

Tourist Movement Dynamics in Special Interest Tourism: Spatial Analysis of Rafting Activities on Cicatih and Citarik Rivers

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ABSTRACT

Tourism encompasses more than just attractions and points of interest; it also involves the movement of individuals from their place of residence to tourist destinations. Special interest tourism refers to travel activities with a specific and focused objective. In Sukabumi Regency, Cicatih and Citarik rivers, are well known as destinations for whitewater rafting, a prominent form of special interest tourism. This study examines the spatial patterns of tourist movement and the factors influencing these patterns using spatial analysis and chi-square correlation analysis. The findings reveal that spatial movement patterns are shaped by the distinct spatial dimensions of each river. Tourists exhibiting a single pattern of movement tend to have limited mobility and do not travel across multiple directions, in contrast to those with multiple or complex movement patterns. These movement patterns are influenced by various determining factors. Notably, the attractiveness of the destination, tourist motivation, and the duration of stay significantly affect movement behavior. In contrast, a tourist's place of origin and the number of travel companions were found to have no substantial influence on their movement.

Keywords: Spatial movement, Special interest tourism, Rafting tourism, Chi-square analysis

1. INTRODUCTION

1.1. Background

Tourism is one of the key contributors to a nation's economy, serving as a significant source of foreign exchange. It encompasses not only tourist attractions and destinations but also involves the movement of tourists from their places of residence to tourism sites. According to Robinson and Murphy in Pitana and Gayanti (2005), tourism develops as a result of travelers exploring new regions, thereby experiencing novel environments and journeys. The tourism sector has evolved in various aspects, including the forms and nature of tourism activities, tourist motivations, and changes in travel patterns (Suwantoro, 1997).

Each tourist differs in terms of individual characteristics, behavior, place of origin, economic background, and travel motivation, all of which contribute to distinct patterns of movement. These movements reflect interactions between attractions and between geographic locations. Gigi and McKercher (2006) categorize tourist movement patterns into three types: single pattern, multiple pattern, and complex pattern. These movement types are influenced by a variety of factors. Understanding tourist movement is essential for assessing the attractiveness of tourism objects, tracking changes in tourist flows over time, analyzing

tourism development trends in specific areas, and determining tourism development zoning (Suharto, 2009).

One tourism category that has gained increasing popularity in recent years is special interest tourism, particularly white-water rafting. This type of tourism offers not only adventure and challenges but also the opportunity to enjoy the natural beauty of rivers. Teamwork, high concentration, and discipline are essential traits for individuals participating in rafting activities. In Sukabumi Regency, two rivers are well known as special interest rafting destinations: the Cicatih River and the Citarik River. Numerous outdoor adventure operators have established services in these areas, offering not only rafting but also a variety of tourism packages such as camping, family gatherings, off-road activities, and war games.

Differences in physical characteristics, facilities, types of tourism activities, and route configurations between the two rivers influence the motivations and preferences of visiting tourists. For this reason, the researcher is interested in selecting the Cicatih and Citarik Rivers as study areas to examine the spatial variations that emerge from special interest tourism activities, specifically white water rafting in Sukabumi Regency.

1.2. Research Problem

The Cicatih and Citarik Rivers are among the primary destinations for white-water rafting tourism in Sukabumi Regency. Although both serve as locations for special interest tourism, they differ in terms of physical characteristics, available tourism facilities, and the volume of tourist visits. These differences contribute to the emergence of spatial variations in tourist activities. Based on the background outlined above, the research problems addressed in this study are:

1. What are the types of movement patterns of special interest tourists engaged in white-water rafting on the Citarik and Cicatih Rivers?
2. How significant is the influence of various factors on the movement patterns of special interest tourists engaged in white-water rafting on the Citarik and Cicatih Rivers

1.3. Research Objectives

This study aims to identify the types of movement patterns exhibited by special interest tourists participating in white-water rafting on the Citarik and Cicatih Rivers, as well as to analyze the influence of various factors on these movement patterns.

2. THEORETICAL REVIEW

2.1 Special Interest Tourism

Special interest tourism is a type of travel where individuals visit a destination due to a specific personal interest in particular objects or activities offered at the tourism site (Weiler & Hall, 1992). According to Medlik (1993), special interest tourism refers broadly to vacation travel undertaken by individuals driven by specialized interests, such as art, education, hobbies, sports, and outdoor activities. It is essentially a segmentation within the

tourism industry, focused on providing tailored services and experiences for tourists whose travel decisions are shaped by a distinctive motivation, rather than general sightseeing or relaxation.

This form of tourism caters to those who seek more than conventional leisure, offering in-depth engagement with topics or experiences that align with their passions. For instance, it can include artistic retreats, environmental expeditions, educational workshops, or wilderness adventures. In Indonesia, special interest tourism is still in a developmental stage but is increasingly being explored as a strategic niche, particularly for tourists motivated by meaningful and immersive experiences.

Participants in special interest tourism often aim to expand their understanding of people, cultures, landscapes, and daily life in a way that differs from mass tourism. It tends to require some level of skill or prior interest, and generally does not demand high-end infrastructure or extensive development. Despite its relatively simple facility requirements, special interest tourism encompasses various forms, frequently labeled as active travel, experience-based travel, rural or indigenous community visits (social tourism), educational journeys, nature-based tourism, and conservation-driven travel. These labels emphasize the personal growth, physical engagement, and environmental sensitivity often involved in this tourism segment

2.2 White-water Rafting

White-water rafting, or arung jeram, is defined as the activity of navigating sections of a river characterized by rapids or swift currents, using specific types of watercraft (Williams, 1974). The watercraft referred to in this context typically include inflatable rafts, kayaks, and canoes, and are operated with paddles (Smayamtala, 2000). Rafting can serve multiple purposes—ranging from sport and recreation to exploration. As such, white-water rafting is both a physically engaging activity and a form of leisure or expedition that combines natural challenges with adventure.

According to the Indonesian Rafting Federation (FAJI), the term “arung jeram” originates from the English phrase “white-water rafting,” which broadly refers to river navigation using boats powered by paddling. The International Rafting Federation (IRF) defines rafting as a human activity that involves navigating a river using physical strength and skill to maneuver a soft-sided boat, and recognizes it as a social, commercial, and sporting pursuit. While the term “rafting” has had various interpretations in Indonesia during its early adoption, the term “arung jeram” has since been standardized in competency frameworks.

In these standards, white-water rafting refers specifically to the act of navigating a river using inflatable boats or similar watercraft, operated by a crew of at least two people, one of whom serves as the skipper. This definition sets several parameters: the activity must take place on a flowing river; it must use inflatable watercraft; it relies on human paddling power, whether by individuals, pairs, or teams; and it involves group dynamics, including roles and coordination among crew members. These criteria reflect both the technical and team-based nature of the activity, which makes it suitable not only for thrill-seekers but also for tourists interested in physical challenges, team-building, and nature-based adventure.

2.3 Tourist Movement

Tourist movement, or travel patterns, can be understood by examining the motivations, directions, and volume of movement (Wijayanti, 2011). The motivation for movement is based on the purpose of the trip and can include economic, socio-cultural, educational, and recreational factors. Direction is influenced by the origin and destination of the trip, typically classified as home-based or non-home-based. Meanwhile, volume refers to the number of individuals involved in the movement, as well as the intensity of the activity over time.

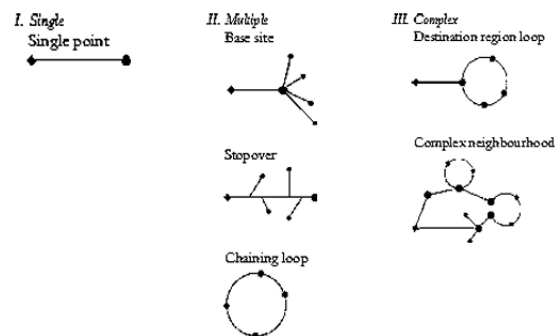


Figure 1. Movement Types

Source: Gigi and McKercher (2006)

According to Gigi and McKercher (2006), tourist movement can generally be categorized into three types: single pattern, multiple pattern, and complex pattern. A single pattern movement refers to a travel behavior in which tourists visit only one destination before returning to their point of origin using the same route. This pattern implies a focused and short-duration visit with minimal deviation from the main destination.

In contrast, multiple pattern movement involves visiting more than one destination within the same trip. This type is further divided into three subtypes: base site, stopover, and chaining loop. In a base site pattern, the tourist begins the journey at their point of origin, first visits the primary tourism object, and then proceeds to secondary sites. In a stopover pattern, the tourist visits one or more locations before reaching the main tourism site, which is saved for the end of the trip. The chaining loop pattern, meanwhile, involves a circular route where the tourist connects multiple tourism objects in a loop-like sequence, creating a ring-shaped travel path.

Complex pattern movement is a combination of the previous types and includes destination region loops and complex neighborhood patterns. A destination region loop involves tourists starting their trip by exploring multiple destinations in a loop before returning home via the shortest path between the final destination and their point of origin. This is essentially a hybrid of the single and chaining loop patterns. Meanwhile, the complex neighborhood pattern combines two or more of the movement patterns mentioned above, resulting in more diverse and layered travel behaviors. These movement patterns help researchers understand the spatial dynamics of tourism, particularly in terms of how tourists

engage with attractions and how different factors influence their travel decisions across space and time.

3. METHODS

This study focuses on tourists visiting selected natural attractions, specifically those engaged in white-water rafting as a form of special interest tourism. The respondents were selected using judgmental sampling, a non-probability sampling method in which participants are chosen based on the researcher's careful and deliberate assessment. According to Yunus (2010), judgmental sampling allows the selection of samples that are considered to represent the characteristics of a particular group or geographic area accurately. Since the objective of this research is to identify spatial patterns in tourist movement, the respondents had to reflect diverse movement types and spatial behaviors. Therefore, only tourists who displayed variation in their movement patterns were selected to ensure a more comprehensive understanding of spatial dynamics.

The population targeted in this research consisted of tourists who visited white-water rafting sites along the Cicatih and Citarik Rivers in Sukabumi Regency. Field interviews were conducted in late March 2019, specifically during weekends (Friday, Saturday, and Sunday) under the assumption that these days coincide with higher tourist activity due to public holidays and more stable river flow conditions. The timing was strategic in order to capture a sufficient volume and diversity of tourist behavior during peak visitation periods.

The research process began by preparing an administrative map of Sukabumi Regency to define the study boundaries. A spatial distribution map of nature-based tourism attractions located along the Cicatih and Citarik Rivers was also developed to support spatial analysis. Subsequently, the research focused on identifying the sequence of tourist visits during their movements. This included recording the order in which each site was visited, whether as a first, second, third destination, and so forth. The result of this step was the construction of a visit sequence matrix, which served as the foundation for analyzing movement patterns.

In addition to identifying movement sequences, the study distinguished between primary and secondary tourist destinations based on the respondents' travel behavior. Using this information, the researcher categorized the types of tourist movement in accordance with the theoretical framework proposed by Gigi and McKercher (2006). These categorizations were made using specific criteria, and the results were recorded in tabular form, detailing the movement types observed along both the Cicatih and Citarik Rivers. A series of tourist movement maps were then created to visualize each movement type, enabling clearer spatial interpretation of tourist flow across the two rivers.

Further analysis was conducted to classify tourist characteristics based on their place of origin, group size, and visit frequency. Place of origin was categorized into tourists from Sukabumi Regency, other parts of West Java, eastern, central, and western regions of Java, other islands outside Java, and international visitors. Group size was classified into small groups (1–2 persons), medium groups (3–5 persons), and large groups (more than 5 persons). Visit frequency was divided into first-time visitors and repeat visitors.

To examine the relationship between tourist movement patterns and influencing factors, the study employed Chi-square correlation analysis. In this analysis, tourist movement served as the dependent variable (Y), while various influencing factors acted as independent variables (X). The objective was to determine which factors significantly affected movement patterns. Finally, the strength of these relationships was quantified using contingency coefficient values, which were presented in tabular format. This allowed the identification of the most influential variables and the degree of association between them, contributing to a deeper understanding of what drives different types of tourist movement in the context of special interest tourism in Sukabumi.

4. RESULTS AND DISCUSSIONS

4.1 Data Analysis

This study employs a spatial descriptive analysis approach, aiming to describe and analyze the spatial patterns of tourist movement in a descriptive manner. Spatial descriptive analysis is used to reveal the spatial patterns that emerge from the processed data, particularly in relation to how tourists move across the study area.

To answer the first research question “What are the types of movement patterns of special interest tourists engaged in white-water rafting on the Citarik and Cicatih Rivers?”, the analysis begins with the identification of tourist movement types based on a matrix of visit sequences and the classification of primary and secondary destinations. This analysis is descriptive in nature, providing a narrative of tourist flow patterns. It is further enhanced through a spatial approach that considers both the distance and direction from tourists’ places of origin to the rafting locations on the Cicatih and Citarik Rivers. These relationships are examined by correlating the distance from origin areas to the tourist destinations with graphs representing types of tourist movement. This method allows for the identification of spatial patterns based on the geographic distance between tourists’ origins and the destination areas.

In addition to analyzing the distance-based patterns, spatial movement is also interpreted based on the extent of tourists' activity space, which refers to the geographical range of movement within and around the Cicatih and Citarik River tourism areas. This is analyzed qualitatively by examining both the distances and directions between visited tourist sites, as well as the number of natural attractions visited by each tourist. This comprehensive approach enables the researcher to visualize and understand the spatial behavior of tourists within the context of special interest white-water rafting.

$$\chi^2 = \sum \sum \frac{(O-E)^2}{E}$$

To address the second research question “What is the influence of various factors on the movement patterns of tourists?”, a chi-square correlation analysis is used. This method is suitable for examining relationships between nominal variables, as noted by Hasan (2010). The analysis aims to identify which factors have a statistically significant influence on tourist movement patterns. A significance level (alpha) of 5% (0.05) is applied, which means that

the analysis is conducted with a 95% confidence level and a 5% margin of error. The hypothesis tested in this analysis is as follows:

H_0 : There is no relationship between tourist movement types and travel motivation, tourist origin, or tourist attraction.

H_1 : There is a relationship between tourist movement types and travel motivation, tourist origin, or tourist attraction.

The conclusion is determined based on the results of the chi-square statistical test. If the calculated chi-square significance value (Asymp. Sig) is greater than 0.05, the null hypothesis (H_0) is accepted, indicating no significant relationship. Conversely, if the value is less than 0.05, the alternative hypothesis (H_1) is accepted, indicating a statistically significant relationship between the variables. This analysis ultimately helps to determine which factors are most strongly associated with different types of tourist movement.

4.2 Research Findings

4.2.1. Types of Tourist Movement

Field observations revealed a notable variation in the movement patterns of tourists engaged in special interest tourism, particularly white-water rafting. In both the Citarik and Cicatih Rivers, five distinct types of movement patterns were identified: one single pattern (single point), three multiple patterns (base site, stopover, and chaining loop), and one complex pattern (destination region loop).

At the Citarik River, tourist movement was predominantly of the single point type, accounting for 38% of all movements. This was followed by the base site type at 24%, stopover at 22%, chaining loop at 10%, and finally, the complex type (destination region loop) at 6%. These findings indicate that most tourists traveling to the Citarik River prefer direct and simple routes to a single destination. However, a significant portion also demonstrates more dynamic travel patterns, especially in the form of base site and stopover movements, suggesting secondary site visits around the primary rafting location. The chaining loop and destination region loop types occurred less frequently, reflecting a smaller number of tourists who engage in more extensive or circular travel patterns across multiple attractions.

A similar pattern was observed at the Cicatih River, where the same five movement types emerged. Tourist movement here was also dominated by the single point type, at 40%, followed by the base site type at 26%, stopover at 20%, and chaining loop at 14%. Notably, the complex movement type was not observed at Cicatih to the same extent as at Citarik. These results reinforce that most visitors to both rivers prefer to visit a central attraction, typically rafting, and may extend their trips slightly with visits to nearby secondary attractions. The Cicatih River, in particular, shows a stronger focus on rafting, which influences the simpler, more direct movement patterns.

Tourist movement intensity can also be assessed by identifying which combinations of attractions are visited most frequently. At the Citarik River, high-intensity movement occurs between closely located attractions. The most common sequences involve rafting to the camping ground, children's adventure to rafting, and children's adventure to paintball. These short-distance transitions reflect a clustered spatial arrangement of attractions that support multi-stop visits within a limited geographic radius.

At the Cicatih River, field findings show that tourists typically visit between one and four natural attractions during their trip—slightly fewer than at the Citarik River. As at Citarik, rafting is the most popular primary attraction. Interestingly, tourists often select rafting as both their first and second activity, indicating a strong preference or repeat experience within the same visit. The third most frequent visit was to the children's adventure area, followed by paintball. High-intensity movement at Cicatih occurred between attractions in close proximity, such as rafting to the camping ground, family gathering areas to rafting, and children's adventure to rafting. These patterns reflect the dominance of rafting as the main attraction, underscoring the river's identity as a destination for extreme water sports. As such, rafting consistently serves as both the primary motivation and the central experience for most visitors to Cicatih.

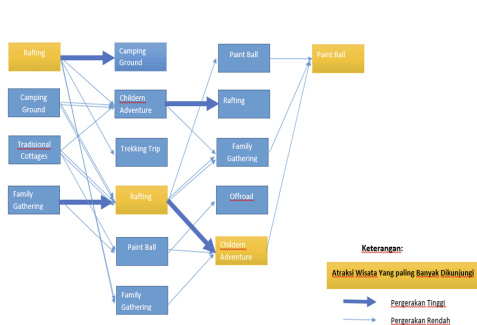


Figure 2. Citarik's Tourist Movement

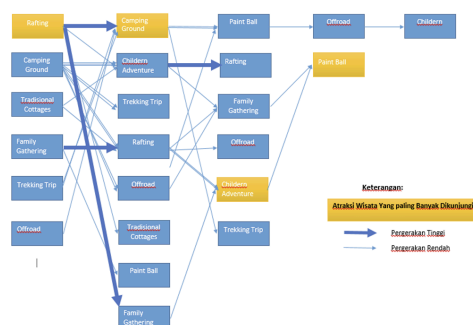


Figure 3. Cicatih's Tourist Movement

4.2.2. Tourist Movement Patterns

Tourist movement patterns differ between domestic and international tourists. At the Citarik River, foreign tourists typically choose the site based on its well-established reputation for rafting, which remains their main purpose of visit. Domestic tourists, however, often explore multiple attractions during a single trip, visiting between one to five natural tourism sites. Their movement patterns tend to be shaped by proximity, convenience, and available activities within the tourism area. The most popular first activity remains rafting, followed by the camping ground, children's adventure, and paintball, in that order. High-intensity movement again correlates with the close spatial proximity of these attractions.

In contrast, tourist movement at the Cicatih River tends to be more focused. Most visitors prioritize rafting, often engaging in it multiple times during a single visit. Compared to

tourists at the Citarik River, those at Cicatih visit fewer attractions, typically between one and four. The repeat selection of rafting as both the first and second activity reinforces its dominance as the main draw. Subsequent visits are directed to the children's adventure area and paintball. As at Citarik, high-intensity movement is found between nearby attractions, such as from rafting to the camping ground, family gathering areas to rafting, and children's adventure to rafting. These patterns emphasize the Cicatih River's positioning as a destination that caters heavily to adrenaline-driven tourism, with rafting as the core experience that defines both visitor motivation and movement behavior.

4.3 Discussion

4.3.1. Spatial Patterns of Special Interest Tourists Engaged in White-Water Rafting in Sukabumi Regency

The spatial pattern of tourist movement is analyzed based on the mobility of visitors between different attractions along the Cicatih and Citarik Rivers. This movement is derived from the sequence of attractions visited during their tourism experience. Field findings indicate that there is significant variation in the movement patterns of tourists within these special interest destinations. Among the two rivers, the Citarik River exhibits greater diversity in movement types than the Cicatih River. At Citarik, tourist movement includes the single pattern, multiple patterns (base site, stopover, and chaining loop), and a complex pattern (destination region loop). In contrast, at Cicatih, only four types were identified—single pattern and the three multiple patterns, without the complex pattern.

These movement types are shaped by the number of attractions visited and the primary objectives of the tourists. The single pattern type, specifically the single point variant, involves visits to only one destination. In contrast, the multiple pattern type includes visits to more than one attraction with both primary and secondary destinations. In the base site pattern, tourists first visit their main destination and then proceed to secondary sites. In the stopover pattern, they visit secondary sites before arriving at the primary one. In the chaining loop pattern, tourists alternate between secondary and primary attractions in a loop. The destination region loop pattern, categorized as complex, involves a circular route around various attractions, with tourists returning to their point of origin via the shortest route between the main destination and the starting location.

Each movement type reflects distinct tourist behaviors. Tourists with a single point pattern typically spend a significant amount of time at a single, primary attraction, usually rafting, or participate in family recreation or group events. This pattern is commonly observed in visitors traveling from Jakarta to rafting attractions. These single-destination tourists come from both within and outside Sukabumi Regency, resulting in diverse movement distances.

Tourists with multiple pattern movements, including base site, stopover, and chaining loop, tend to explore not only the rafting attractions at the two rivers but also other activities such as camping, paintball, trekking, off-road driving, traditional cottages, children's adventure parks, and family gathering venues. Among base site movements, the most frequent transitions include rafting to traditional cottages or to camping grounds at Citarik, and rafting to camping grounds at Cicatih. These movements generally occur over short

distances between closely located attractions, with only a few tourists traveling longer distances.

The high frequency of movement between rafting and camping sites reflects the unique appeal of these attractions, which offer natural beauty and experiences not easily found in the tourists' places of origin. In the stopover movement type, tourists tend to visit other attractions en route to their main destination. This pattern is often chosen by visitors from outside Sukabumi who aim to maximize their time by including additional attractions in their itinerary, even when the sites are not in close proximity. The stopover type tends to involve longer distances and less predictable directions, including visits to both well-known and lesser-known destinations. At Citarik, for instance, tourists frequently move from traditional cottages to rafting or from rafting to off-road activities; at Cicatih, common transitions include paintball to rafting, despite the significant distance.

The chaining loop type also demonstrates more varied directions and distances. At Citarik, this pattern includes both short and long-distance movements between attractions, indicating broader spatial behavior. Meanwhile, the destination region loop (only observed at Citarik) represents the broadest spatial movement. Tourists following this complex pattern visit nearly all available attractions, covering both short and long distances in various directions. Their movement includes well-known destinations as well as new or unexplored sites, making it the most extensive among all identified movement types.

Overall, the maximum number of attractions visited in a single trip was five at the Citarik River and four at Cicatih, while visits to only one destination represented the minimum. Based on physical distance and the number of attractions visited, the complex movement type (destination region loop) has the widest range, as it involves travel in all directions and includes nearly every attraction. Multiple pattern movements, although less extensive, show variation as well. Within this category, the stopover type enables broader exploration across farther distances and more numerous attractions. The chaining loop type also involves both short and long distances but follows more limited directions. The base site type has the most restricted movement, typically involving short distances and fewer destinations.

These varying movement types contribute to the formation of distinct spatial patterns for each river. The differing characteristics and spatial dimensions of the Citarik and Cicatih Rivers influence the movement behaviors observed. Geographically, the Citarik River flows from north (downstream) to south (upstream), with tourist attractions concentrated in the central portion. Meanwhile, the Cicatih River flows from east (downstream) to west (upstream), with attractions mainly distributed in the lower part of the river. Consequently, at Citarik, tourist movement occurs both upstream and downstream, while at Cicatih, the general direction is from upstream to downstream. Furthermore, the rafting route at Cicatih is longer than that of Citarik, contributing to a broader movement area and influencing the spatial dynamics of tourism in each river.

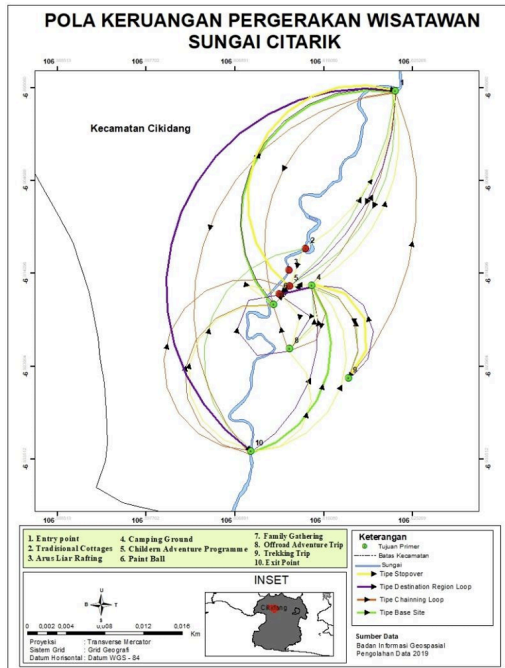


Figure 4. Spatial Patterns of Citarik's Tourist Movement

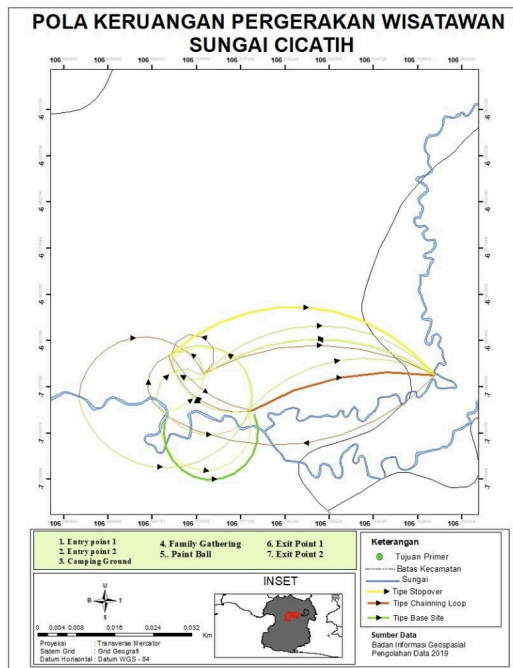


Figure 5. Spatial Patterns of Cicatih's Tourist Movement

4.3.2. Relationship Between Tourist Movement Types and Influencing Factors

Tourist movement types are shaped by several influencing factors. To identify these factors, the relationship between the dependent variable (Y) - tourist movement and the independent variables (X) - influencing factors, was examined using chi-square correlation analysis. The analysis also included the calculation of contingency coefficients to assess the strength of associations among variables.

Results show that tourist attractions and visitor motivation have a significant impact on movement patterns. The nature of the attractions and tourists' interest in specific activities strongly influence the routes and destinations they choose. Group composition (e.g., traveling with family or peers) also plays a role but does not have a statistically significant effect. On the other hand, factors such as place of origin, prior visitation experience, and number of travel companions were found not to significantly influence tourist movement patterns at the Citarik and Cicatih Rivers.

Table 1. Chi-square Analysis Results

Relationship Type	Results	Citarik River	Cicatih River
Motivation	Asynp.sig	0.000	0.002

Relationship Type	Results	Citarik River	Cicatih River
	Contingency Coefficient	0.699	0.642
	Asynp.sig	0.290	0.156
Tourist Origin	Contingency Coefficient	0.561	0.570
	Asynp.sig	0.000	0.000
Activity Interest	Contingency Coefficient	0.805	0.798
	Asynp.sig	0.050	0.040
Group Composition	Contingency Coefficient	0.479	0.520
	Asynp.sig	0.270	0.061
Companion Number	Contingency Coefficient	0.420	0.500
	Asynp.sig	0.930	0.251
Past Experience	Contingency Coefficient	0.371	0.324
	Asynp.sig		

5. CONCLUSION

The spatial patterns of tourist movement identified in this study are shaped by the differing spatial dimensions of the Citarik and Cicatih Rivers. The Citarik River flows from north (downstream) to south (upstream), with most tourist attractions concentrated in the central section of the river. Tourist movement at Citarik occurs in both upstream and downstream directions. In contrast, the Cicatih River flows from east (downstream) to west (upstream), and its attractions are primarily located in the downstream area, with movement predominantly directed from upstream to downstream. Additionally, the rafting route at Cicatih is longer than that of Citarik, which contributes to a broader spatial extent of tourist movement in the area.

The single pattern type of movement, commonly observed at both rivers, is characterized by limited mobility, with tourists visiting only one attraction and following a non-divergent direction. This makes it the most spatially restricted among the observed types. In contrast,

tourists who follow complex and multiple pattern types demonstrate broader movement, both in terms of direction and distance, as well as in the diversity of natural attractions visited. Among these, the destination region loop subtype exhibits the widest spatial reach. Within the multiple pattern category, the stopover subtype displays a more extensive range of movement compared to the chaining loop and base site subtypes. Tourists with the stopover pattern visit nearly all natural attractions, covering short to long distances and making a substantial number of visits. The chaining loop pattern involves a moderate spatial extent with movement across short to medium distances. Meanwhile, tourists with the base site pattern demonstrate the most limited range of movement within the multiple pattern category, visiting fewer attractions and staying within a relatively narrow physical radius.

The formation of these movement types is influenced by various factors. Among them, the characteristics of tourist attractions and the motivation to visit specific sites significantly affect the spatial behavior of tourists. Although group composition does exert some influence, it is not statistically significant. Other factors such as the tourists' place of origin, prior visitation experience, and number of travel companions do not have a meaningful impact on movement patterns in either the Citarik or Cicatih Rivers

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