities. The result is revealed in Table 4.9, while Figure 4.8 provides a pictorial representation of the preferred routes to the sites based on each of the facilities.

Table 4.9: Least Cost Path to Tourist Sites

LCP Bars	
	Distance (km)
Starting Point	
Bus station	20.20
Train station	27.05
Tourist information centre	17.01
LCP Cafés	
	Distance (km)
Starting Point	
Bus station	25.22
Train station	32.38
Tourist information centre	22.23
LCP Hotels	
	Distance (km)
Starting Point	
Bus station	46.03
Train station	53.94
Tourist information centre	42.49

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Table 4.9: Least Cost Path to Tourist Sites (Continued from previous page)

LCP Restaurants	
	Distance (km)
Starting Point	
Bus station	25.40
Train station	32.23
Tourist information centre	22.29
LCP Shops and Supermarkets	
	Distance (km)
Starting Point	
Bus station	45.97
Train station	53.85
Tourist information centre	42.64

Source: Author's Analysis (2023)

The study investigated the fastest routes to tourist sites in the area based on the availability of hospitality facilities such as bars, cafés, hotels, restaurants, shops, and supermarkets. The results revealed that the distance of the fastest routes varied depending on the type of facility used as a cost surface.

When considering the availability of bars, the fastest route from the bus station to the tourist sites covered a distance of 20.20 km, while the fastest route between the train station and tourist sites was 27.05 km. The route from the tourist information centre to the tourist sites took a distance of 17.01 km. However, it was noted that the route did not extend to certain sites, including Blarney castle, Ballincollig regional park, gunpowder mills, and Blackrock castle observatory, due to the absence of bars in the area. For the fastest route through Cafés, the distance from the bus station to the tourist sites was 25.22 km, and the route between the train station and tourist sites was 32.38 km. Meanwhile, the fastest route from the tourist information centre to the tourist sites covered a distance of 22.23 km. It was also observed

that Blarney castle, Ballincollig regional park, and gunpowder mills were not included in the route due to the absence of Cafés in the area.

In contrast, it was revealed that the route through hotels extended to all tourist sites in the area due to the availability of hotels across the locations of the sites. It was observed that the fastest route from the bus station to the tourist sites covered a distance of 46.03 km, while the fastest route between the train station and tourist sites was 53.94 km. The route from the tourist information centre to the tourist sites took a distance of 42.49 km.

The fastest route through restaurants covered a distance of 25.40 km from the bus station to the tourist sites, while the fastest route between the train station and tourist sites was 32.23 km. The distance of the fastest route from the tourist information centre to the tourist sites was 22.29 km. Moreover, It was observed that Blarney castle, Ballincollig regional park, and gunpowder mills were not included in the route due to the absence of restaurants in the area.

Lastly, the study found that the fastest route through shops and supermarkets covered a distance of 45.97 km from the bus station to the tourist sites, while the fastest route between the train station and tourist sites was 53.85 km. The distance of the fastest route from the tourist information centre to the tourist sites was 42.64 km. The route was observed to extend to all tourist sites in the area due to the availability of these facilities across the study area. Nonetheless, it is essential to acknowledge that the hospitality facilities utilised in this study do not represent an exhaustive list and, as a result, may not accurately reflect the full range of facilities available throughout Cork city.

Furthermore, Figure 4.8 reveals the map of Cork city showing the LCP routes to the tourist sites. The results demonstrate a significant overlap in the routes leading to these sites, passing

through several hospitality facilities. Some deviations were observed in the routes to certain tourist sites, including Ballincollig Regional Park and Gunpowder Mills, Blarney Castle, and Blackrock Castle Observatory, which were situated outside the city centre. However, minimal variation was found in the routes leading to tourist sites within the city centre.

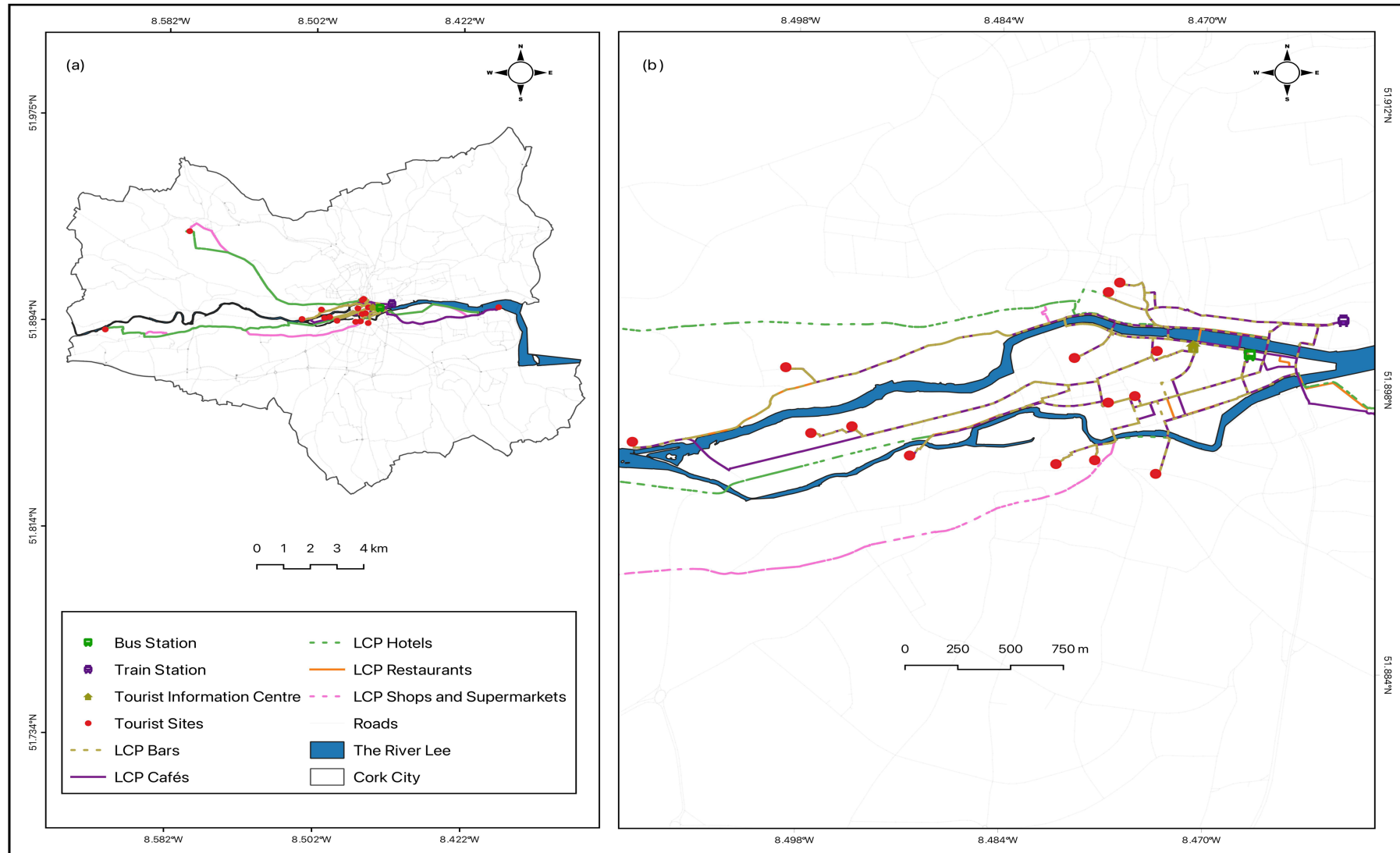


Figure 4.8: Least Cost Path to Tourist Sites Based on the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6 Route Suitability from Tourist sites to Hospitality facilities

This section shows the shortest and quickest route from the tourist sites to the hospitality facilities. Tourists in the course of visiting sites will always seek the hospitality facilities closest to these tourist sites. The OD cost matrix was used to determine the closest facilities to the sites. Subsequently, the shortest path analysis was carried out to examine the shortest and quickest routes from each of the tourist sites and the facilities. Tables and figures were used to display the results. The author selected the 10 closest facilities to each of the tourist sites (see Appendix 5-22), for a simple and clearer presentation of the result.

4.6.1 Route from Ballincollig Regional Park and Gunpowder Mills to the Facilities

The Ballincollig regional park is a magnificent 150 acre park that has numerous woodland walks and runs linearly along 2.4 kms of the River Lee, providing fine views of the river. Within the park grounds, are the very evident structures of the former Gunpowder Mills, where at one time over 600 people were employed making gunpowder. The Ballincollig area was chosen for the development of a gunpowder manufacturing facility due to the availability of a large area of flat land in the surrounding valley, the proximity to Cork City, and reliable water power. The Gunpowder mills is Ireland's largest and most important industrial archaeological site, established in 1794, with the remains of over a 100 buildings visible. In 1974, the site was bought by Cork County Council, and this facilitated the development of the highly successful Ballincollig regional park. The park offers something for everyone, with a large playground, outdoor gym, marked walking and running routes as well as pitches (Cork City Council, 2022).

The study area was examined to determine the shortest and quickest routes from Ballincollig regional park and Gunpowder mills to various facilities (see Appendix 5). The results showed that the shortest route to bars took a distance of 12.50 km, which could be covered in 18.34

minutes. Conversely, the quickest route to the bars covered a distance of 14.76 km in 12.93 minutes. Regarding Cafés, the study found that the shortest route covered a distance of 13.96 km, which would take 19.72 minutes to reach from the tourist site. In contrast, the quickest route between the site and Cafés covered a distance of 16.24 km, which could be reached in 14.13 minutes.

Moreover, the result revealed that the shortest route to hotels from the tourist site was 15.29 km, which would take 36.07 minutes to travel. Meanwhile, the quickest route covered a distance of 17.39 km and took 19.71 minutes to reach the hotels. In terms of restaurants, the study found that the shortest route covered a distance of 13.51 km, which could be reached in 25.17 minutes. However, the quickest route to restaurants covered a distance of 16.05 km and could be reached in 15.97 minutes. Additionally, the shortest route to shops as well as supermarkets covered a distance of 12.24 km, which would take 23.59 minutes to reach from the tourist site. Meanwhile, the quickest route covered a distance of 14.08 km, which could be reached in 14.20 minutes.

The map of the study area showing the shortest and quickest route to the Ballincollig regional park and Gunpowder mills from the closest facilities to the site is displayed in Figure 4.9. The findings revealed that there was a degree of overlap, as well as observable variations in the routes from the site to these facilities, particularly around the city centre. The overlapping predominately occurred on roads such as Model Farm road and Currigrohane road.

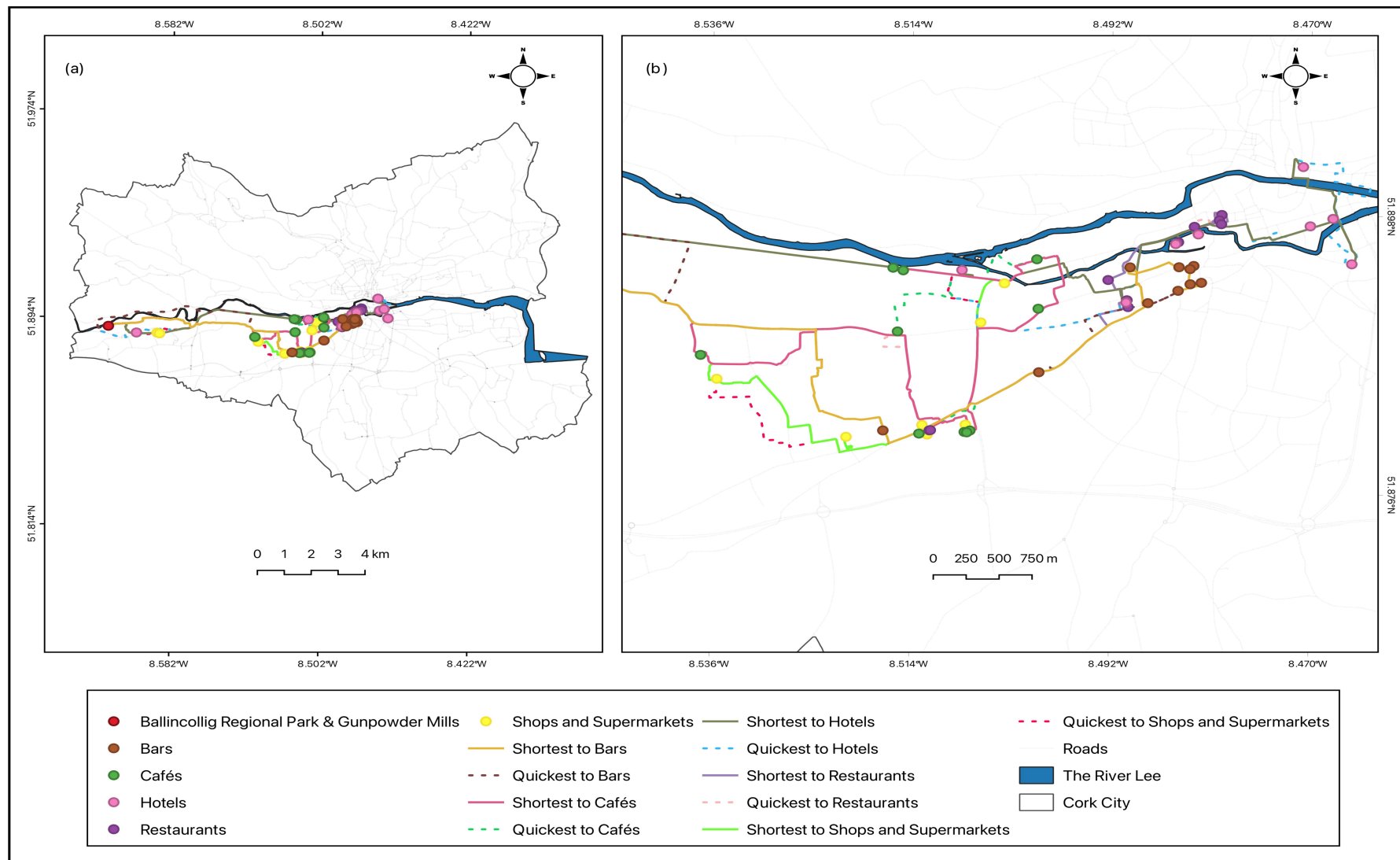


Figure 4.9: Routes from Ballincollig Regional Park and Gunpowder Mills to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.2 Route from Blackrock Castle Observatory to the Facilities

The Blackrock castle observatory was originally developed as a coastal defence fortification in the 16th century to protect upper Cork harbour and port. Housed in an historic 16th century fort with panoramic view of Cork harbour. This is now home to a research observatory and scientific centre. This observatory offers guided tours through the heart of the castle with views of various planetarium shows in which a tourist can immerse themselves in a Cosmos experience and journeys of exploration exhibits (Cork City Council, 2022).

In this study, the distance and time it takes to reach various facilities closest to the tourist site (see Appendix 6) were analysed. The shortest route to the bars from the site was found to be 6.83 km in 12.01 minutes, while the quickest route covered a distance of 6.85 km in 9.38 minutes. Similarly, the shortest route to the cafés was found to be 9.56 km in 14.57 minutes, while the quickest route covered a distance of 11.69 km in 10.34 minutes. Additionally, it was observed that the shortest route to the hotels from the tourist site takes a distance of 12.46 km in 25.35 minutes, and the quickest route covered a distance of 14.57 km in 13.93 minutes. Moreover, the shortest route to the restaurants was observed to be 9.19 km in 23.18 minutes, while the quickest route covered a distance of 14.45 km in 12.47 minutes. The shortest route to shops and supermarkets from the tourist site was found to be 10.30 km in 19.71 minutes. Meanwhile, the quickest route between the site and facilities covered a distance of 10.86 km in 14.17 minutes.

In Figure 4.10, the shortest and quickest routes from Blackrock Castle Observatory to various facilities are depicted. The results demonstrate substantial variation in the routes leading to these facilities from the site. Notably, there is some overlap in the routes to facilities located within the city centre such as Victoria road.

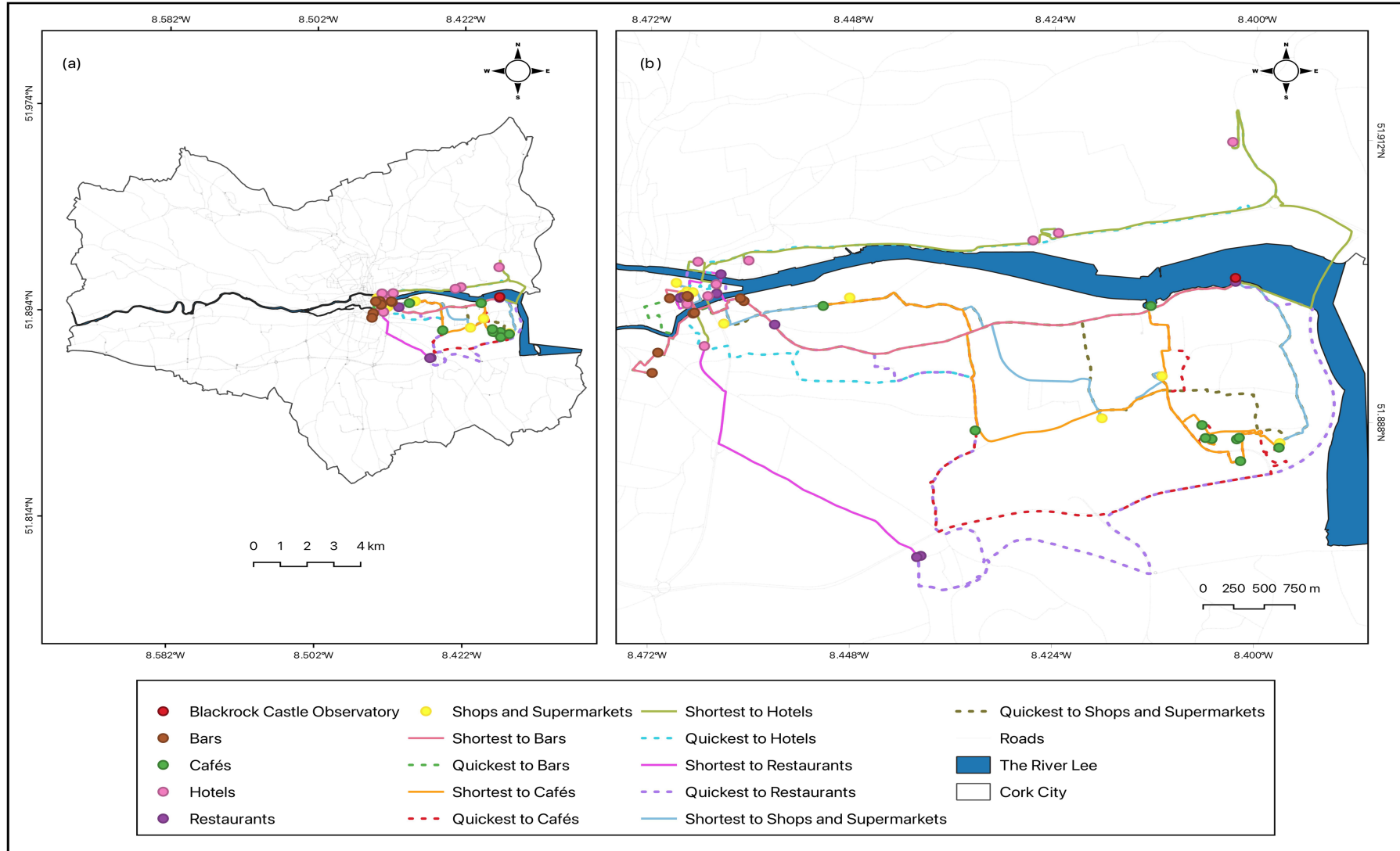


Figure 4.10: Routes from Blackrock Castle Observatory to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.3 Route from Blarney Castle to the Facilities

Built nearly six hundred years ago, Blarney castle is an historic site that is famous for its stone, which traditionally confers the gift of eloquence on all who kiss it. The site has 60 acres of gardens to explore and enjoy. The gardens features a deadly Poison garden, and Fern garden alongside an exceptional collection specimen trees. Also, features a magical rock close and numerous walks and trails (Cork City Council, 2022).

This study examined the shortest and quickest routes from the tourist site to various facilities, including bars, cafés, hotels, restaurants, as well as shops and supermarkets closest to the site (see Appendix 7). The results showed that the shortest route to the bars from the tourist site is 10.78 km, and it takes 20.41 minutes to reach, while the quickest route is 14.81 km and takes 13.23 minutes. For the Cafés, the shortest route is 13.49 km and takes 27.83 minutes, while the quickest route is 17.08 km and takes 15.69 minutes.

The shortest route to the hotels from the tourist site is 20.95 km, and it takes 45.53 minutes to reach, whereas the quickest route was 23.03 km and takes 25.39 minutes to complete. For the restaurants, the shortest route is 11.17 km, and it takes 23.60 minutes, whereas the quickest route is 14.27 km and takes 15.14 minutes. Finally, the shortest route to the shops and supermarkets is 19.79 km and takes 42.89 minutes, while the quickest route is 24.37 km and takes 25 minutes.

Subsequently, Figure 4.11 shows both the shortest and quickest route from Blarney castle to the various facilities, which revealed a distinguishable variation between the routes from the tourist site to the facilities, with some overlap on roads such as Blarney road and New Mallow road.

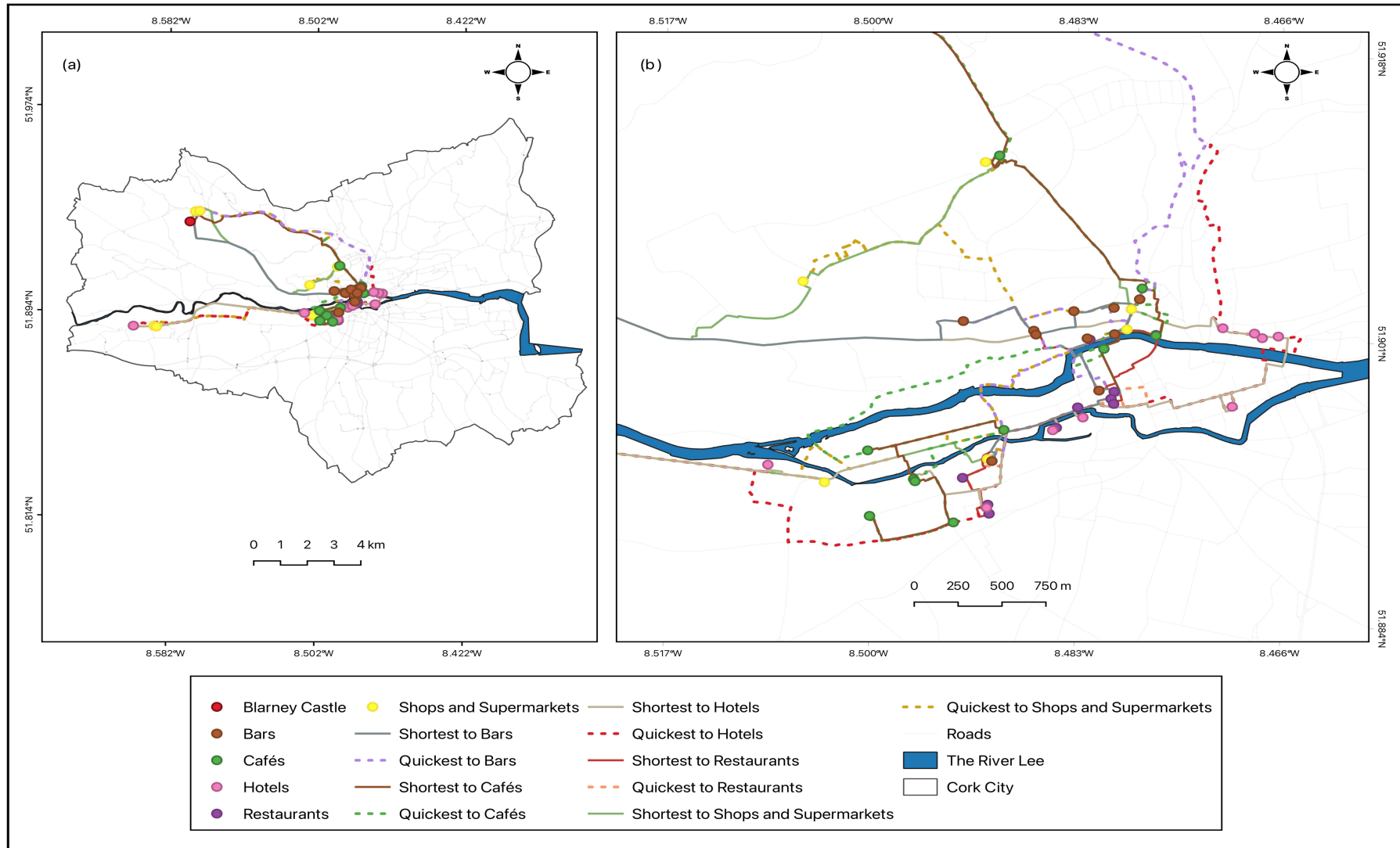


Figure 4.11: Routes from Blarney Castle to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.4 Route from the Butter Museum to Facilities

This is a unique museum for a unique food, the Irish butter. The museum documents the history of butter production and sale in County Cork. It is housed in what was formerly the Cork Butter market. Cork was one of the largest exporters of butter in the world in the 19th century. The exhibitions presented at the museum are intended to provide the visitor with information about the various elements of butter production, from dairy cattle farming, to the documents and artifacts relating to the commercial butter trade (Cork City Council, 2022).

The shortest and quickest routes between the tourist site and facilities such as bars, cafés, hotels, restaurants, as well as shops and supermarkets closest to the site (see Appendix 8) was investigated. The results showed that the shortest route from the tourist site to the bars is 2.23 km, which takes 8.94 minutes. In contrast, the quickest route is 2.74 km, which takes 3.30 minutes. Similarly, the shortest route to the cafés is 2.27 km, taking 9.60 minutes, while the quickest route is 3.28 km, taking 3.98 minutes.

The shortest route to the hotels is 3.59 km, taking 14.61 minutes, while the quickest route is 5.42 km, taking 8.40 minutes. For the restaurants, the shortest route is 2.16 km, taking 8.48 minutes, and the quickest route is 2.78 km, taking 3.60 minutes. Furthermore, the study found that the shortest route to shops and supermarkets is 1.62 km, taking 4.12 minutes, whereas the quickest route is 2.28 km, taking 2.67 minutes.

Meanwhile, Figure 4.12 shows the shortest and quickest routes from the Butter museum to the various facilities. The results showed there was a significant overlap between the routes to the facilities, particularly on roads like Church Street, Dominick Street, North Main Street, and Shandon Street. Nevertheless, the routes leading to hotels, which were located farther from the site, exhibited a noticeable variation in their paths.

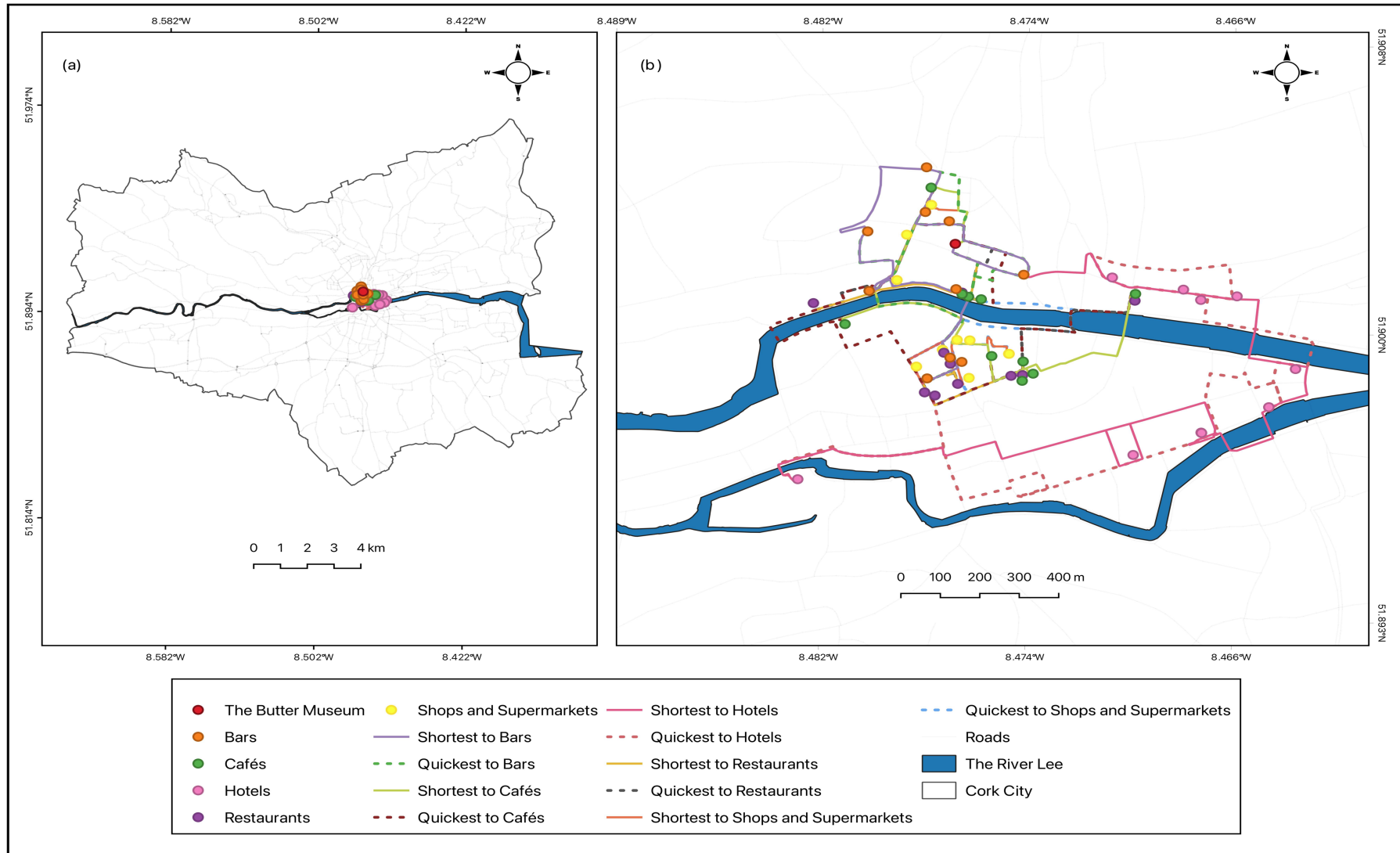


Figure 4.12: Routes from the Butter Museum to Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.5 Route from Cork City Gaol to the Facilities

The Cork city gaol with its castle like exterior is a restored prison furnished with life-sized wax figures, fascinating sound effects and exhibitions that tells the social history as well as the contrasting lifestyles of 19th century Cork, and why some people turned to crime. The prison opened in the 1820s and closed in 1923. The building was reopened to the public as a tourist site in 1993 (Cork City Council, 2022).

In examining the various routes from the tourist site to multiple facilities nearest the site (see Appendix 9), several key findings were uncovered. The shortest distance to bars was found to be 4.59 km, taking approximately 10.07 minutes, while the quickest route spanned 5.55 km but only required 6.90 minutes. Similarly, the shortest route to cafés measured 5.06 km with an estimated travel time of 11.86 minutes, compared to the fastest route which extended 6.53 km but took a mere 7.47 minutes. When considering the routes to hotels, the shortest distance was 7.71 km, requiring 21.84 minutes to complete, whereas the quickest route measured 8.90 km and took 12.21 minutes. For restaurants, the shortest route covered 4.47 km in 13.06 minutes, while the fastest option spanned 6.26 km and was completed in 7.99 minutes. Finally, the shortest distance to shops and supermarkets amounted to 6.78 km with a travel time of 20.44 minutes, while the most time-efficient route covered 8.85 km in 11.95 minutes.

A visual representation of the shortest and quickest routes from Cork city gaol to each of the aforementioned facilities can be found in Figure 4.13, which showed that the routes to these facilities are particularly different with limited overlap between them.

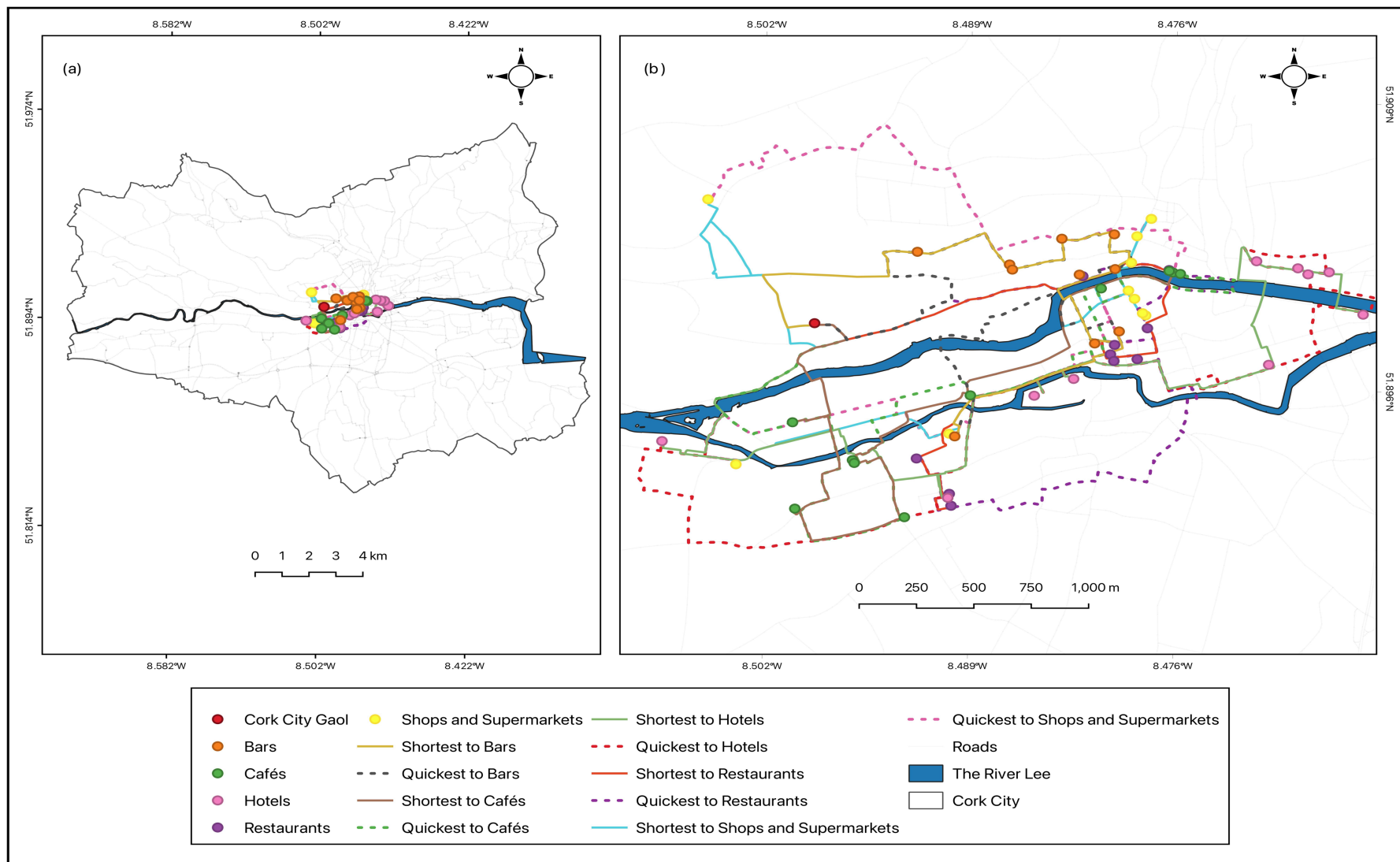


Figure 4.13: Routes from Cork City Gaol to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.6 Route from Cork Public Museum and Fitzgerald's Park to the Facilities

Cork public museum is housed in a mid-19th century building and has exhibited Cork's rich and diverse heritage since 1945. This includes archaeological exhibits that trace over 7,000 years of human settlement in Cork. The museum is located inside Fitzgerald's park. This is a beautiful 18 acre park adjoining the River Lee and equally a tourist site. It has walkways, an ornamental pond, a high quality inclusive playground, a lawn area with performance pavilion, an award winning sky Garden, and a sculpture trail (Cork City Council, 2022). For the reason that Cork Public Museum is located inside the Park, the shortest and quickest routes to both sites were investigated.

An analysis of the various routes between the tourist sites and facilities in close proximity to the sites (see Appendix 10-11) revealed that the shortest distance to bars from Cork Public Museum measured 3.20 km in a time of 9.82 minutes, while the shortest route to Fitzgerald's Park covered 3.40 km, taking 10.23 minutes. In contrast, the quickest route to bars covered 4.20 km in 4.92 minutes, meanwhile the fastest route to Fitzgerald's Park extended 4.39 km and required 5.34 minutes to complete.

Regarding the routes to cafés, the shortest distance from Cork Public Museum was found to be 4.81 km, taking 12.16 minutes, while the shortest route to Fitzgerald's Park measured 4.67 km, with an estimated travel time of 11.87 minutes. Conversely, the fastest route to cafés spanned 5.26 km, taking only 6.69 minutes, while the quickest route to Fitzgerald's Park covered 5.04 km and required 6.55 minutes.

In terms of the routes to hotels, the shortest distance from Cork Public Museum amounted to 7.33 km, taking 20.92 minutes, while the shortest route to Fitzgerald's Park covered 7.18 km and required 20.15 minutes. However, the most time-efficient route to hotels spanned

8.88 km and took 12.36 minutes, while the quickest route to Fitzgerald's Park extended 8.67 km and required 12.22 minutes.

For restaurants, the shortest route from Cork Public Museum measured 3.46 km with a travel time of 8.83 minutes, while the shortest route to Fitzgerald's Park spanned 3.56 km, taking approximately 10 minutes. The fastest route to restaurants covered 4 km in 7.51 minutes, while the quickest route to Fitzgerald's Park extended 4.31 km and required 7.66 minutes.

Finally, the shortest distance to shops and supermarkets from Cork Public Museum was found to be 5.18 km, taking 12.84 minutes, while the shortest route to Fitzgerald's Park measured 7.28 km, requiring 17.22 minutes. The quickest route to shops and supermarkets spanned 6.86 km and took 7.31 minutes, while the fastest route to Fitzgerald's Park covered 9.34 km, taking approximately 11 minutes. The results also indicated that the closest facilities to the tourist sites were the same for all facilities, except for shops and supermarkets.

Figure 4.14, provides a visual representation of the shortest and quickest routes from Cork Public Museum and Fitzgerald's Park to the various facilities. The results indicate that the most direct and efficient routes from both sites are predominantly the same for all facilities, with the exception of shops and supermarkets, where one facility stands out. Additionally, there is a distinguishable variation between the routes to the tourist sites, with some overlap occurring on streets such as Washington Street, Western Road, and Donovan Road.

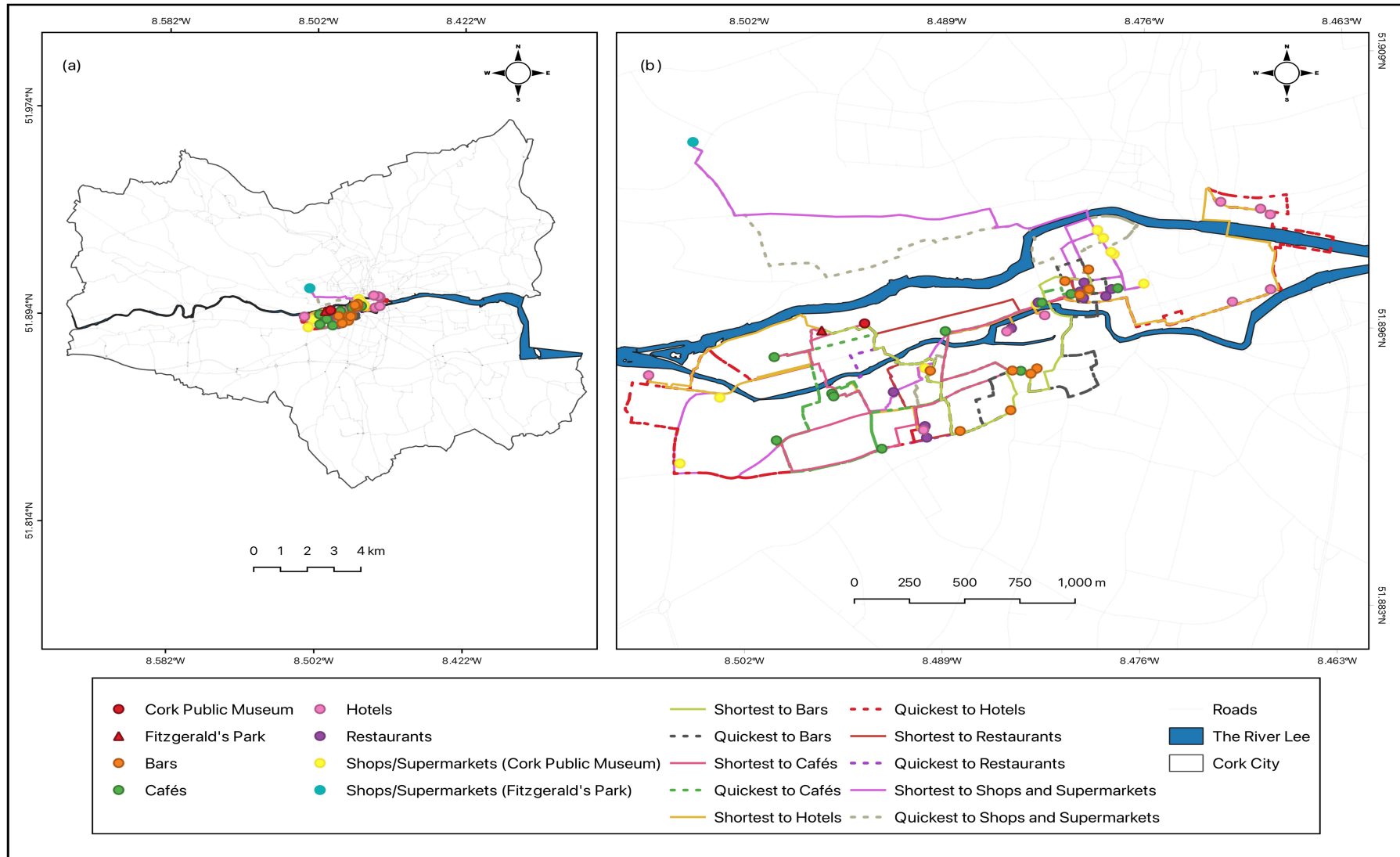


Figure 4.14: Routes from Cork Public Museum and Fitzgerald's Park to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.7 Route from Crawford Art Gallery to the Facilities

Crawford Art gallery's historic building provides an oasis of calm and tranquillity in the heart of Cork city. The gallery holds an expansive national collection of over 3,000 works featuring sculptures, paintings and watercolours, through to contemporary video installations. As well as, three centuries of Irish Art. The gallery also hosts numerous temporary exhibitions by contemporary national and international artists (Cork City Council, 2022).

The routes from the tourist site to the facilities (see Appendix 12) were analysed. The shortest distance to bars was found to be 1.37 km, with an approximate travel time of 3 minutes, while the quickest route spanned 1.49 km but only required 2.24 minutes. In terms of the routes to cafés, the shortest distance from the tourist site measured 1.08 km and took 2.75 minutes, whereas the fastest route covered a nearly identical distance of 1.09 km but took a time of 1.69 minutes. When considering the routes to hotels, the shortest route extended to 3.68 km and required 16.67 minutes, while the quickest route spanned 4.79 km and took about 7.84 minutes. For restaurants, the shortest route from the tourist site measured 0.65 km with a travel time of 1.16 minutes. However, the fastest route covered a slightly longer distance of 0.66 km and took marginally less time at 1.10 minutes. The shortest distance to shops and supermarkets from the tourist site was found to be 0.70 km, taking 1.23 minutes, whereas the most time-efficient route covered a similar distance of 0.71 km in only 1.18 minutes.

Furthermore, the shortest and quickest routes from Crawford Art gallery to the facilities is presented in Figure 4.15. The results demonstrate that the routes to these facilities exhibit significant overlap, primarily on streets like Half Moon Street, Drawbridge Street, and Emmett Place. However, a noticeable variation can be observed in the routes leading to hotels.

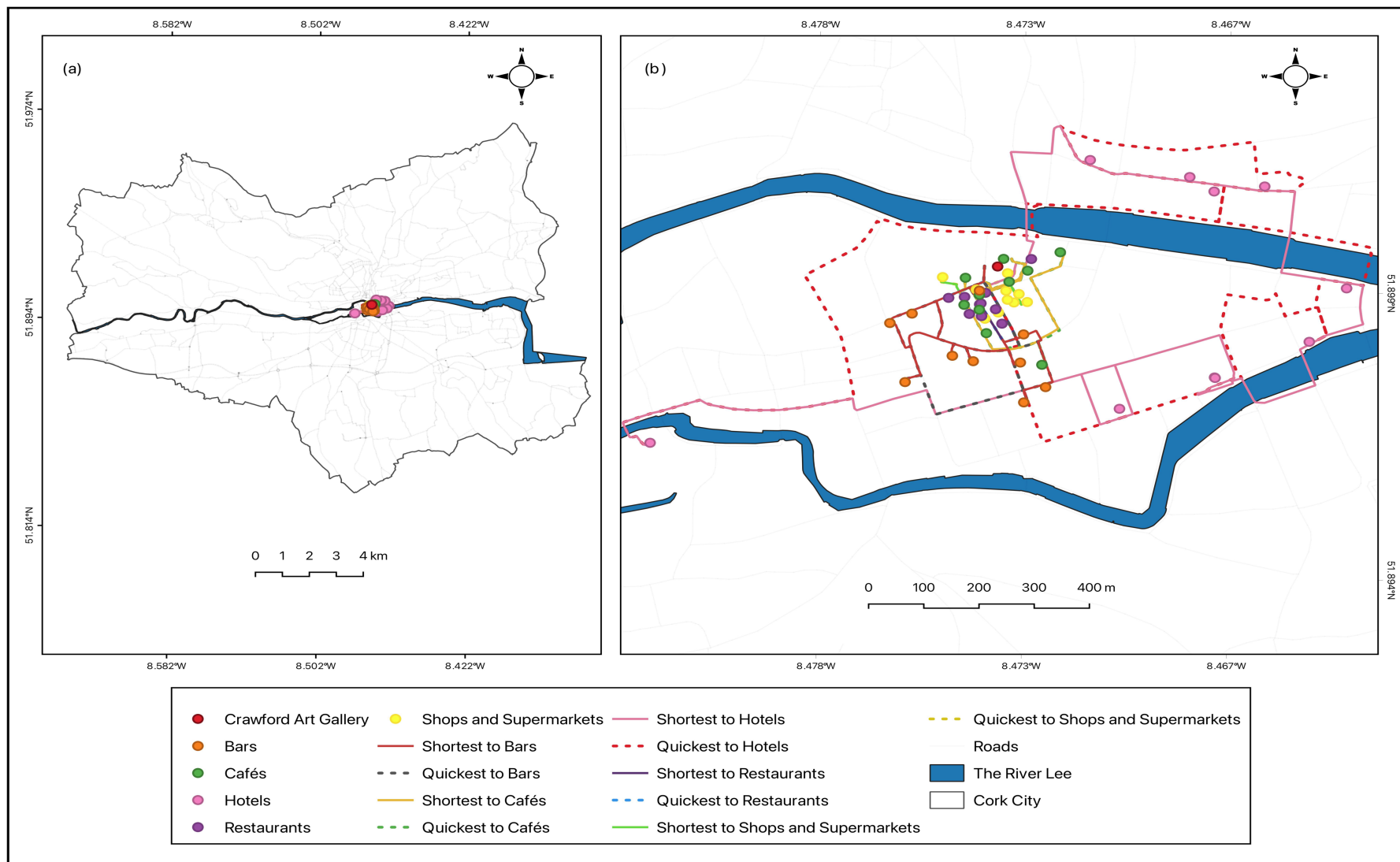


Figure 4.15: Routes from Crawford Art Gallery to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.8 Route from Elizabeth Fort to the Facilities

Built in the aftermath of the battle of Kinsale in the 17th-century, Elizabeth Fort has watched over Cork for over 400 years. Ever since, the star shaped fort has been a military barracks, a convict prison for the transport of female prisoners, a food depot during the famine and a Royal Irish Constabulary station (Cork City Council, 2022).

The distance and time taken to reach the tourist site from the facilities closest to the site (see Appendix 13) were assessed. The result showed that the shortest distance to bars from the tourist site was found to be 2.84 km, with a travel time of 7.04 minutes, whereas the quickest route spanned 3.72 km but only required 4.04 minutes. Pertaining to cafés, the shortest route from the tourist site covered a distance of 3.40 km, taking 13.27 minutes. Meanwhile, the fastest route extended 5.08 km and took merely 6.18 minutes. For hotels, the shortest route measured approximately 6 km with a travel time of 23.25 minutes, while the quickest route spanned 7.44 km and required 10.88 minutes. The shortest route from the tourist site to the restaurants measured 2.93 km and took 8.25 minutes. However, the fastest route covered a slightly longer distance of 3.26 km and took only 6.54 minutes. Finally, the shortest distance to shops and supermarkets from the tourist site was found to be 2.47 km, taking 10.54 minutes, while the most time-efficient route spanned 3.26 km and required only 4.50 minutes.

A depiction of the shortest and quickest routes from Elizabeth Fort to the various facilities can be found in Figure 4.16. The illustration indicates that the routes to these facilities exhibit substantial overlap, particularly on roads near the tourist site, such as Douglas Street, Barrack Street, Bishop Street, and Fort Street.

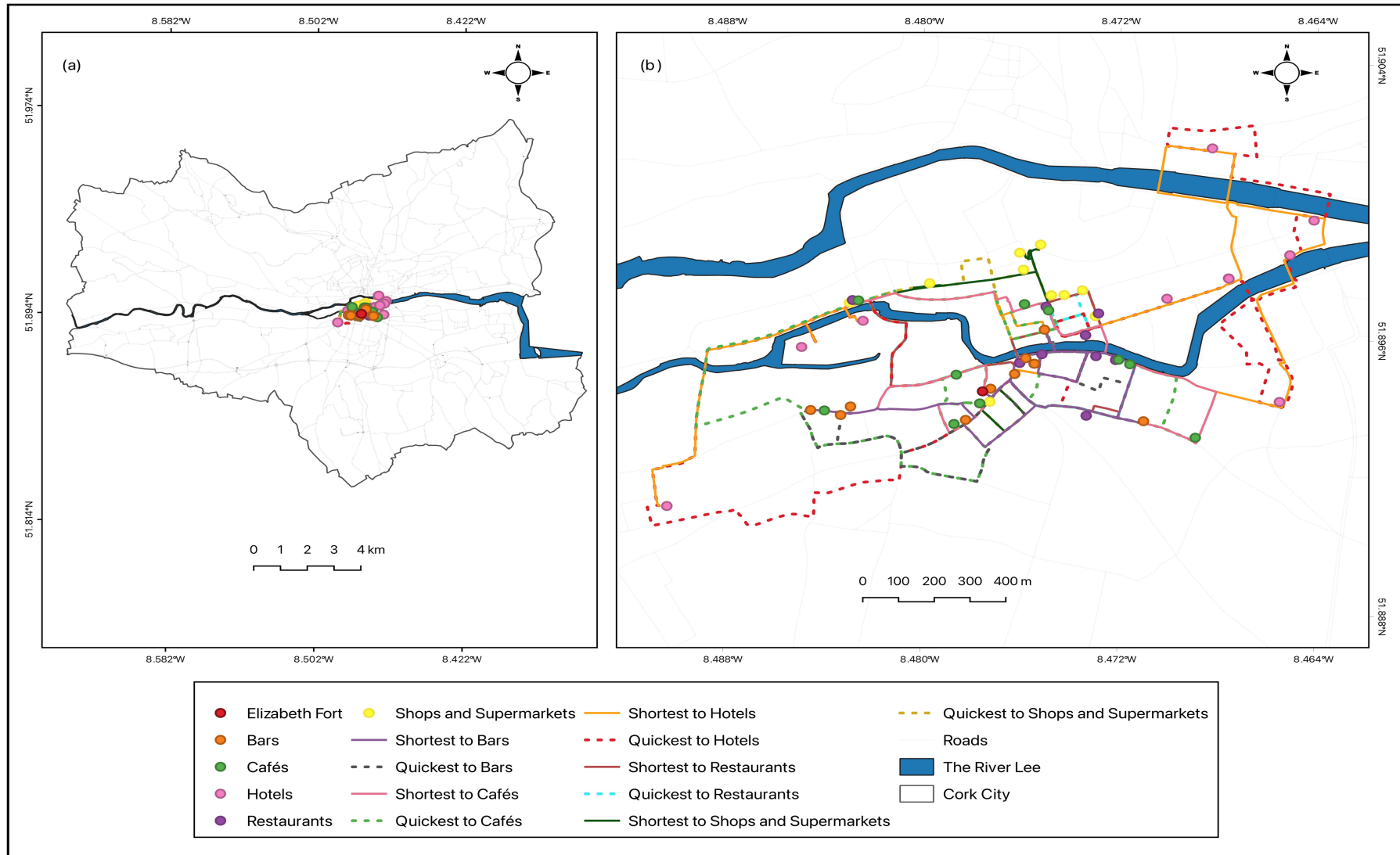


Figure 4.16: Routes from Elizabeth Fort to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.9 Route from the English Market to Facilities

The iconic English Market is situated in the heart of Cork City. A covered food market, it has been trading since 1788 and is one of the oldest municipal markets in the world. Renowned for the quality and range of produce, from local fish and seafood to European delicacies as well as farm to fork fare and award-winning producers. The stallholders, the produce and the atmosphere make this a unique shopping destination (Cork City Council, 2022).

This study investigated the routes between the various facilities (see Appendix 14) and the tourist site to several facilities revealed significant insights. The shortest distance to bars from the tourist site measured 1.26 km, with a travel time of 4.61 minutes, while the most efficient route spanned 1.36 km but only required 1.62 minutes. Regarding the cafés, it was observed that the shortest route from the site covered a distance of 1.34 km, taking 5.97 minutes. However, the fastest route extended 1.96 km and took a mere 2.72 minutes. The most direct route to the hotels measured approximately 4.36 km with a travel time of 19.32 minutes, while the most time-effective route spanned 5.16 km and required around 9 minutes. Interestingly, both the shortest and quickest routes to restaurants from the tourist site covered an identical distance of 1.76 km, taking a time of 6.46 minutes, which indicates no difference between the two routes from the restaurants to the English Market. In the case of shops and supermarkets, the shortest distance from the tourist site was found to be 1.06 km, taking 4.41 minutes, while the most expedient route covered 1.54 km and required only 1.87 minutes.

The map of the study area showing the shortest and most efficient routes from the English Market to various facilities is shown in Figure 4.17. The results showed a significant overlap of the majority of routes leading to facilities from the tourist site.

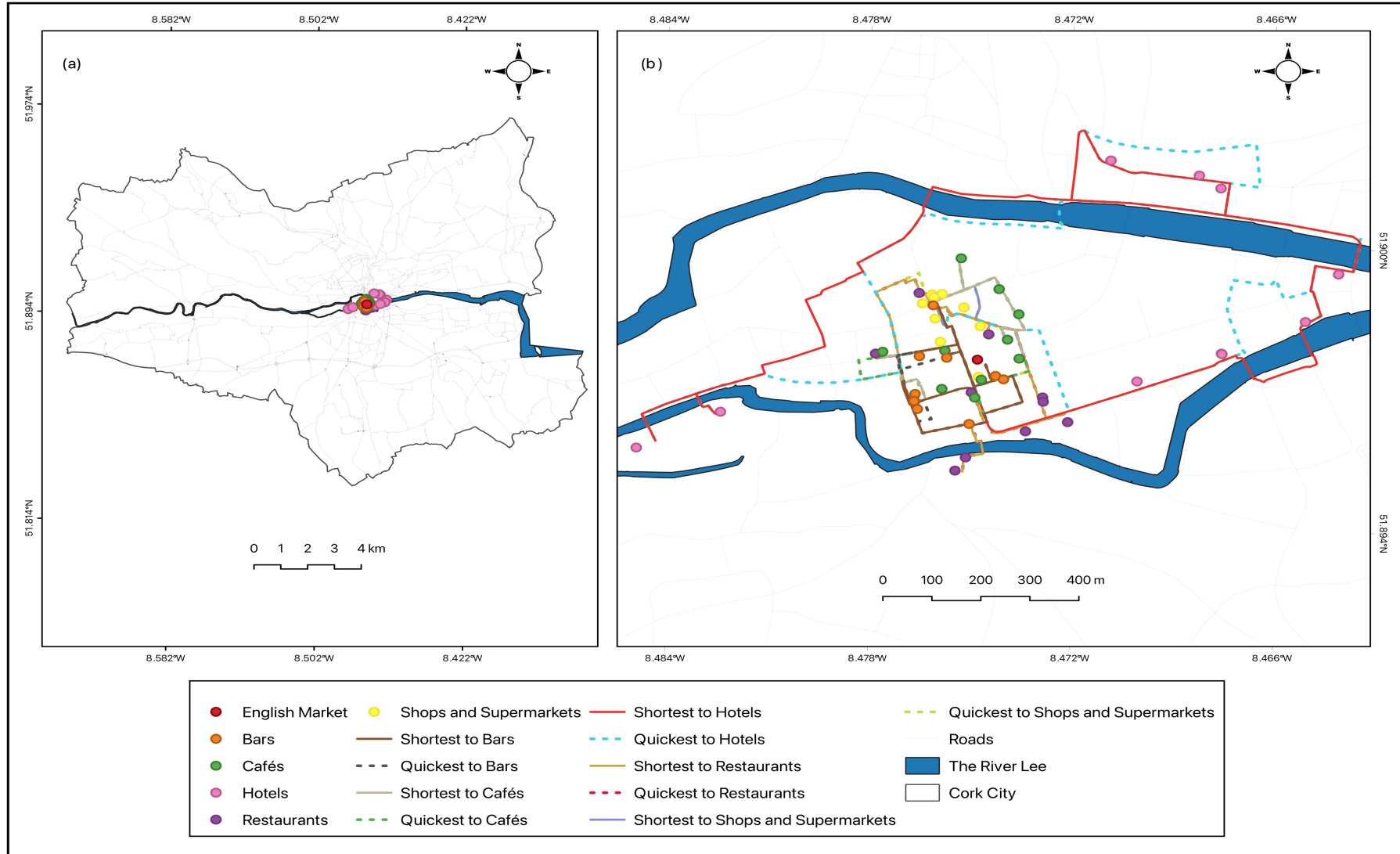


Figure 4.17: Routes from the English Market to Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.10 Route from Glucksman Gallery to the Facilities

The award-winning building is located within the historic grounds of University College Cork. The Glucksman gallery is a cultural and educational institution that promotes the research, creation and exploration of the visual arts. It was named in 2007 as one of the 1001 buildings you must see before you die, the gallery is a hive of cultural activity that includes exhibitions, talks, creative workshops, art courses and gallery shop (Cork City Council, 2022).

The analysis of routes from the tourist site to multiple facilities (see Appendix 15) was carried out, which revealed that the shortest distance to bars from the tourist site measured 2.94 km, with a travel time of 10.17 minutes, while the most efficient route spanned 3.97 km, requiring only 4.35 minutes. Although, the shortest route from the tourist site to the cafés covered a distance of 4.29 km and took 13.39 minutes. In contrast, the fastest route extended 5.99 km and took a mere 7.56 minutes. For hotels, the most direct route measured approximately 7.44 km with a travel time of around 22 minutes, while the most time-effective route spanned 9.25 km and required around 12 minutes. In terms of restaurants, the shortest distance from the tourist site was found to be 3.15 km, taking 8.31 minutes, while the most expedient route spanned 3.85 km and required only 7.31 minutes. As for shops and supermarkets, the shortest route from the tourist site measured 5.29 km, with a travel time of 16.34 minutes, while the quickest route extended 7.64 km but took just 7.90 minutes.

Figure 4.18, offers a comprehensive visual depiction of the shortest and quickest routes from Glucksman Gallery to the various facilities. The results revealed variations in the routes to the facilities, with some overlapping on roads such as Grande Parade, Washington street, and Donovan road.

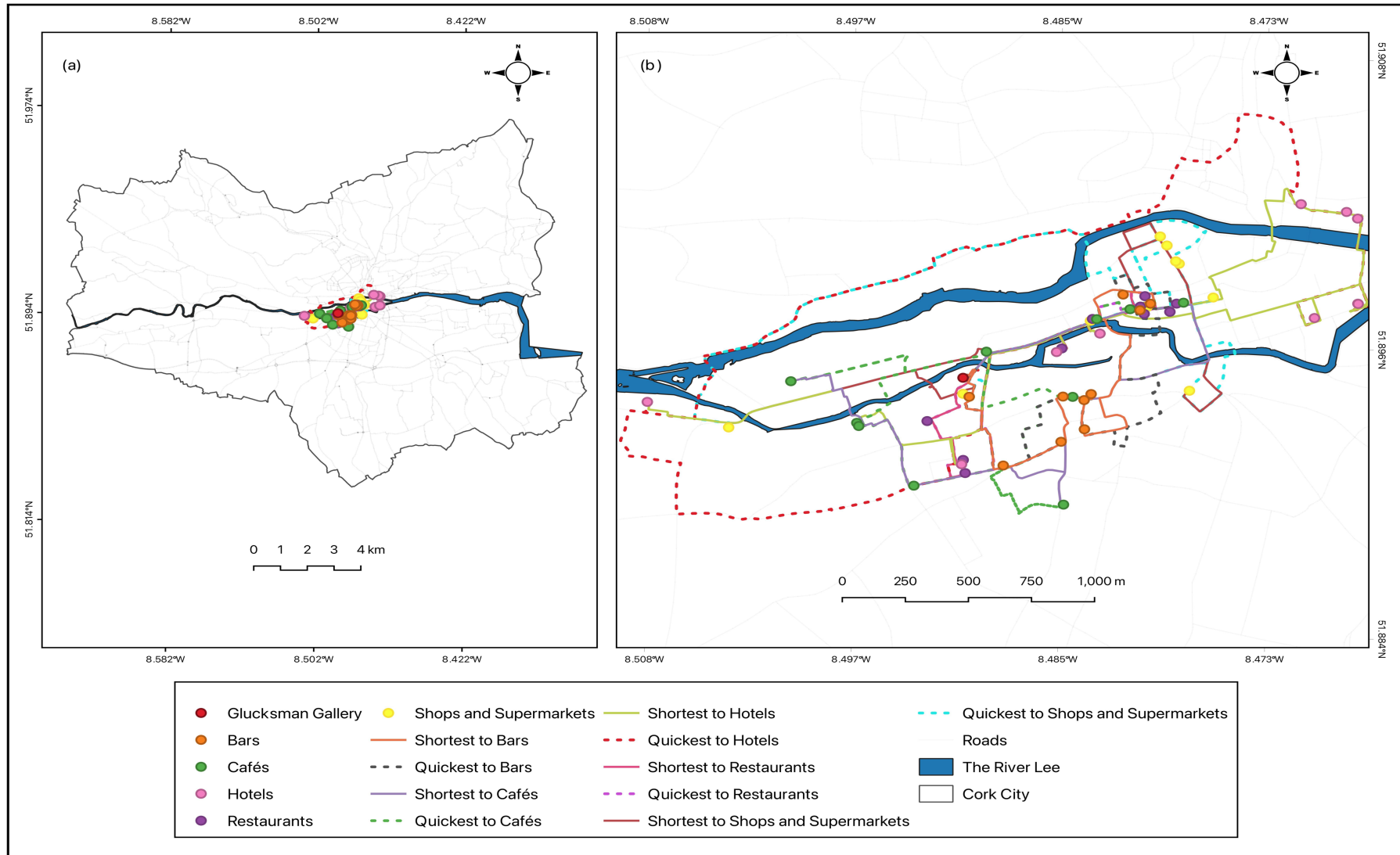


Figure 4.18: Routes from Glucksman Gallery to Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.11 Route from Nano Nagle Place to the Facilities

The Nano Nagle place is a unique oasis in the heart of Cork City, with an engaging museum that celebrates the story of daring Nano Nagle, set against the backdrop of wealth and poverty in 1700's Cork. It also houses walled gardens, a design shop, and Cork focused book shop. The regenerated convent buildings are home to educational projects (Cork City Council, 2022).

A comprehensive analysis of the routes from the Nano Nagle Place to different facilities (see Appendix 16), provided the following results. For bars, the shortest distance from the tourist site measured 2.48 km with a travel time of 7.86 minutes, while the fastest route spanned approximately 3 km and took 5.40 minutes. In relation to cafés, the most direct route from the tourist site covered a distance of about 2 km and required 6.49 minutes, whereas the quickest route extended to 3.87 km and necessitated 5.53 minutes. For hotels, the shortest route from the tourist site measured 4.48 km with a travel time of 20.28 minutes, while the most time-efficient route spanned 5.90 km and took only 9.18 minutes. When considering restaurants, the shortest distance from the tourist site was revealed to be 1.32 km, taking 3.97 minutes, while the most quickest route covered 1.56 km and required 3.04 minutes. For shops and supermarkets, the shortest route from the tourist site measured 1.11 km with a travel time of 3.57 minutes, while the fastest route extended 1.73 km and took a mere 2.54 minutes.

A clear depiction of the shortest and most efficient routes from Nano Nagle Place to various facilities is provided in Figure 4.19. The results display overlapping routes to facilities nearest the tourist site, mainly along Douglas Street and South Mall. However, there is an observable variation in the routes leading to hotels.

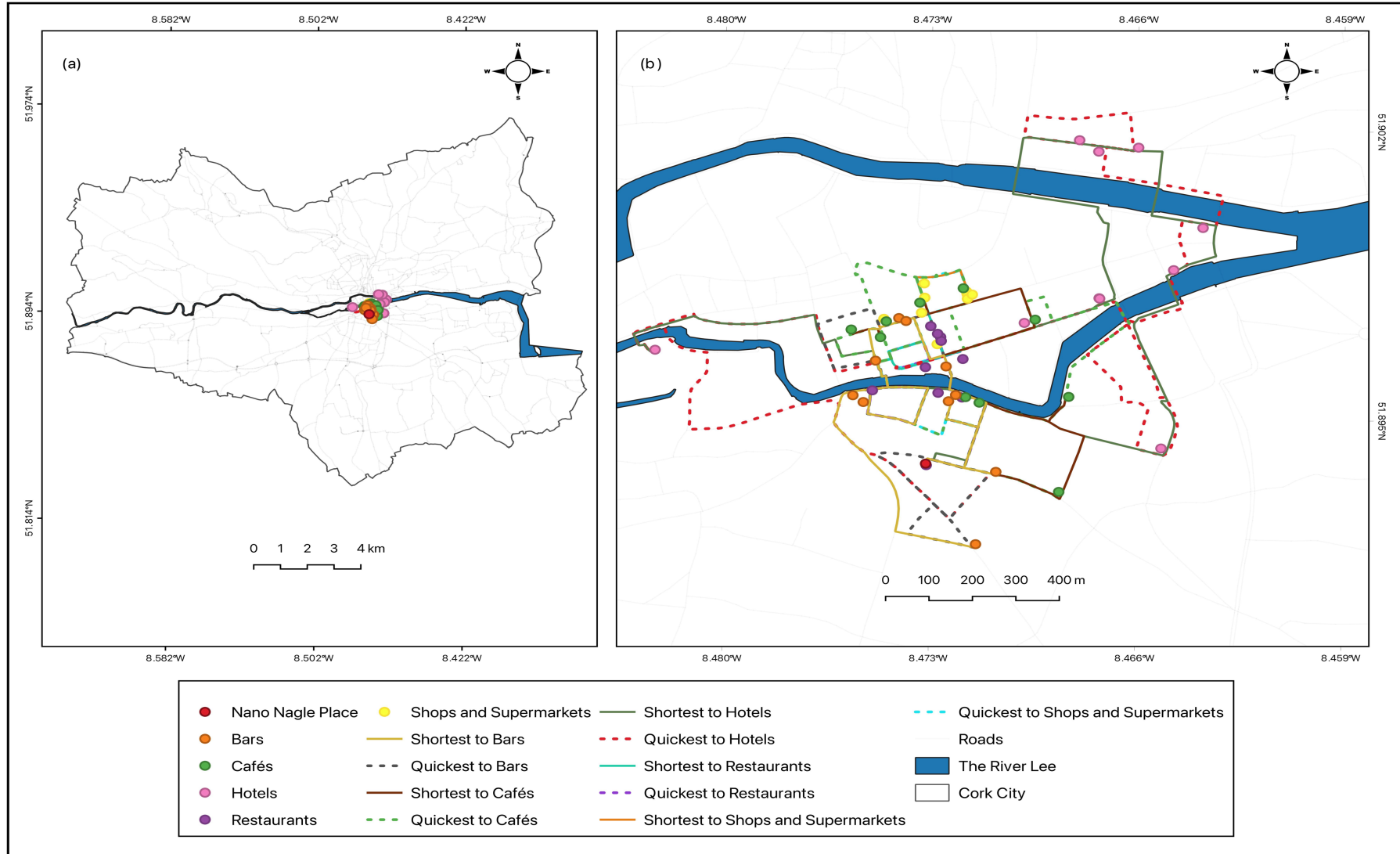


Figure 4.19: Routes from Nano Nagle Place to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.12 Route from Old Cork Waterworks Experience to the Facilities

Built to serve an empire during a time of rebellion, maritime trade and mass emigration, Old Cork Waterworks stands proud on the Cork hillside overlooking the River Lee. The experience promotes the stories of Cork's Victorian waterworks, while exploring the former boiler and engines houses. The site provides an interactive exhibition which allows tourists to become a waterworks worker to journey through and unravel centuries of industrial heritage (Cork City Council, 2022).

The study examined various routes from the tourist site to facilities nearest to the site (see Appendix 17), yielding the following insights. In respect to bars, the shortest route from the tourist site covered a distance of 6.92 km and took 12.62 minutes, while the most efficient route spanned 8.40 km and required 8.67 minutes to complete. Regarding to cafés, the most direct route from the tourist site measured 6.95 km with a travel time of 11.30 minutes, while the quickest route extended 7.30 km and took 7.77 minutes. In the case of hotels, the shortest route from the tourist site covered 6.98 km in 19.41 minutes, while the fastest route reached 8.27 km and took 11.94 minutes. For restaurants, the most direct route from the tourist site spanned 5.03 km with a travel time of 9.96 minutes, whereas the most time-efficient route covered 5.33 km and required 8.32 minutes. Meanwhile, for shops and supermarkets, the shortest route from the tourist site measured 8.80 km with a travel time of 22.23 minutes, while the fastest route extended 10.96 km and took 13.51 minutes.

Figure 4.20, reveals the shortest and quickest routes from Old Cork Waterworks Experience to various facilities in the area. The results indicate distinct variations between the routes leading to these facilities, with the most noticeable differences being the routes to shops and supermarkets situated furthest from the tourist site.

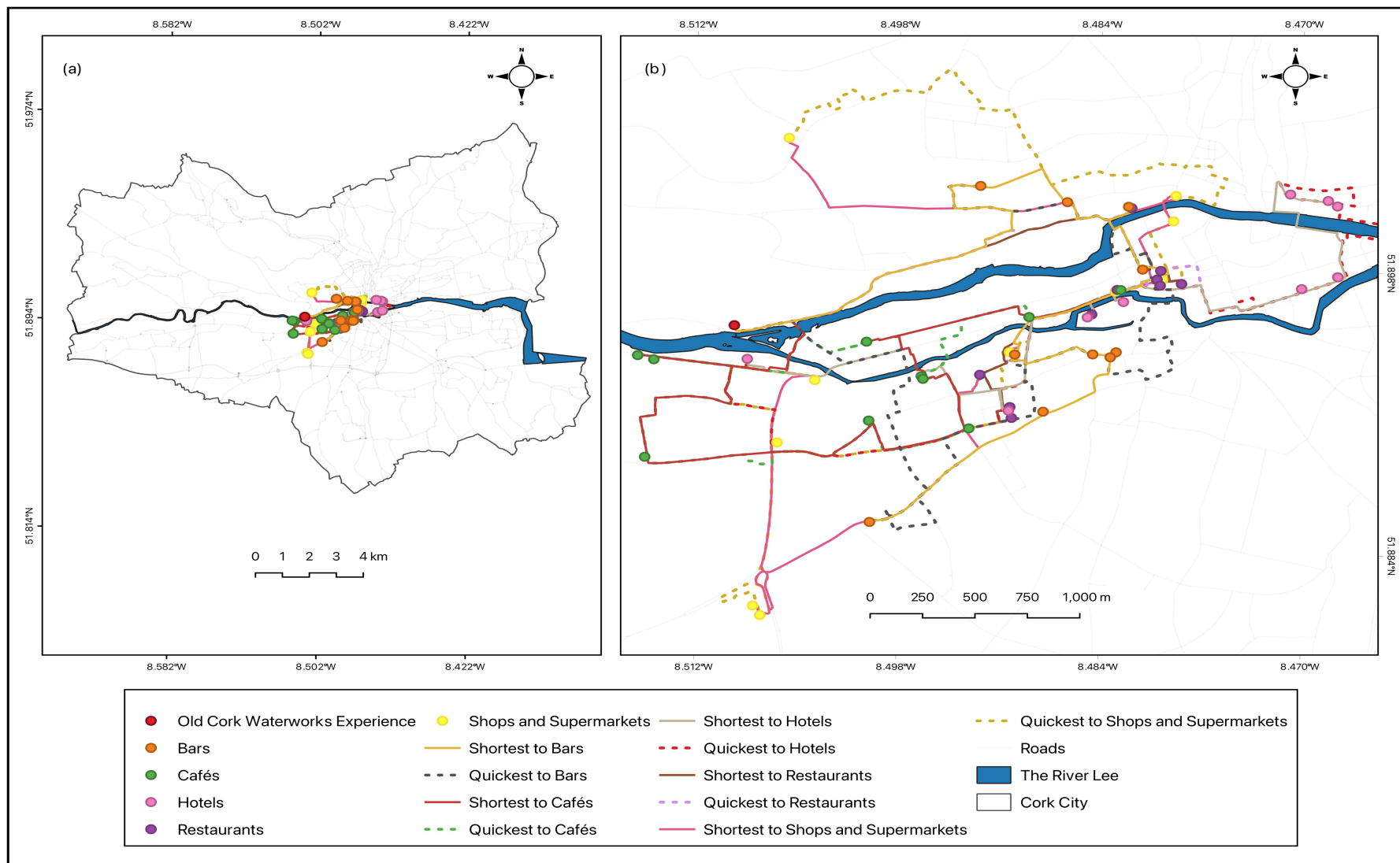


Figure 4.20: Routes from Old Cork Waterworks Experience to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.13 Route from Shandon Bells and Tower/St. Anne's Church to the Facilities

One of the city's most iconic landmarks, with its gold salmon weathervane, St Anne's Church Shandon is one of the oldest churches still in use in Cork city. Tourists visiting the Tower can ring the famous Shandon Bells, climb 132 steps then experience a spectacular view of the city at 36.6m/120ft (Cork City Council, 2022).

In this comprehensive analysis, various routes from the tourist site to different facilities (see Appendix 18) were investigated. The result revealed the shortest route between the tourist site and bars covered a distance of 2.43 km and took 10.17 minutes, while the quickest route spanned 2.94 km and required 3.56 minutes. In terms of cafés, the most direct route from the tourist site measured 2.24 km with a travel time of 9.56 minutes, while the fastest route extended 3.28 km and took 3.99 minutes. For hotels, the shortest route from the tourist site covered a distance of 3.63 km in 15.68 minutes, whereas the most efficient route reached 5.38 km and took 8.36 minutes. The most direct route from the tourist site to restaurants spanned 2.18 km with a travel time of 9.67 minutes, whereas the most time-efficient route covered 2.86 km and required 3.69 minutes. Furthermore, the shortest route from the site to shops and supermarkets measured 2.16 km with a travel time of 7.37 minutes, while the quickest route extended 2.73 km and took 4.11 minutes.

Figure 4.21, visually presents the shortest and quickest routes to the facilities from Shandon Bells and Tower/St. Anne's Church. The findings show a noticeable variation between the routes, with some overlapping occurring on North Main Street, Kyle Street, Kyril's Quay, and Lavitt's Quay. The most significant variations were observed in the routes leading to hotels.

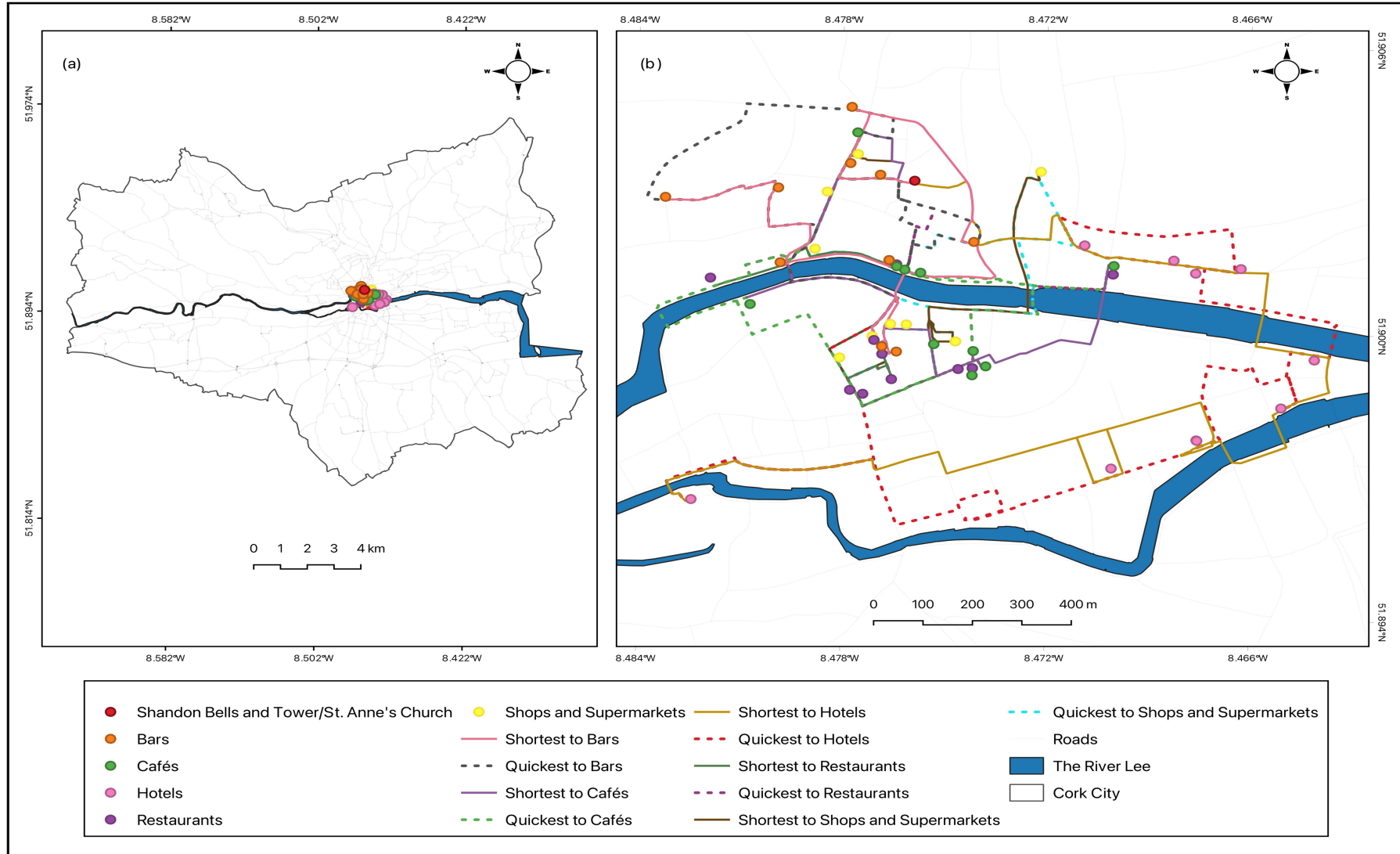


Figure 4.21: Routes from Shandon Bells and Tower/St. Anne's Church to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.14 Route from St. Fin Barre's Cathedral to the Facilities

Standing on the site of several earlier cathedrals dating back to 606AD, St Fin Barre's is a 19th century Gothic Revival masterpiece. Tourists are immersed in a rich experience of over 1,100 carvings, unique stained-glass windows, marbled walls, frescoes, wood carvings, brass fittings and intricate floor mosaics alongside the historic cathedral organ in a 'pit' as well as a cannon ball fired at the cathedral in 1690 (Cork City Council, 2022).

This study assessed the varying routes from the tourist site to different facilities nearest the site (see Appendix 19). For bars, the shortest route covered a distance of 1.49 km and took 6.38 minutes, while the quickest route spanned 2.89 km, taking 2.94 minutes. Meanwhile, the most direct route between the cafés and tourist site measured 3.81 km in length and required 15.52 minutes, while the fastest route extended 6.38 km and took 7.61 minutes. For hotels, the shortest route from the tourist site covered a distance of approximately 6 km in 25.26 minutes, whereas the most time-efficient route reached 8.17 km and took 11.73 minutes. In terms of restaurants, the most direct route from the tourist site spanned roughly 3 km, taking 9.22 minutes, while the quickest route covered 3.75 km and required 6.41 minutes. As for shops and supermarkets, the shortest route from the tourist site measured 3.33 km and took 10.68 minutes, while the quickest route extended 4.39 km and required 5.81 minutes.

Moreover, the shortest and quickest routes from St. Fin Barre's Cathedral to the different facilities are shown in Figure 4.22. The analysis revealed that there is an overlap between the shortest and quickest routes to most facilities, with the exception of hotels located farthest from the site, which exhibited significant variation. This overlap primarily occurs on roads nearest to the tourist site, such as Bishop street and Fort street, as well as on popular thoroughfares like Washington street.

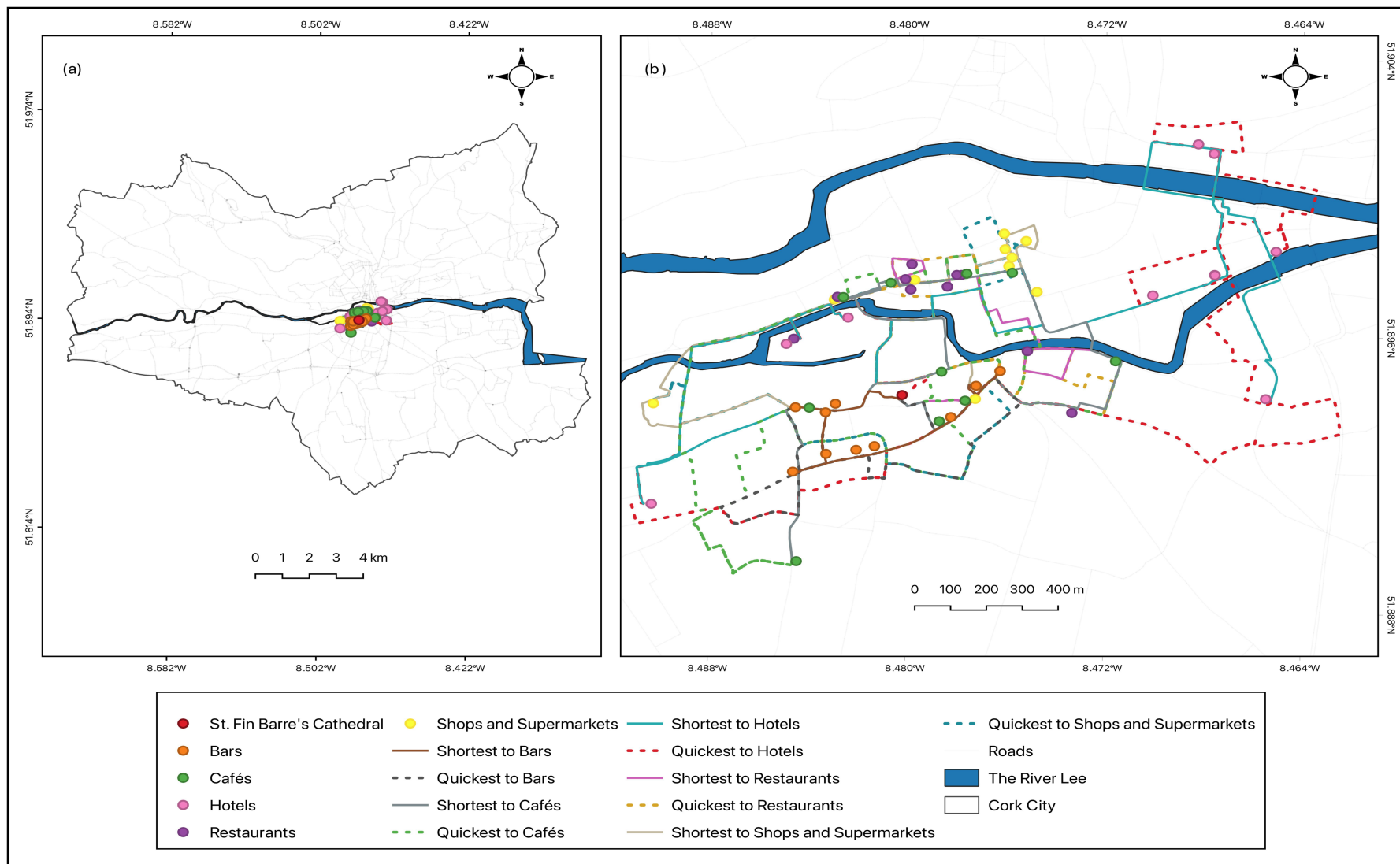


Figure 4.22: Routes from St. Fin Barre's Cathedral to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.15 Route from St. Peter's Cork to the Facilities

Every great city has its old town and in Cork, this is the North Main Street. St. Peter's Cork is the highlight of the old town, and an integral part of Cork's history. This deconsecrated church has been beautifully restored and designed with a contemporary and tasteful style. St Peter's has an innovative cultural and heritage programme of events, and regularly hosts exhibitions and events (Cork City Council, 2022).

The routes from the tourist site to different facilities (see Appendix 20) were evaluated. It was observed that the shortest route from the site to bars covered a distance of 0.99 km and took 3.24 minutes, while the quickest route spanned 1.37 km, taking 1.55 minutes. In regards to cafés, the most direct route from the tourist site measured 1.98 km in length and required 9.42 minutes, while the fastest route extended 3.09 km and took 3.60 minutes. Interestingly, the shortest and quickest routes to the hotels from the tourist site were identical, both covering a distance of 4.32 km and taking 17.71 minutes. This implies no difference between the most direct and time-efficient routes from St. Peter's Cork to the nearest hotels. However, the most direct route from the tourist site to restaurants covered 1.05 km, taking a time of 1.47 minutes, whereas the quickest route covered 1.11 km and required 1.31 minutes. As for shops and supermarkets, the shortest route from the tourist site measured 1.29 km and took 1.75 minutes, while the quickest route extended 1.63 km and required 1.62 minutes.

An illustration of the shortest and quickest routes from St. Peter's Cork to the various facilities is presented in Figure 4.23. The findings indicate that both the quickest and shortest routes to these facilities pass through multiple roads. Particularly, there is minimal overlap between the routes leading to different facilities from the tourist site, primarily on roads such as North Main street and Corn Market street.

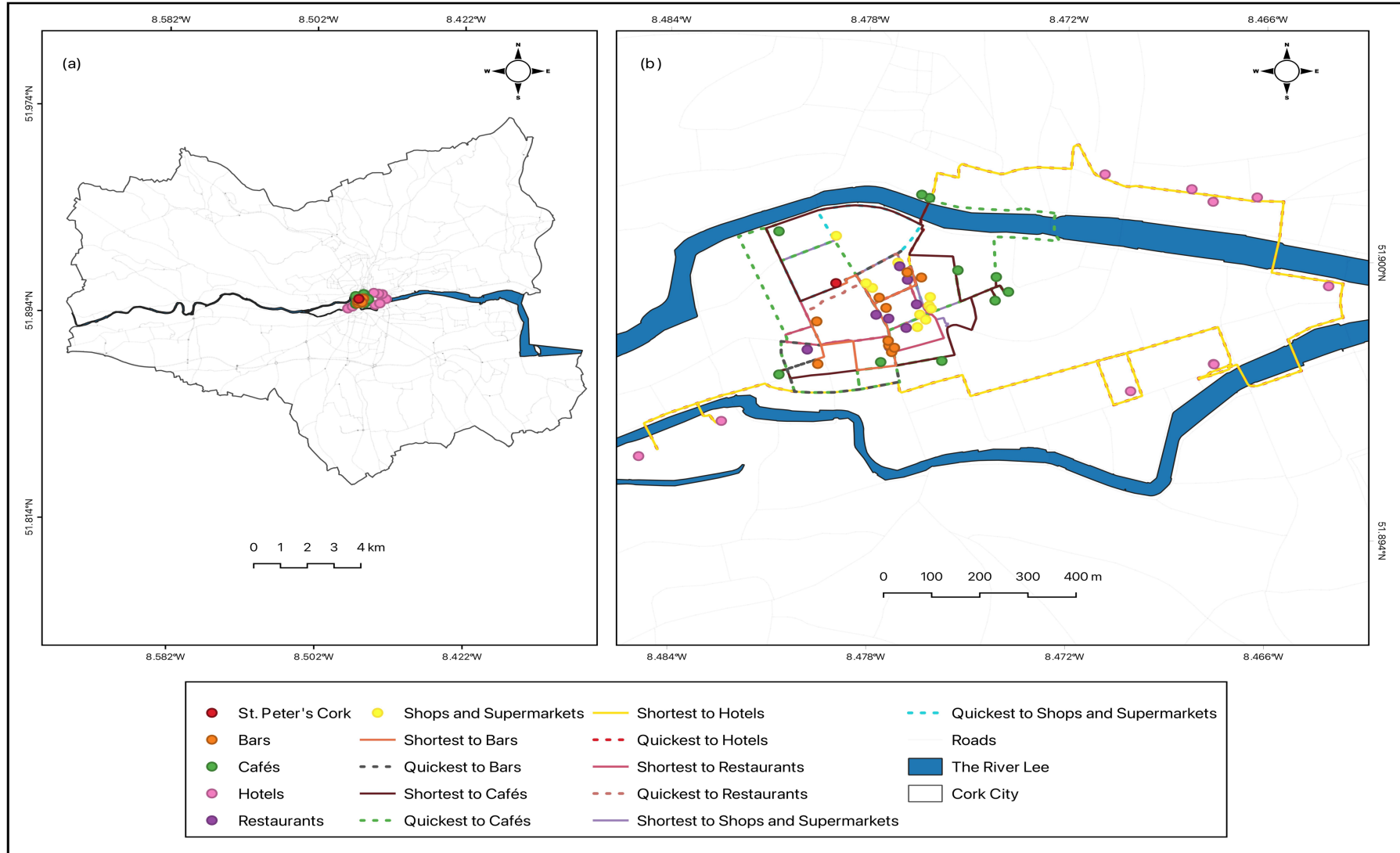


Figure 4.23: Routes from St. Peter's Cork to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

4.6.16 Route from Triskel Christchurch to the Facilities

Triskel Christchurch is a fully refurbished neoclassical Georgian Church and is over 300 years old, although there's been a church on the site since at least 1050. It was the main civic church of Cork City in the 17th Century (Cork City Council, 2022).

In this analysis, the routes from the tourist site to various facilities in proximity to the site (see Appendix 20) were examined. The result showed the following findings. For bars, the shortest route covered a distance of 0.70 km and took 2.85 minutes, while the quickest route covered 0.97 km, in 1.13 minutes. The shortest route from the tourist site to cafés was 2.22 km in distance and required a time of 6.89 minutes, while the fastest route extended 3.48 km and took 3.77 minutes. For hotels, the shortest route from the tourist site covered a distance of 4.31 km and took 19.44 minutes, while the quickest route spanned 5.36 km and required 9.25 minutes. Concerning the restaurants, it was observed that the most direct route from the tourist site spanned 1.31 km, taking 6.37 minutes, while the quickest route covered 1.54 km and required 3.51 minutes to complete. At the same time, the shortest route from the tourist site to shops and supermarkets was 1.35 km and took 3.56 minutes, while the quickest route extended 1.64 km and required 2.02 minutes.

Furthermore, the result is clearly illustrated in Figure 4.24, which displays the shortest and quickest routes from Triskel Christchurch to the various facilities. The routes to these facilities predominantly followed roads such as Washington street, Hanover street, and Grand Parade. Notably, the routes to hotels were distinct and showed no overlap with other routes, as these facilities were situated at a greater distance from the tourist site compared to other facilities in the city centre.

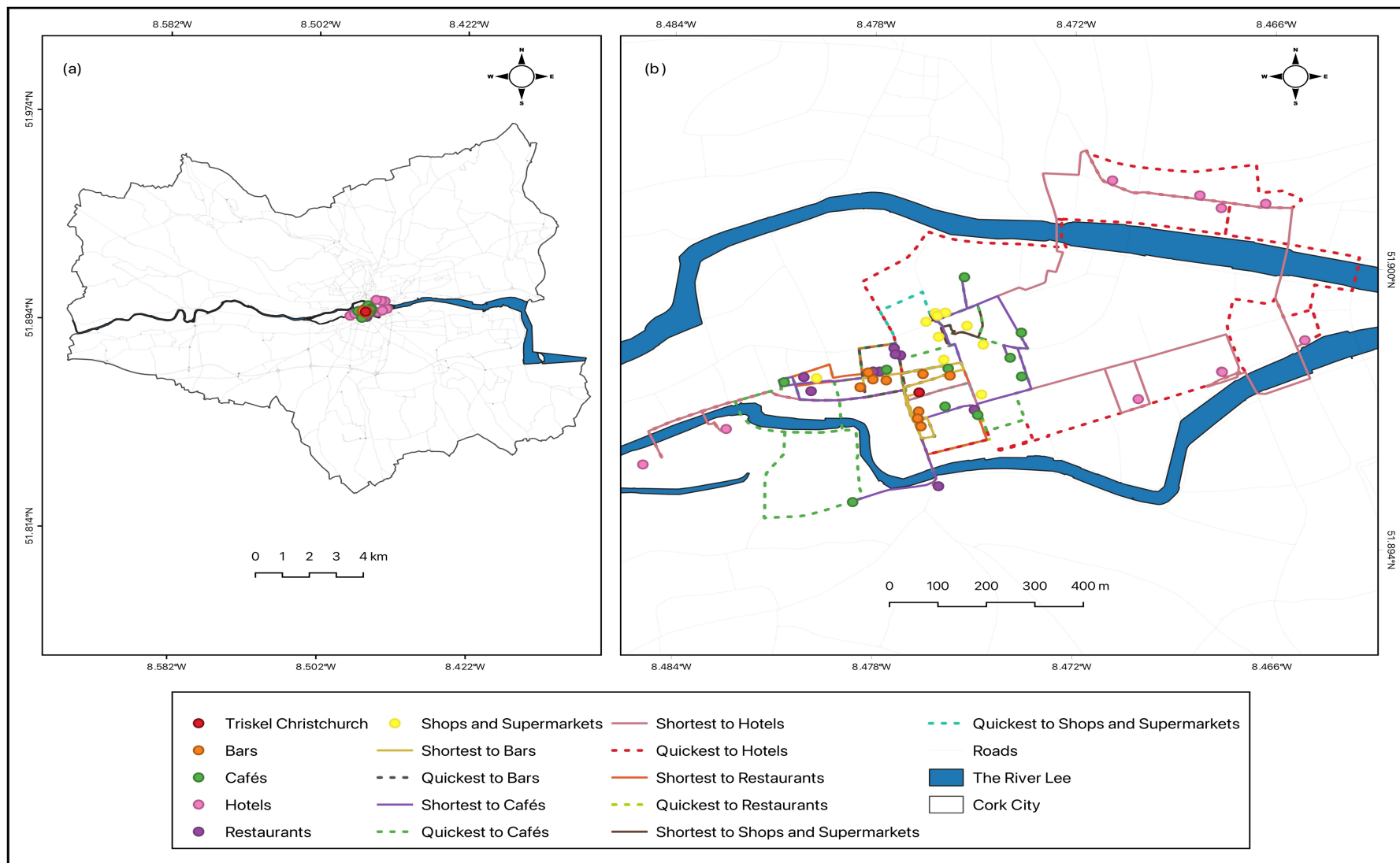


Figure 4.24: Routes from Triskel Christchurch to the Facilities (a) City extent (b) City centre

Source: Author's Analysis (2023)

5. Discussion of Findings

This section will discuss the findings obtained from the results of the study in relation to the objectives as indicated in chapter one: determine important considerations of mobility to the tourists, identify and map tourist sites and hospitality facilities as well as examine the spatial pattern and density of the sites and facilities, examine route suitability between tourist sites and the facilities.

5.1 Determine Important Considerations of Mobility to the Tourists

The result from the survey provided valuable insights into the demographic profile of tourists visiting the surveyed sites (Table 4.1). As stated earlier in the study, the definition of a tourist adopted for this study is by Ghanem (2017), which identified tourist as a person escaping from primary obligations and daily routine for a certain amount of time, through a deliberate displacement usually geographical, in search of unique experiences while seeking satisfaction, leisure and fun. The findings have several implications for both the tourism industry and the development of tourist mobility strategies. Remarkably, the higher proportion of female respondents (60%) suggested that women were more inclined to participate in the surveys, despite the attempt by the researcher to distribute the surveys evenly across all groups. The result may also reflect a higher proportion of female tourists at the surveyed sites. The finding is consistent with the results from Meng and Uysal (2008), which discovered that female tourists accounted for 59% of the visitors to a nature-based resort destination in southwest Virginia. The authors also established that differences in gender can impact perceptions of destination attributes, motivations, and travel values. This finding has practical implications for tourism marketers and businesses, who can tailor their marketing campaigns and services to cater to the preferences of female tourists. Another, consequence of this finding is that a

greater fraction of female tourists may have implications for mobility in a tourism destination. This could affect transportation preferences, safety considerations, and the choice of tourist activities. For instance, Loukaitou-Sideris (2016) highlights that women tend to have different mobility patterns and concerns, such as a heightened emphasis on personal security and the use of public transport during travel. Therefore, tourism destinations with safe and accessible public transportation options may be in an advantageous position to accommodate the preferences and needs of female tourists.

Furthermore, the age distribution of the respondents indicates that a majority of tourists (68%) are within the age bracket of 18-39. According to Chen, et al. (2018) these younger demographic is generally known to be more tech-savvy and open to new experiences. This is particularly seen through the use of smartphones in facilitating information search, on-site decision making, and experience sharing at tourist sites. As a result, businesses in the tourism industry can focus on developing innovative and technology-driven services to attract this age group. The marital status of the respondents revealed that 48% were single, while 42% were married. This finding implies that there is a considerable market for both individual and couple tourists. This is supported by Dolnicar (2008) who demonstrated that tourism businesses can take advantage of segmentation by offering tailored packages and experiences. For instance, marketing efforts can be focused by developing the most effective message for each targeted segment, as well as communicating this message through the most effective communication channel for the particular segment. Meanwhile, the data on household size reveals that most tourists (68%) come from smaller households of about 1-3 members. This implies that smaller households may be more flexible and open to consider alternative modes of transportation,

which is in agreement with the result of Ye, et al. (2018), where the authors concluded that larger households were constrained and more likely to use private vehicles for transportation.

However, the result showing information about the education level, employment status, and annual remuneration of tourists (see Table 4.2) revealed that a high proportion of the tourists were formally educated, with 64% having attained a tertiary education, which suggests that these individuals may be more knowledgeable and provide reliable information for this survey. According to Odeleye and Oyekanmin (2013), education is important to tourism, as it increases an individual's ability to obtain, analyse and interpret information as well as use their resources efficiently. Also, the education of respondents may influence their decision to engage in tourism activities. The findings on employment status show that the majority of tourists (60%) are employed, with an additional 18% being self-employed. This suggests that these individuals might have a higher level of disposable income and could afford to spend more on tourism services and experiences as opined by Ogunbodede (2012). As a result, hospitality businesses can focus on offering a range of high-quality services and experiences to cater to this market segment. In addition, the fact that 12% of the respondents are students implies that there is a potential market for budget travel options and services geared towards younger, cost-conscious tourists. In response to this finding, tourism and service providers should consider developing budget-friendly packages and services to attract this segment of the market. The annual remuneration result (Table 4.2) reveals that 58% of the tourists earn above 30,000, while 42% earn less than 30,000. This suggests that there is a diverse range of income levels among the tourists. Consequently, tourism businesses should offer a variety of pricing options and packages to cater to different income brackets.

The result also showed that a high proportion of respondents were from within Ireland (86%) and specifically from Cork (60%). This indicates a strong domestic and local tourism market (Table 4.3). This finding suggests that tourism businesses should focus on marketing efforts and services that cater to the preferences of local and domestic tourists and is corroborated by UNWTO (2020) report, which states that domestic tourism is expected to lead the recovery of the sector in the short-term. This indicates majority of trips undertaken within countries, which can serve as a foundation for the recovery of international tourism at destinations. This market segment might be more inclined to take shorter trips and engage in activities that promote local culture and heritage. Additionally, 14% of tourists were from countries such as France, Spain, Germany, Netherlands, as well as the United Kingdom, representing a valuable international market segment. Therefore tourism businesses and marketers could develop targeted strategies to attract and cater to these visitors, considering their specific interests and preferences. This can include providing multilingual services and promoting experiences that emphasise the unique aspects of Irish culture and heritage. The finding that 50% of non-resident tourists in the study area were visiting for the second to fourth time, while 30% were visiting for the first time, point towards a high level of repeat visitation. This suggests that Cork city has a strong appeal and that tourists are generally satisfied with their experiences, which is supported by Sario-López, et al. (2020) who determined that tourist satisfaction and motivation were the primary factors that compelled tourist revisitation to a destination. Tourism businesses should capitalise on this positive trend by encouraging customer loyalty through personalised services, special offers, alongside loyalty programs. To the best of the researcher's knowledge, Blarney Castle was the only tourist site that offered such programs during the time of this research. Equally, efforts should be made to convert first-time tourists into repeat customers by providing exceptional experiences and value for money. Meanwhile,

the accommodation choices of respondents show that 24% chose to stay with family and friends, while 16% stayed at hotels for proximity to the city centre and convenience. This finding implies that there is demand for both cost-effective and convenient accommodation options. Hospitality businesses can supply these by offering affordable accommodation types, especially around the city centre where most of the tourist sites are located.

Moreover, the result also showed that 52% of tourists visited the sites for exploration and sightseeing, while 36% were seeking relaxation and leisure (see Table 4.4). This suggests that there is a diverse range of motivations driving tourism in the area. Tourism businesses should cater to these different motivations by offering a variety of experiences, activities, and services that satisfy the needs of adventurous and leisure-seeking tourists. Additionally, the results regarding information sources reveal that 42% of participants were already aware of the site, while family and friends, tourist information centres, and websites and magazines accounted for 22%, 18%, and 12% of the tourists' discovery of the tourist sites, respectively. This finding implies that there is potential for improving the marketing and promotion of the sites, especially through digital channels as well as word-of-mouth recommendations. Hence, tourism businesses and destination marketers should invest in online presence, social media marketing, and through partnerships with influencers or travel bloggers to reach a wider audience and attract more visitors to the site. Moreover, the fact that 56% of the tourists were visiting the site for the first time and 20% visited once a year indicates that there is potential for increasing repeat visitation. Tourism businesses can encourage repeat visits by offering personalised services, loyalty programs, and special offers for returning visitors. Additionally, efforts should be made to convert first-time visitors into repeat customers by providing exceptional experiences and value for money. Furthermore, the finding that 74% of

the respondents visited the tourist sites alone, with 26% traveling as part of a group, suggests that there is a strong market for solo travellers. Tourism businesses should cater to this market segment by offering tailored services and experiences. For instance, Coudounaris and Sthapit (2017) demonstrated that tourism and service providers could develop programs in which tourists can closely experience the local culture and actively participate, which provide avenue to realise maximum tourism experience and encourage repeat visitors to destinations. Similarly, Rasoolimanesh, et al. (2021) suggested that tourists with a pleasant and meaningful memories of their visits to tourist sites and destinations have a tendency to engage in word of the mouth recommendations and revisit the destination.

At the same time, the result on mobility to the tourist sites (Table 4.5) showed that 58% of tourists used the bus to get to the sites and 16% walked, suggesting that public transportation and sustainable modes of travel are popular among tourists. This highlights the importance of investing in efficient and accessible public transportation systems, as well as pedestrian-friendly infrastructure, to satisfy the preferences of tourists whilst also promoting sustainable mobility. It was also observed that 14% of respondents used private cars and 12% used taxis to reach the tourist sites, which indicates that there is also demand for private transportation options. The results regarding wayfinding show that 50% of tourists already knew their way to the site, while 20% relied on family and friends, 16% on navigation apps, and 14% on the tourist information centre for directions to the tourist sites. This finding implies that there is room for improvement in providing accessible and user-friendly information about getting to the tourist sites through enhancing the visibility and functionality of navigation apps, as well as improving signage and information at the tourist sites and public transport hubs, which can help tourists find their way easily and also encourage the use of sustainable transportation

options. In addition, the result on stops made en-route to the sites reveals that 37% of tourists stopped for food, 21% for shopping or groceries, and 17% for drinks and coffee. This finding implies there is a demand for convenient and accessible amenities along the way to the tourist site. Businesses can capitalise on this opportunity by offering services close to the tourist sites alongside bus stops. This can enhance the overall visitor experience by providing an ease of movement and access to facilities. According to Wall (1978, as cited by Lue, et al. 1993) tourist sites do not exist in isolation, and are usually found within the environment of competing and complementary facilities. Hence, it is inevitable that the mobility of tourists will involve the visit of more than one site or facilities on a single trip.

Nonetheless, the result on tourists' perception of the trip provided valuable insights into their experience in Cork city (see Table 4.6). First, the fact that 68% of tourists enjoyed the ease of moving around the study area and getting to the tourist sites indicates that the city's existing transportation infrastructure and services are well-received. To maintain as well as improve upon this positive experience, continuous investments should be made in maintaining and enhancing public transportation systems, pedestrian-friendly infrastructure, and wayfinding signage. The study also found that 12% of respondents enjoyed the scenery of Cork city, which emphasises the importance of preserving and promoting the natural and cultural beauty of the city. Tourism businesses and destination marketers can leverage this aspect by creating experiences and marketing materials that showcase the city's picturesque scenery and unique character. The results regarding improvements to transportation services revealed that 22% of participants would like to see the real-time bus information displays improved, while 14% and 12% desire more public transport options, alongside enhanced directions around the city respectively. Policymakers and transportation providers should take these suggestions into

account to improve real-time information displays at bus stops, explore supplementary public transport services, and improve wayfinding systems to enhance the overall visitor experience, whilst also encouraging the use of sustainable transportation options. Furthermore, findings on what attracted tourists to the study area showed that 42% appreciated the quietness and serenity, 22% found the city beautiful and pleasant, 16% were impressed by the friendliness of the locals, while 20% thought Cork city was fun and cultural. The diversity of attractions suggest that the city offers a well-rounded experience for tourists. This is in agreement with Leiper (2004), who affirms that tourist destinations are places where people travel to and choose to stay in order to experience certain features and characteristics, habitually acting on a perceived attraction of the location. To further capitalise on these strengths, tourism businesses, marketers, and policymakers should develop targeted strategies that emphasise and enhance these aspects of the city, such as promoting cultural events, preserving natural spaces, and encouraging local hospitality.

5.2 Examine the Spatial Pattern and Density of the Tourist Sites and Hospitality Facilities

The result from the nearest neighbor analysis (NNA) and kernel density estimation provided valuable insights into the spatial distribution and level of concentration of tourist sites and hospitality facilities in the study area. These insights have several implications for tourism development, and effective tourist mobility. This also corresponds with the position of Gunn (1988), that the location of tourist sites and facilities across space determines the level of accessibility and patronage to the sites as well as the facilities. The NNA results (see Table 4.7) indicate that the distribution of tourist sites is random, with an observed mean distance of 1119.5207 meters between sites. This suggests that tourist sites are not concentrated in specific areas of the city, which may impact tourist mobility and travel patterns. This finding

does not align with the result of Odum, et al. (2018) who discovered that the pattern of distribution of ecotourism resources in Anambra state, Nigeria was dispersed. Although, this finding is in agreement with Obong, et al. (2015) who demonstrated that tourism attractions in Southern part of Cross River state were randomly distributed. Also, that of Amalu, Otop, Oko and Oko-Isu (2018) which shows that ecotourism sites in Enugu state, Nigeria were randomly distributed. However, the result of the kernel density (Figure 4.1) estimation showed that a considerable amount of the tourist sites were found within the city centre. This complies with the study of Rengarajan, et al. (2014) where the authors observed that tourism sites were clustered around three major areas in the city centre.

In contrast, most of the hospitality facilities, including bars, cafés, restaurants, shops, and supermarkets, exhibit a clustered pattern of distribution, particularly around the city centre. This clustering may be advantageous for tourists, as it affords them the ability to find a variety of hospitality services within a relatively small area, therefore reducing travel distances and promoting walkability. However, it may also create issues of overcrowding, congestion, and competition among businesses in these areas. This result conforms with the finding of Eneyo and Ekong (2018) who observed that hospitality services in Uyo were clustered around the city centre. Also, the finding is in agreement with Li, et al. (2020) who revealed that catering service providers were concentrated in areas with developed transportation network and rich tourism resources. Likewise, Yannan, et al. (2020) showed that the retail outlets in Urumqi exhibited an obvious aggregative distribution favoured around the city centre compared to the periphery. Similarly, the result aligns with the study of He, et al. (2021) who observed that facilities, such as bars, clubs, cinemas, were generally concentrated around the centre of the city with a strong or relatively strong level of clustering. The random distribution of the hotels

across the city, suggests that tourists have a variety of options for choice of accommodations throughout the study area. This can be beneficial for tourists who prefer different types of environments, from the bustling city centre to quieter neighbourhoods. This result is in contradiction with the finding of Lee, et al. (2018) who observed that the spatial pattern of hotels in the United States were clustered. However, it is worth noting that the current study and Lee et al.'s research differ in the scale of the area analysed.

The distribution and spatial patterns of the tourist sites and facilities have implications for the mobility of tourists, and essentially satisfaction derived from the visit. Hence, urban planning and tourism development bodies as well as policymakers should consider ways to balance the clustering of hospitality facilities with the need for diverse tourist experiences and to avoid possible overcrowding in certain areas. Simpson (2017), argues that overcrowding in tourism destinations is easier to prevent than to recover from and requires long term planning from relevant stakeholders. This could include promoting the development of new tourist sites and hospitality facilities in underutilised parts of the area, supporting mixed-use developments, and improving transportation links to ensure ease of access to sites and facilities across the city. Moreover, the creation of effective tourist mobility strategies should take into account the spatial distribution of tourist sites and hospitality facilities to promote sustainable modes of transportation, such as public transport, cycling, and walking, especially in the city centre, where facilities are clustered.

5.3 Examine Route Suitability Between Tourist Sites and the Facilities

Mobility plays a crucial role in the enjoyment of tourist activities. The ease with which an individual can move around the tourist destination, greatly impacts their decision to visit that destination (Vanhove and Vanhove, 2004). Tourists looking to visit sites and facilities may

seek the shortest route. However, the shortest route may not always be the best route. This is demonstrated by Quercia, et al. (2014) who showed that compared to the shortest routes, the recommended routes added just a few extra walking minutes but were perceived to be more beautiful, quiet, and happy. The findings from the analysis of route suitability between tourist sites and hospitality facilities highlight the differences between the shortest and quickest routes connecting various transportation hubs, such as bus and train stations and the tourist information centre, to tourist sites, nearby bus stops and facilities in Cork city. The results indicate that the quickest routes from the bus and train stations and the tourist information centre to the tourist sites are faster but cover a greater distance than the shortest routes (Table 4.8). This suggests that tourists may need to choose between minimising travel time and reducing the distance travelled, depending on their preferences and priorities.

On the other hand, the study found that the shortest and quickest routes from the bus and train stations as well as the tourist information centre to the nearest bus stops to the tourist sites are considerably longer in both distance and travel time compared to the routes directly to the sites. This implies that accessing tourist sites through the use of public transportation may not be efficient, and potentially discouraging tourists from visiting tourist sites located outside of the city centre using this transportation option. These findings can inform urban planning and transportation management decisions to enhance tourist mobility in the study area. For example, policymakers and transportation providers can work together to optimise public transportation, by offering direct routes to tourist sites making the option of public transportation more appealing to tourists. However, there are ongoing projects in Cork city by the National Transport Authority (NTA) in partnership with other key government agencies to develop, and implement, the Cork Metropolitan Area Transport Strategy (CMATS). This will

enable Cork's growth potential and reimagining its future with a multi-billion Euro investment in transport over the next two decades, which will see a transformation of the bus system, a new light rail system, comprehensive cycling network and facilities and enhanced pedestrian facilities (Busconnects Cork, 2022). Additionally, a map of the study area showing the shortest and quickest routes from each of the starting points to the tourist sites and nearby bus stops was provided (Figure 4.7), this can serve as a useful visual aid for tourists, transportation planners, and tourism businesses. The map can assist potential tourists plan their journeys more effectively, while also informing transportation planners and businesses of potential areas for improvement in accessibility and connectivity.

The result of the least cost path analysis shed light on the fastest routes to tourist sites in Cork city based on the availability of the various hospitality facilities such as bars, cafés, hotels, restaurants, shops, and supermarkets (Table 4.9). The study draws attention to the impact of hospitality facilities on the accessibility and connectivity of tourist sites in the area. The results demonstrate that the distance of the fastest routes to the sites varies depending on the type of facility used as a cost surface. In considering the availability of bars, cafés, and restaurants, it was observed that certain tourist sites, such as Blarney Castle, Ballincollig Regional Park, and Gunpowder Mills, were not included in the routes due to the absence of these facilities in the area. This suggests that the lack of nearby hospitality facilities might create accessibility challenges for tourists and limit the overall appeal of these tourist sites. Although, it should be noted that this study's list of hospitality facilities in Cork city is not exhaustive and may not reflect the full range of available options, as the presence of pop-up cafes and food trucks, which are transient in nature, may not be captured. According to a study by Lugosi, et al. (2020) pop-up facilities are new forms of temporary and mobile hospitality businesses that

are currently becoming popular in urban areas. These types of businesses offer unique dining experiences and often cater to changing consumer preferences and trends. However, they are characterised by high levels of irregularity, largely resulting from the spatial variability. Hence, making them difficult to capture in studies that rely on fixed list of hospitality facilities. Contrastingly, the study revealed the fastest routes through hotels, shops, and supermarkets extended to all tourist sites in the area, indicating a more comprehensive coverage of the city's attractions. This emphasises the importance of evenly distributed hospitality facilities to ensure greater accessibility and connectivity for tourists, enhancing the visitor experience and potentially boosting tourism-related revenues. These findings have several implications for policymaking, and tourism business development in Cork city. For instance, policymakers can prioritise the development and distribution of hospitality facilities in areas underserved by such amenities, improving accessibility to the city's tourist sites and promoting tourism growth. Additionally, businesses can strategically locate their establishments in areas with better connectivity to tourist sites, catering to the needs of visitors and enhancing their overall experience. Moreover, the map of Cork city showing the least-cost-path routes to the tourist sites based on the availability of different hospitality facilities was revealed (Figure 4.8). This can serve as a valuable tool for tourists and tourism businesses alike. The map can help tourists to plan their itineraries more effectively, by considering the availability of nearby facilities, whilst also guiding businesses to understand the distribution of facilities in relation to tourist sites, and allowing them to make informed decisions about potential business opportunities. The results from the least cost path analysis offered unique understandings to the study. Nonetheless, there are some limitations to its use in social research that should be taken into account. One limitation is that, the study assumes a homogeneous landscape with uniform costs associated with each type of terrain or land cover. However, the actual cost of

movement can vary depending on factors such as slope and surface roughness. To cite an instance, Chandio, et al. (2012) employed the topography and functions related to the slope, land use and the cost data layers for optimal road planning. The result showed that the most efficient roads avoided unnecessary slopes.

Finally, route suitability from tourist sites to hospitality facilities revealed important insights into the accessibility of these facilities from the tourist sites. It was observed that shortest routes from tourist sites located outside the city centre such Ballincollig regional park and Gunpowder mills, Blackrock castle observatory and Blarney Castle to the various facilities including bars, cafés, hotels, restaurants, and shops and supermarkets ranged from 10.78 km to 20.95 km, with travel times between 20.41 and 45.53 minutes. In contrast, the quickest routes were slightly longer in distance, ranging from 14.27 km to 24.37 km, but with shorter travel times between 13.23 and 25 minutes. On the other hand, the results revealed that the shortest routes from majority of the tourist sites found within the city centre to the bars, cafés, hotels, restaurants, and shops and supermarkets were considerably shorter, ranging from 1.62 km to 7.33 km, with travel times between 4.12 and 20.92 minutes. Likewise, the quickest routes were also shorter in distance, ranging from 2.28 km to 8.88 km, with travel times between 2.67 and 12.36 minutes. Comparing the two findings, it is evident that the accessibility of facilities from the tourist sites located within the city centre is significantly better than that from tourist sites found toward the outskirts of the city centre. The shorter distances and travel times between the sites situated in the city centre and the facilities suggest a higher concentration of the facilities in its vicinity, which may positively impact the overall appeal and visitor experience of the site. In contrast, the greater distances and travel times from the tourist sites positioned outside the city centre to the facilities indicate a lower

accessibility to these facilities, which could potentially limit the attractiveness of the site to tourists. The result also corresponds with the finding from Abubakar, Idoko and Ocholi (2017), which observed that the shorter visitation durations were associated with time-optimised scenarios compared to distance-optimised routes, while shorter visitation distances were associated with distance-optimised scenarios, in comparison to time-optimised scenarios. Essentially, the results suggests that distance and road speed limits play a critical role in the accessibility of the sites and facilities in Cork city, especially for the sites located outside the city centre. This also collaborates with the result of spatial pattern and density of the tourist sites and hospitality facilities (see Table 4.7 and Figure 4.1) which revealed that considerable amount of the sites and facilities were concentrated around the city centre.

Consequently, the observed variations and overlaps in routes, particularly in the city centre, indicate that tourists have multiple options for reaching various facilities (see Figure 4.7-4.24). This provides flexibility as well as convenience for tourists as they navigate through the city. Furthermore, the noticeable variation in routes to hotels, which are typically located farther from tourist sites, suggests that greater consideration should be given to the accessibility and transportation options to these facilities. This may help improve the overall tourist experience by making it easier for tourists to reach accommodations from the tourist sites. Additionally, the analysis of routes to facilities within the city centre reveals the importance of well-designed urban planning in facilitating tourist mobility. The observed overlap in routes to different facilities highlights the interconnectedness of the city's infrastructure and suggests that improvements to transportation options and infrastructure in one area can potentially benefit multiple facilities.

CHAPTER FIVE

CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the conclusion, limitations and future recommendations of the study. The study was concluded based on findings, and limitations were also stated. Subsequently, recommendations were made for proper decision making by the concerned authorities and the general public.

5.2 Conclusion

In conclusion, this dissertation has provided an in-depth analysis of tourist sites, hospitality facilities, and tourist mobility in Cork city. Through the examination of tourists' consideration of mobility, the spatial distribution pattern as well as level of density of tourist sites alongside hospitality facilities. The study also examined the accessibility and connectivity between these sites and various facilities, the results has generated valuable insights for potential tourists, policymaking, and tourism business development in the area. The methods employed in the analysis include quantitative and qualitative techniques.

The required dataset were retrieved from relevant sources and processed for analysis. This includes the digitisation of over 600 road network layers across the study area. In addition, the datasets were integrated into a common georeferenced framework for accurate analysis through the Irish Transverse Mercator (IRENET95). The road network was then classified according to the recommended speed limits for road classes in Ireland, which was used to build a network dataset for the spatial analysis. On the other hand, the qualitative data

obtained through the administration of questionnaires at the tourist sites was analysed using thematic analysis.

The survey conducted in the study provided insights into the demographic profile of tourists visiting the surveyed sites, which has implications for the tourism industry and tourist mobility strategies. The study also found that women were more inclined to participate in the surveys, suggesting a higher proportion of female tourists at the surveyed sites. The result also showed a considerable market exists for both individual and couple tourists, with smaller households being more flexible and open to alternative modes of transportation. Besides, it was observed that education is important to tourism, as it increases an individual's ability to obtain, analyse, and interpret information efficiently. A high proportion of tourists were employed and might have a higher level of disposable income and domestic tourism was strong, with a high level of repeat visitation. It was revealed, that public transportation and other sustainable modes of travel were popular among tourists, highlighting the importance of investing in efficient and accessible public transportation systems and pedestrian-friendly infrastructure. The city's existing transportation infrastructure and services were well-received, and there is a demand for convenient and accessible amenities along the way to the tourist sites. Lastly, the results showed that the tourists were attracted to the quietness and serenity, beauty, friendliness of locals, and cultural aspects of Cork city.

The research also revealed that while the majority of hospitality facilities exhibit a clustered pattern of distribution around the city centre, the distribution of tourist sites appears more random. This clustering of hospitality facilities can be advantageous for tourists, as it allows them to find a variety of services in a relatively small area, thereby reducing travel distances

and promoting walkability. This finding indicates the need for a more strategic and integrated approach to urban planning and policymaking to ensure that the distribution of facilities better aligns with the location of tourist sites.

Furthermore, the study has explored the shortest and quickest routes between the tourist sites and various facilities such as bars, cafés, hotels, restaurants, shops, and supermarkets. The results indicate significant differences in accessibility and connectivity between different tourist sites, with some sites having better access to hospitality facilities than others. This information can help inform tourism planning decisions, and support the development of new tourism businesses, whilst also enhancing the overall tourist experience in Cork city.

In addition, the analysis of the fastest routes based on the availability of hospitality facilities has underscored the importance of considering the needs and preferences of tourists when planning infrastructure development and transportation systems in the area. Therefore, by improving connectivity between tourist sites and various facilities, the city can attract more visitors, boost local businesses, and support tourism growth. Lastly, this study has highlighted the significance of visual representations, such as maps, to assist in understanding the spatial relationships between tourist sites and hospitality facilities. These visual aids can serve as valuable tools for tourists, tourism businesses and policy makers, facilitating better planning and decision-making.

To conclude, this dissertation has contributed to the understanding of the complex interplay between tourist sites, hospitality facilities, and tourist mobility in Cork city. By addressing the questions related to the distribution of the sites and facilities, including the challenges with accessibility and connectivity. This research provides insights that experts and stakeholders can collaborate to create a more attractive, and enjoyable tourism experience for tourists.

The insights obtained from this research can also serve as a foundation for future studies. The methods applied could also be adopted to examine tourism in other Urban environments in Ireland and elsewhere.

5.3 Limitations

While this dissertation has provided valuable insights into the study of tourist sites, hospitality facilities, and tourist mobility in Cork city. However, it is essential to acknowledge there were some limitations encountered during the study that may have influenced the results and their interpretation.

First of all, the study may have been constrained by the sample size of respondents in the survey. A larger sample size could have provided a more comprehensive understanding of the preferences and behaviors of tourists visiting the study area. Additionally, the study focused primarily on tourists that were available and willing to participate in the survey at the time the researcher visited the sites, which may not fully represent the diverse backgrounds of all visitors to the city. Although, the author made an attempt to get a balanced perspective from both male and female respondents, it was observed that the female participants encountered were more receptive and open to participate in the exercise. Also, considering the fact that the survey was solely handled by the researcher, there was a time and monetary constraint. Hence, the researcher could not afford to revisit the sites multiple times, even when no participants were found at the time of visit. This is in contrast to studies such as Omare (2016) who employed a research assistance and enumerators for questionnaire survey. Likewise, Le-Klähn, et al. (2014) engaged three survey assistants for questionnaire administration across three popular tourist sites in Munich, between April and May 2012.

Also, the study was focused on the situation at a specific point in time. As a result, it may not account for changes in tourist patterns and preferences over time, limiting the generalisability of the findings to periods the survey was conducted. Likewise, the data collection through surveys, may have been influenced by the subjectivity and potential biases of respondents. Personal preferences, recall bias, and social desirability bias could have affected the accuracy of the information provided by the participants.

In addition, the study relied on secondary data sources for some of its analyses, which may have limited the accuracy and reliability of the findings. For instance, geographic coordinates of hospitality facilities were retrieved from Google earth imagery without ground truthing. Also as discussed earlier, it should be noted that this study's list of hospitality facilities in Cork city is not exhaustive and may not reflect the full range of available options, as the presence of pop-up cafes and food trucks, which are transient in nature, may not be captured.

Another, limitation of the study is the simplification of spatial analysis. The spatial analysis conducted in the study, such as nearest neighbor analysis and the calculation of shortest and quickest routes, may have been limited by simplifications and assumptions made during the process. To give an example, the analysis on the shortest and quickest route assumed that the vehicles will driving at the maximum allowed speed on the various road types and that stops will be made at all traffic signals. The analysis using the bus network also assumes that stops will made at every bus stop on the route. However, real-world complexities, such as traffic congestion, road closures, and variations in public transportation schedules, may have influenced the accuracy of the findings. It is also worth mentioning that the study may have benefited from adding elevation data to the road network to provide a more realistic result regarding the shortest and quickest routes, in consideration of the topography of Cork city.

Nonetheless, despite these limitations, this dissertation has provided meaningful insights into the distribution and accessibility of tourist sites and hospitality facilities in Cork city. The findings can be used as a basis for further research, as well as informing tourism businesses and policymaking aimed at enhancing the tourism experience in the city.

5.4 Recommendations

Based on the findings of this study, several recommendations can be made to improve the tourist experience, accessibility to tourist sites, and the overall appeal of Cork city as a tourism destination:

1. **Improve public transportation options:** To enhance tourist mobility, the city should consider expanding and improving public transportation options, such as increasing the frequency of buses and providing more routes, and ensuring reliable and timely schedules. This will not only benefit tourists but also the local population.
2. **Enhance wayfinding and directional information:** To facilitate better navigation and accessibility to tourist sites, clear and comprehensive wayfinding information should be provided. This includes strategically placed signage, user-friendly maps, and digital tools such as navigation apps that cater specifically to tourists.
3. **Promote tourist sites on the outskirts:** To distribute tourist traffic more evenly across the city, tourist sites located outside the city centre should be promoted. This could involve developing comprehensive marketing strategies that showcase the unique aspects of each site.
4. **Invest in the quality of hospitality facilities:** To attract more tourists and improve their experience, it is crucial to invest in the quality of hospitality facilities, such as bars, cafés, hotels, restaurants as well as shops and supermarkets. This can involve offering

diverse and high-quality options, providing excellent customer service, and ensuring a comfortable and welcoming atmosphere.

5. Encourage revisitation through engagement and satisfaction: To ensure second time revisits and for tourists to have a memorable and satisfying experience, efforts should be made to engage tourists through cultural events, local experiences, and interactive attractions. Additionally, collecting regular feedback from tourists can help identify areas of improvement and opportunities for innovation in the tourism sector.

By implementing these recommendations, Cork city can further establish itself as a desirable tourism destination, offering visitors an enjoyable and memorable experience while fostering tourism growth and development.

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Appendix 1 (Questionnaire Survey)

Demographic Information

Section A:

1. Gender: • Male [] • Female [] • Others []
2. Age bracket: • 18-29 [] • 30-39 [] • 40-49 [] • 50-59 [] • 60-69 []
• 70 and above []
3. Relationship status: • Single [] • Married [] • Others []
4. Household size: • 1-3 [] • 4-6 [] • 7-9 [] • 9 and above []
5. Annual family/personal income: • Under 30,000 [] • 30,000-40,000 [] • 40,000-50,000 [] • 50,000-60,000 [] • 60,000-70,000 [] • Above 70,000 []
6. Level of education: • Vocational education [] • Primary education []
• Secondary education [] • Tertiary education [] • Others []
7. What do you do for a living: • Employed [] • Self-employed [] • Unemployed [] • Retired [] • Student [] • Others []

Section B:

8. Have you travelled internationally? • Yes [] • No []
9. Where did you travel from? []
10. What is your Nationality? []
11. Are you a resident of Ireland? • Yes [] • No []
12. Are you a resident of Cork? • Yes [] • No []
13. Where in Ireland did you travel from? []
14. Is this your first visit to Cork city? • Yes [] • No []
15. How many times have you visited Cork city as a tourist? • Second time [] • Third time [] • Fourth time [] • Fifth to ninth time [] • Over ten times []
16. Where do you currently stay in the city? []

17. Why are you staying at your current location? []

Information about the Tourist site and Mobility

Section A:

1. What is your purpose of visiting the tourist site? []

2. How did you find out about the tourist site?

- I already knew of it []
- Friends and family []
- Travel agency []
- Websites and magazines []
- Hotel staff []
- Tourist information centre in Cork city []
- Other []

3. Is this your first visit to the tourist site? • Yes [] • No []

4. How often do you visit the tourist site?

- Every Week []
- Once in 1 Month []
- Once in 3 Months []
- Once in 6 Months []
- Once in 12 Months []

5. Are you travelling alone? • Yes [] • No []

6. Are you travelling as a family/group? • Yes [] • No []

7. How many people are travelling in the group including yourself? []

8. How many nights will you spend in Cork city? []

Section B:

9. What mode of transportation did you use to get to your destination?

- Private car []
- Bicycle/motorcycle []
- Walk []
- Bus []
- Taxi []

10. Why did you choose that method of transportation? []

11. How did you find directions to the tourist site?

- I know my way to the site []
- Navigation apps (Google map) []
- Paper maps []
- Open bus tours []
- Help from locals []
- Tourist information centre in Cork city []
- Other []

12. Did you make any stop(s) on your way to the tourist site? • Yes [] • No []

13. Where did you make the stop(s)? [_____]

14. Reason for making the stop(s)? []

15. What did you like about your trip to the tourist site? []

16. What did you dislike about your trip to the tourist site? []

17. What aspect of your trip, would you like to be improved upon? []

18. How did you find moving around the city?

- Easy []
- Fairly easy []
- Undecided []

- Fairly difficult []
- Difficult []

19. What is your reason for the choice above? []

20. What else do you plan to do while in Cork city? []

21. Do you plan to use the same mode of transport to move around the city? • Yes []
• No []

22. If no, then what new mode of transport will you use? []

23. Why have you chosen this new mode of transport? []

24. What is your overall impression of Cork city? []

Appendix 2 (Tourist Information Sheet)

Thank you for considering participating in this research project. The purpose of this document is to explain to you what the work is about and what your participation would involve, to enable you to make an informed choice.

The purpose of this study is to examine the factors affecting tourist mobility in Cork City and to determine the optimal route between these locations. Should you choose to participate, you will be asked to complete a questionnaire, which will include close-ended and open-ended questions about your demographic information alongside information about the tourist sites and mobility. You will also be asked to identify routes taken on your trip to the tourist sites on a map of Cork City showing the sites, road network and other notable landmarks.

Participation in this study is completely voluntary. There is no obligation to participate, and should you choose to do so you can refuse to answer specific questions or decide to withdraw from the study prior to completing the survey. All information you provide will be confidential and your anonymity will be protected throughout the study.

You maintain the right to withdraw from the study at any stage up to the point of data submission. At this point, your data will be collated with that of other participants and can no longer be retracted.

The anonymous data will be stored on a University College Cork supported cloud storage platform. We will also upload the data to a digital repository in anonymized format, such as the Digital Repository of Ireland or Zenodo to ensure reproducible research. The data will be stored for minimum of ten years.

The information you provide may contribute towards research publications or conference presentations and a research thesis.

We do not anticipate any negative outcomes from participating in this study. Should you experience distress arising from participating in the research, please contact the Department of Geography for assistance through the website: <https://www.ucc.ie/en/geography/> or by phone: +353 (0)21 490 2517/2888/2804.

This study has obtained ethical approval from the UCC Social Research Ethics Committee. If you have any queries about this research, you can contact me at 121110073@umail.ucc.ie or 0864563221. If you agree to take part in this study, please complete the consent form below.

Appendix 3 (Consent Form)

I _____ (Please print your name) hereby grant consent for my answers to the attached questionnaire to be used for the purposes of a single study on tourist mobility in Cork city.

I understand that the data I provide through this questionnaire will be anonymised and I will not be identified at any point during the analysis or publication of any research materials.

I understand the anonymous data will be stored for a minimum of ten years as a part of the University College Cork's Code of Research Conduct.

I understand that once my responses have been submitted, they will be collated with the other respondents in anonymised format, and I cannot request my data to be removed and destroyed.

Signed: _____

Date: _____

Appendix 4 (Closest Bus Stops to the Tourist Sites)

Tourist Site	Bus Stop	Distance (km)
Blarney Castle	Blarney Village	0.62
Shandon Bells and Tower/St. Anne's Church	Upper John Street	0.18
The Butter Museum	Upper John Street	0.19
Crawford Art Gallery	St. Patrick Street (Oasis)	0.23
St. Peter's Cork	Washington Street (Court House Chambers)	0.30
Triskel Christchurch	South Main Street (Bishop Lucey Park)	0.07
The English Market	Grand Parade (Daybreak)	0.12
St. Fin Barre's Cathedral	Proby's Quay	0.15
Elizabeth Fort	Frenches Quay (Sull's Electric Shop)	0.21
Nano Nagle Place	George's Quay (Abbey Court House)	0.46
Blackrock Castle Observatory	Blackrock Village	0.83
Glucksman Gallery	O'Donovan Road	0.25
Cork Public Museum	Western Road (An Oige Hostel)	0.24
Fitzgerald's Park	Western Road (Op Castlewhite Apartments)	0.27
Cork City Gaol	Western Road (Op Castlewhite Apartments)	0.88
Old Cork Waterworks Experience	Western Road (UCC IT Building)	0.75
Ballincollig Regional Park & Gunpowder Mills	Old Quarry	0.94

Appendix 5 (Closest Facilities to Ballincollig Regional Park and Gunpowder Mills)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	The Bishopstown Bar	8.46	Clouds Café	6.52	Oriel House	1.66
2	Flannery's Irish Pub	9.02	Beantown Café	7.71	The Kingsley	8.32
3	Cissie Youngs	9.60	Bosca Drive Thru Coffee	7.74	Hayfield Manor	9.47
4	The New Bar	9.66	Box'd Drive Thru Coffee	7.84	The River Lee	10.22
5	Mok's	9.85	Mango Café	8.83	Lancaster Lodge	10.24
6	The Rock	9.94	Costa Coffee Bishopstown	8.88	The Imperial	11.24
7	Southside Bar	10.04	Café Atrium	9.03	Maldron Shandon	11.42
8	The Beggarman	10.04	Coffee Shack	9.03	Maldron South Mall	11.42
9	The Abbey Tavern	10.06	Hi Café	9.04	The Townhouse	11.43
10	Gaia	10.07	Dialogue Café	9.04	Ashley Hotel	11.54

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	Four Star Pizza Wilton	8.81	Boots	2.38
2	Gallo & Galetti	8.82	Kirbys Footwear	2.45
3	Orchids Restaurant	9.44	Your Stop Nexus Market	6.76
4	UCC Main Restaurant	9.48	Dunnes Stores Bishoptown	8.26
5	Perrotts Garden Bistro Restaurant	9.57	Tesco Express North Block	8.35
6	Paradiso	10.19	Centra Victoria Cross	8.60
7	The River Club	10.21	Lidl Wilton	8.74
8	Domino's Pizza Washington St	10.40	Aldi Wilton	8.85
9	Ichigo Ichie	10.41	Wilton Shopping Centre	9.03
10	Four Star Pizza Washington St	10.50	Garden Goodness	9.05

Appendix 6 (Closest Facilities to Black Rock Castle Observatory)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	Goldbergs	4.40	Pronto The Coffee Shop	0.85	Cork's Vienna Woods	3.63
2	The Idle Hour	4.44	Starbucks Mahon Point	2.02	Belverde Lodge	4.19
3	Charlies's Bar	4.84	Naturally Nourished	2.03	Clayton Silver Springs	4.45
4	El Fenix Bar	4.86	Starbucks City Gate	2.18	The Townhouse	4.68
5	The Poor Relation	4.96	Coffee Doc	2.25	Clayton	4.77
6	The Welcome Inn	4.99	Dukes Coffee Company	2.30	Jury's Inn	4.89
7	Fionnbarra	5.01	Coffee Desk	2.32	Maldron Shandon	5.00
8	Hannah Barretts	5.07	Bean and Leaf	2.42	Maldron South Mall	5.00
9	The Oliver Plunkett	5.15	Ross Bakery & Café	3.24	REZz Hotel	5.25
10	The Frisky Whiskey	5.15	Coffee & Crepes	3.74	The Dean	5.32

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	The Castle Café	0.01	Aldi Blackrock	1.73
2	Salt Food & Wine	4.05	Mahon Point Shopping Centre	1.95
3	Goldbergs	4.40	Scally's SuperValu	2.32
4	Golden Elephant	4.69	Tesco Superstore Ballintemple	3.53
5	Dockland	4.69	Aldi Ballintemple	4.57
6	Haveli Indian Restaurant	4.71	Victorias Antiques	5.00
7	Sultan Café Restaurant	4.86	Spar Parnell Place	5.00
8	Elbow Lane Brew & Smoke House	5.02	Comic Vault	5.01
9	Market Lane	5.03	Olori	5.02
10	Milano	5.05	SuperValu St Patrick's St	5.13

Appendix 7 (Closest Facilities to Blarney Castle)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	The Residence Bar	7.26	Café Atrium	7.54	The Kingsley	8.00
2	The Joshua Tree	7.53	Costa Coffee Churchfield Rd	7.61	Hayfield Manor	8.26
3	River Lane Bar	7.78	Eco Café	7.68	The River Lee	8.42
4	Glenryan Tavern	7.87	Bio Café	7.70	Lancaster Lodge	8.45
5	Franciscan Well Brewery	7.94	The Green Frog Café	7.95	Ashley Hotel	8.77
6	D'Anglers Bar	8.06	Mango Café	8.06	Oriel House	8.86
7	The New Bar	8.09	The Haven Café	8.07	Hotel Isaacs	8.94
8	The Friary	8.10	Sicilian Delights	8.15	The Metropole	8.99
9	Woolshed Bar	8.19	Café Jane	8.30	REZz Hotel	9.08
10	Old Reliable	8.23	Coffee Scape	8.31	The Imperial	9.17

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	Pompeii Pizza	7.95	Centra Blarney	0.59
2	UCC Main Restaurant	8.06	Blarney Woollen Mills	1.10
3	Perrotts Garden Bistro Restaurant	8.25	Singleton's SuperValu	6.50
4	Ichigo Ichie	8.27	Lidl Churchfield	7.54
5	The Charcoal Grill	8.31	Centra Victoria Cross	7.90
6	Orchids Restaurant	8.35	Kirbys Footwear	7.95
7	Domino's Pizza Washington St	8.39	An Siopa	8.00
8	Paradiso	8.40	Boots	8.11
9	The River Club	8.42	Oje System Afro-Caribbean Store	8.14
10	Four Star Pizza Washington St	8.42	Clifford's Centra	8.15

Appendix 8 (Closest Facilities to the Butter Museum)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	O'Cionnaighs Pub	0.10	Myo Café	0.19	Ashley Hotel	0.53
2	Maureen's	0.21	Coffee Scape	0.22	Hotel Isaacs	0.72
3	Old Reliable	0.23	Iyer's Café	0.23	The Metropole	0.77
4	Bierhaus	0.25	Café Jane	0.25	REZz Hotel	0.86
5	Homer Bar	0.32	Vanilla Sky	0.47	Jury's Inn	1.03
6	Old Town Whiskey Bar	0.40	Prime Café & Bakers	0.51	The Imperial	1.04
7	Rising Sons Brewery	0.41	The Haven Café	0.56	Clayton	1.09
8	The Friary	0.43	Rebel Coffee	0.57	Lancaster Lodge	1.11
9	D'Anglers Bar	0.48	Dukes Coffee Company	0.58	Maldron Shandon	1.18
10	Ryans Bar	0.50	Priority Coffee	0.59	Maldron South Mall	1.19

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	The Charcoal Grill	0.22	Clifford's Centra	0.22
2	51 Cornmarket	0.38	Costello stores	0.24
3	Bodega	0.41	Jia Jia Market	0.33
4	Cornstore Cork	0.48	McCarthy's Clothing & Footwear	0.37
5	Tony's Bistro	0.55	Cork Oriental Supermarket	0.39
6	Amicus	0.56	Oje System Afro-Caribbean Store	0.40
7	Da Mirco Osteria	0.57	Tesco Superstore Lavitt's Quay	0.45
8	The Black Dog	0.57	Tesco Superstore Paul St	0.45
9	Burritos & Blues	0.57	EuroGiant North Main St	0.48
10	Pompeii Pizza	0.58	Lidl Cornmarket St	0.49

Appendix 9 (Closest Facilities to Cork City Gaol)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	The Joshua Tree	1.08	Café Atrium	0.96	The Kingsley	1.42
2	The Residence Bar	1.24	Eco Café	1.09	Hayfield Manor	1.67
3	Franciscan Well Brewery	1.26	Bio Café	1.11	The River Lee	1.84
4	Glenryan Tavern	1.40	The Green Frog Café	1.36	Lancaster Lodge	1.86
5	The Friary	1.42	The Haven Café	1.39	Ashley Hotel	2.25
6	The New Bar	1.50	Mango Café	1.47	Hotel Isaacs	2.32
7	Woolshed Bar	1.51	Sicilian Delights	1.56	The Metropole	2.37
8	D'Anglers Bar	1.60	Coffee Scape	1.69	REZz Hotel	2.46
9	BrewDog Cork	1.62	Myo Café	1.72	The Imperial	2.49
10	River Lane Bar	1.65	Iyer's Café	1.75	Jury's Inn	2.56

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	Pompeii Pizza	1.27	Singleton's SuperValu	0.93
2	UCC Main Restaurant	1.48	Centra Victoria Cross	1.32
3	Ichigo Ichie	1.60	An Siopa	1.42
4	Perrotts Garden Bistro Restaurant	1.66	Oje System Afro-Caribbean Store	1.53
5	The Charcoal Grill	1.69	Asian Foods	1.58
6	Domino's Pizza Washington St	1.71	Fresh and Frozen	1.61
7	Four Star Pizza Washington St	1.74	Clifford's Centra	1.63
8	Orchids Restaurant	1.76	EuroGiant North Main St	1.69
9	Tony's Bistro	1.77	Mr Price North Main St	1.71
10	Dwyers of Cork	1.78	Costello stores	1.75

Appendix 10 (Closest Facilities to Cork Public Museum)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	The New Bar	0.59	The Green Frog Café	0.45	Hayfield Manor	0.81
2	Cissie Youngs	0.98	Café Atrium	0.49	The River Lee	0.92
3	Woolshed Bar	1.00	Eco Café	0.57	Lancaster Lodge	0.95
4	The Rock	1.00	Bio Café	0.59	The Kingsley	1.22
5	Costigan's Pub	1.09	Sicilian Delights	0.84	The Imperial	1.94
6	The Beggarman	1.10	Café Depeche	0.91	Maldron Shandon	2.13
7	The Abbey Tavern	1.12	Mango Café	1.00	Maldron South Mall	2.13
8	The Alibi Bar	1.15	Joe's and Bros	1.04	Hotel Isaacs	2.21
9	BrewDog Cork	1.19	Pinkmoon Café	1.07	Ashley Hotel	2.22
10	Mok's	1.20	Brew 132	1.26	The Metropole	2.26

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	UCC Main Restaurant	0.56	An Siopa	0.50
2	Perrotts Garden Bistro Restaurant	0.80	Centra Victoria Cross	0.85
3	Paradiso	0.90	Records & Relics	0.88
4	The River Club	0.92	Centra Washington St	1.12
5	Orchids Restaurant	0.95	EuroGiant North Main St	1.32
6	Ichigo Ichie	1.08	Asian Foods	1.33
7	Domino's Pizza Washington St	1.11	Mr Price North Main St	1.34
8	Four Star Pizza Washington St	1.20	Tesco Express North Block	1.36
9	Dwyers of Cork	1.24	Fresh and Frozen	1.36
10	Liberty Grill	1.24	St Augustine's Shop	1.39

Appendix 11 (Closest Facilities to Fitzgerald's Park)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	The New Bar	0.78	Café Atrium	0.34	Hayfield Manor	1.01
2	Cissie Youngs	1.18	Eco Café	0.48	The Kingsley	1.07
3	Woolshed Bar	1.20	Bio Café	0.50	The River Lee	1.12
4	The Rock	1.21	The Green Frog Café	0.65	Lancaster Lodge	1.15
5	Costigan's Pub	1.29	Mango Café	0.86	The Imperial	2.14
6	The Beggarman	1.30	Sicilian Delights	0.95	Maldron Shandon	2.33
7	The Abbey Tavern	1.32	Café Depeche	1.11	Maldron South Mall	2.33
8	The Alibi Bar	1.35	Joe's and Bros	1.24	Hotel Isaacs	2.41
9	BrewDog Cork	1.38	Pinkmoon Café	1.27	Ashley Hotel	2.42
10	Mok's	1.39	Brew 132	1.46	The Metropole	2.46

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	UCC Main Restaurant	0.76	An Siopa	0.70
2	Perrotts Garden Bistro Restaurant	1.00	Centra Victoria Cross	0.70
3	Paradiso	1.09	Records & Relics	1.08
4	The River Club	1.11	Tesco Express North Block	1.21
5	Orchids Restaurant	1.15	Centra Washington St	1.32
6	Ichigo Ichie	1.28	EuroGiant North Main St	1.52
7	Domino's Pizza Washington St	1.31	Asian Foods	1.52
8	Four Star Pizza Washington St	1.40	Mr Price North Main St	1.53
9	Dwyers of Cork	1.43	Fresh and Frozen	1.56
10	Liberty Grill	1.44	Singleton's SuperValu	1.58

Appendix 12 (Closest Facilities to Crawford Art Gallery)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	Jim Cashmans	0.07	Rebel Coffee	0.08	The Imperial	0.53
2	Le Chateau	0.18	Starbucks Opera Lane	0.09	Hotel Isaacs	0.59
3	The Thomond Bar	0.23	Prime Café & Bakers	0.09	Ashley Hotel	0.62
4	The Oyster Tavern	0.26	Plus and Minus Café	0.11	The Metropole	0.64
5	Mutton Lane Inn	0.29	Dukes Coffee Company	0.11	Maldron Shandon	0.71
6	Atlas	0.32	Crawford Gallery Café	0.13	Maldron South Mall	0.71
7	An Bodhrán	0.32	Costa Coffee Emmett Place	0.13	REZz Hotel	0.73
8	The Roundy	0.33	Fellini Café	0.18	Jury's Inn	0.76
9	The Woodford	0.37	Perry Street Market Café	0.22	Clayton	0.82
10	SoHo Bar	0.38	Café Noir	0.26	Lancaster Lodge	0.96

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	Nando's Cork	0.05	Pinocchio's	0.07
2	CoqBull	0.09	Kilkenny Shop	0.08
3	Amicus	0.09	River Island	0.08
4	Bunsen	0.10	Louis Copeland & Sons	0.10
5	Strasbourg Goose Restaurant	0.10	Office	0.12
6	Burritos & Blues	0.11	H&M	0.12
7	Restaurant 14a	0.12	Nine Crows Vintage	0.13
8	Umi Falafel	0.12	Next	0.13
9	Koto	0.13	Wild Design Collective	0.13
10	Luigi Malones	0.15	New Look	0.14

Appendix 13 (Closest Facilities to Elizabeth Fort)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	BarBarella	0.01	Café Tiramisu	0.17	Lancaster Lodge	0.87
2	O'Sho	0.13	Alchemy	0.37	The Imperial	0.98
3	Tom Barry's	0.43	107 Barrack Street	0.44	The River Lee	0.98
4	The Abbey Tavern	0.52	Joe's and Bros	0.59	The Townhouse	1.04
5	Fionnbarra	0.52	Izz Coffee	0.64	Maldron Shandon	1.16
6	The Beggarman	0.55	Filter	0.68	Maldron South Mall	1.17
7	The Courtyard	0.59	Three Fools Coffee	0.69	Hayfield Manor	1.24
8	Fordes Bar	0.60	Café Moly	0.70	Clayton	1.41
9	Deep South	0.61	Soma Coffee	0.73	Jury's Inn	1.59
10	The Rock	0.63	Café Depeche	0.83	Hotel Isaacs	1.61

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	Good Day Deli	0.37	XL Barrack Street	0.38
2	Quay Co-op	0.55	Timberland	0.74
3	The Courtyard On Sober Lane	0.59	Records & Relics	0.80
4	The Flying Enterprise	0.64	Cork Art Supplies	0.81
5	Fat Belly	0.68	EuroGiant Oliver Plunkett St	0.83
6	Hillbilly's Grand Parade	0.70	St Augustine's Shop	0.86
7	Electric	0.73	Mona's Antiques	0.90
8	Sober Lane	0.75	Dealz	0.91
9	An Sibín	0.81	Spar St Patrick's St	0.92
10	Paradiso	0.82	Centra Washington St	0.93

Appendix 14 (Closest Facilities to the English Market)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	Deep South	0.19	Bean and Leaf	0.06	The Imperial	0.51
2	SoHo Bar	0.20	Three Fools Coffee	0.11	Maldron Shandon	0.69
3	The Oval	0.21	Soma Coffee	0.14	Maldron South Mall	0.69
4	The Park Cork	0.21	Café Gusto	0.21	Lancaster Lodge	0.80
5	An Spailpín Fánach	0.23	Brew 132	0.33	The River Lee	0.91
6	Edison	0.26	Coffee Central	0.39	Hotel Isaacs	1.02
7	Ziggys Bar	0.29	Fellini	0.45	Clayton	1.03
8	The Roundy	0.30	Vanilla Sky	0.45	The Metropole	1.06
9	Conway's Yard	0.31	Starbucks Princes Street	0.46	Ashley Hotel	1.09
10	An Bróg Bar	0.32	Dukes Coffee Company	0.47	Jury's Inn	1.12

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	Hillbilly's Grand Parade	0.09	Timberland	0.09
2	Electric	0.26	St Augustine's Shop	0.21
3	Quay Co-op	0.31	Dealz	0.27
4	An Sibín	0.34	Spar St Patrick's St	0.27
5	Jacobs on the Mall	0.35	The Outdoor Adventure Store	0.31
6	Cornstore Cork	0.35	Life Style Sports	0.32
7	The SpitJack Cork	0.35	EuroGiant Oliver Plunkett St	0.32
8	Burnt Pizza	0.35	Kala	0.32
9	The Courtyard On Sober Lane	0.36	Castle Jewellers	0.33
10	The Oyster Tavern	0.36	Oriental Supermarket Express	0.34

Appendix 15 (Closest Facilities to Glucksman Gallery)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	The New Bar	0.20	The Green Frog Café	0.14	Hayfield Manor	0.59
2	Cissie Youngs	0.62	Café Depeche	0.60	The River Lee	0.61
3	The Rock	0.63	Eco Café	0.61	Lancaster Lodge	0.64
4	The Beggarman	0.72	Bio Café	0.63	The Kingsley	1.54
5	The Abbey Tavern	0.74	Joe's and Bros	0.66	The Imperial	1.63
6	Costigan's Pub	0.77	Pinkmoon Café	0.75	Maldron Shandon	1.82
7	Mok's	0.82	Sicilian Delights	0.80	Maldron South Mall	1.82
8	Woolshed Bar	0.83	Brew 132	0.95	Hotel Isaacs	1.94
9	The Alibi Bar	0.84	Café Atrium	0.96	The Metropole	1.99
10	Gaia	0.85	The Lough Café	1.06	Ashley Hotel	2.01

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	UCC Main Restaurant	0.40	An Siopa	0.21
2	Perrotts Garden Bistro Restaurant	0.57	Records & Relics	0.57
3	Paradiso	0.58	Centra Washington St	0.80
4	The River Club	0.60	St Augustine's Shop	1.07
5	Orchids Restaurant	0.70	XL Barrack Street	1.14
6	Domino's Pizza Washington St	0.80	EuroGiant North Main St	1.14
7	Four Star Pizza Washington St	0.89	Asian Foods	1.15
8	Ichigo Ichie	0.90	Mr Price North Main St	1.16
9	Dwyers of Cork	0.92	Centra Victoria Cross	1.17
10	Liberty Grill	0.93	Fresh and Frozen	1.18

Appendix 16 (Closest Facilities to Nano Nagle Place)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	Fionnbarra	0.17	Izz Coffee	0.29	The Imperial	0.66
2	Callanan's Bar	0.36	Filter	0.32	The Townhouse	0.68
3	The Laurel Bar	0.38	Café Moly	0.35	Maldron Shandon	0.85
4	Fred Zeppelins	0.43	3 Little Piggies	0.54	Maldron South Mall	0.85
5	The Courtyard	0.58	Starbucks Princes Street	0.63	Clayton	1.06
6	Fordes Bar	0.59	Three Fools Coffee	0.67	Jury's Inn	1.26
7	Deep South	0.60	Bean and Leaf	0.68	Hotel Isaacs	1.29
8	Hannah Barretts	0.62	The Bookshelf Coffee	0.70	The Metropole	1.34
9	Conway's Yard	0.63	Café Noir	0.72	Lancaster Lodge	1.37
10	An Bróg Bar	0.64	Soma Coffee	0.73	REZz Hotel	1.43

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	Good Day Deli	0.01	Cork Art Supplies	0.49
2	Fat Belly	0.33	Mona's Antiques	0.59
3	Sober Lane	0.39	Cummins Sports	0.62
4	Jacobs on the Mall	0.50	EuroGiant Oliver Plunkett St	0.64
5	An Sibín	0.50	Ann Summers	0.66
6	Electric	0.51	Lush Cosmetics	0.69
7	Burnt Pizza	0.51	Central Shoe Stores	0.69
8	Nash 19	0.52	Denim Store	0.70
9	Ristorante Rossini	0.54	Timberland	0.70
10	Quay Co-op	0.55	The Framemaker	0.71

Appendix 17 (Closest Facilities to Old Cork Waterworks Experience)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	The New Bar	1.65	Café Atrium	0.75	The Kingsley	0.87
2	The Joshua Tree	1.91	Eco Café	1.17	Hayfield Manor	1.74
3	Flannery's Irish Pub	1.92	Bio Café	1.18	The River Lee	2.06
4	Cissie Youngs	1.99	Mango Café	1.26	Lancaster Lodge	2.09
5	The Rock	2.07	Box'd Drive Thru Coffee	1.29	Ashley Hotel	3.07
6	Franciscan Well Brewery	2.09	Bosca Drive Thru Coffee	1.35	The Imperial	3.08
7	Woolshed Bar	2.14	The Green Frog Café	1.59	Hotel Isaacs	3.15
8	The Beggarman	2.17	Sicilian Delights	1.63	The Metropole	3.20
9	The Abbey Tavern	2.18	Beantown Café	1.88	Maldron Shandon	3.27
10	The Residence Bar	2.19	Café Depeche	2.05	Maldron South Mall	3.28

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	UCC Main Restaurant	1.55	Centra Victoria Cross	0.78
2	Perrotts Garden Bistro Restaurant	1.73	Tesco Express North Block	1.22
3	Orchids Restaurant	1.83	An Siopa	1.57
4	Paradiso	2.04	Records & Relics	2.02
5	The River Club	2.06	Singleton's SuperValu	2.03
6	Pompeii Pizza	2.10	Centra Washington St	2.26
7	Ichigo Ichie	2.22	Wilton Shopping Centre	2.26
8	Domino's Pizza Washington St	2.25	Garden Goodness	2.28
9	Four Star Pizza Washington St	2.34	Oje System Afro-Caribbean Store	2.35
10	Dwyers of Cork	2.38	Asian Foods	2.40

Appendix 18 (Closest Facilities to Shandon Bells and Tower/St. Anne's Church)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	O'Cionnaighs Pub	0.07	Café Jane	0.22	Ashley Hotel	0.57
2	Old Reliable	0.19	Myo Café	0.27	Hotel Isaacs	0.76
3	Maureen's	0.28	Coffee Scape	0.29	The Metropole	0.81
4	Homer Bar	0.28	Iyer's Café	0.30	REZz Hotel	0.90
5	Bierhaus	0.33	The Haven Café	0.53	Jury's Inn	1.07
6	The Friary	0.40	Vanilla Sky	0.55	The Imperial	1.08
7	D'Anglers Bar	0.44	Prime Café & Bakers	0.59	Clayton	1.13
8	The Old Town Whiskey Bar	0.47	Priority Coffee	0.63	Lancaster Lodge	1.19
9	Rising Sons Brewery	0.48	Rebel Coffee	0.65	Maldron Shandon	1.22
10	Glenryan Tavern	0.52	Dukes Coffee Company	0.66	Maldron South Mall	1.23

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	The Charcoal Grill	0.30	Clifford's Centra	0.19
2	51 Cornmarket	0.45	Costello stores	0.21
3	The Old Town at Bodega	0.49	Oje System Afro-Caribbean Store	0.37
4	Pompeii Pizza	0.54	Jia Jia Market	0.41
5	Cornstore Cork	0.55	McCarthy's Clothing & Footwear	0.44
6	Da Mirco Osteria	0.61	Cork Oriental Supermarket	0.47
7	Tony's Bistro	0.62	Food Market Mróz	0.53
8	Amicus	0.64	Tesco Superstore Lavitt's Quay	0.53
9	The Black Dog	0.64	Tesco Superstore Paul St	0.54
10	Burritos & Blues	0.65	EuroGiant North Main St	0.55

Appendix 19 (Closest Facilities to St. Fin Barre's Cathedral)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	The Abbey Tavern	0.24	Alchemy	0.22	Lancaster Lodge	0.65
2	Tom Barry's	0.26	107 Barrack Street	0.23	The River Lee	0.76
3	The Beggarman	0.27	Joe's and Bros	0.31	Hayfield Manor	0.96
4	BarBarella	0.31	Café Tiramisu	0.47	The Imperial	1.22
5	The Rock	0.35	Café Depeche	0.62	The Townhouse	1.28
6	O'Sho	0.37	Pinkmoon Café	0.66	Maldron Shandon	1.40
7	Gaia	0.41	Brew 132	0.70	Maldron South Mall	1.41
8	The Gallows	0.45	The Lough Café	0.80	Clayton	1.65
9	Southside Bar	0.50	Café Gusto	0.82	Hotel Isaacs	1.68
10	Mok's	0.53	Izz Coffee	0.88	The Metropole	1.73

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	Paradiso	0.60	XL Barrack Street	0.25
2	Good Day Deli	0.61	Records & Relics	0.59
3	Dwyers of Cork	0.63	Centra Washington St	0.71
4	Four Star Pizza Washington St	0.65	St Augustine's Shop	0.82
5	Liberty Grill	0.68	Timberland	0.88
6	The SpitJack Cork	0.69	An Siopa	0.91
7	Domino's Pizza Washington St	0.70	Dealz	0.93
8	The River Club	0.75	Spar St Patrick's St	0.93
9	Quay Co-op	0.79	Centra Grande Parade	0.94
10	Ichigo Ichie	0.80	The Outdoor Adventure Store	0.98

Appendix 20 (Closest Facilities to St. Peter's Cork)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	Ryans Bar	0.14	The Haven Café	0.29	Lancaster Lodge	0.61
2	BrewDog Cork	0.15	Brew 132	0.32	The River Lee	0.72
3	Vicarstown Bar	0.15	Pinkmoon Café	0.33	The Imperial	0.94
4	The Raven Bar	0.22	Café Gusto	0.38	Ashley Hotel	0.99
5	The Castle Inn	0.23	Vanilla Sky	0.43	Hotel Isaacs	1.05
6	Rising Sons Brewery	0.24	Myo Café	0.45	The Metropole	1.09
7	The Alibi Bar	0.24	Dukes Coffee Company	0.46	Maldron Shandon	1.13
8	Brick Lane	0.24	Prime Café & Bakers	0.47	Maldron South Mall	1.13
9	The Liberty	0.25	Coffee Scape	0.47	REZz Hotel	1.18
10	The Old Town Whiskey Bar	0.26	Rebel Coffee	0.48	Jury's Inn	1.21

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	Tony's Bistro	0.15	EuroGiant North Main St	0.08
2	The Black Dog	0.17	Mr Price North Main St	0.09
3	The Raven	0.22	Marks & Spencer	0.26
4	The Old Town at Bodega	0.23	McCarthys Clothing & Footwear	0.28
5	Sonflour	0.24	Castle Jewellers	0.28
6	Shake Dog	0.24	Baby Boutique	0.28
7	Brick Lane	0.25	Lidl Cornmarket St	0.29
8	Cornstore Cork	0.26	Kala	0.29
9	Ichigo Ichie	0.27	The Outdoor Adventure Store	0.30
10	51 Cornmarket	0.28	Asian Foods	0.32

Appendix 21 (Closest Facilities to Triskel Christchurch)

	Bar	Distance (km)	Café	Distance (km)	Hotel	Distance (km)
1	Ziggys Bar	0.06	Brew 132	0.13	Lancaster Lodge	0.57
2	An Spailpín Fánach	0.10	Café Gusto	0.20	The Imperial	0.64
3	Preachers	0.14	Soma Coffee	0.24	The River Lee	0.68
4	The Oval	0.14	Three Fools Coffee	0.24	Maldron Shandon	0.83
5	The Park Cork	0.14	Pinkmoon Café	0.35	Maldron South Mall	0.83
6	Edison	0.15	Café Tiramisu	0.41	Hotel Isaacs	1.05
7	Rearden's Bar	0.16	Coffee Central	0.42	The Metropole	1.10
8	SoHo Bar	0.17	Fellini	0.48	Ashley Hotel	1.12
9	Dwyers of Cork	0.17	Vanilla Sky	0.49	Clayton	1.17
10	The Washington Inn	0.17	Starbucks Princes Street	0.50	REZz Hotel	1.19

	Restaurant	Distance (km)	Shop and Supermarket	Distance (km)
1	The SpitJack Cork	0.15	St Augustine's Shop	0.19
2	Liberty Grill	0.16	Timberland	0.20
3	Dwyers of Cork	0.17	Dealz	0.30
4	Hillbilly's Grand Parade	0.23	Spar St Patrick's St	0.31
5	The Flying Enterprise	0.24	The Outdoor Adventure Store	0.35
6	Four Star Pizza Washington St	0.29	Life Style Sports	0.35
7	The Raven	0.34	Kala	0.36
8	Shake Dog	0.35	Castle Jewellers	0.36
9	Domino's Pizza Washington St	0.36	The Outdoor Adventure Store	0.30
10	Brick Lane	0.36	Asian Foods	0.32