

Original Article

Public Perception of Riverfront Public Spaces in Vijayawada City

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Received: 17 January 2022

Revised: 18 February 2022

Accepted: 28 February 2022

Published: 28 February 2022

Abstract - Vijayawada is a landmark for its river named Krishna River. The river and the city are well linked and dependable in various aspects, such as the construction of dams, river navigation, water supply, riverfront public spaces, bridges over the river, safety, and floods. For a river-based city like Vijayawada, the development of riverfront public spaces undeniably can bring economic, social, and cultural benefits to the city. Even though the city has an intimate relationship and interdependency with the settlement's origin and growth from the stone age period to the date, the functionality of the existing Riverfront Public Spaces (RFPS) has some unidentified gaps in connecting people with the river. The current RFPS possesses different functional characteristics such as heritage, culture, parks, eateries, and recreational spaces. The four prominent riverfront public spaces have been selected in the city to conduct a public opinion survey. This study's findings and conclusions were drawn through an empirical research method that includes the qualitative and quantitative research approaches through the emphasis on selected entities – riverfront public spaces. These findings will be helpful in identifying the gaps affecting the effective functioning of the existing riverfront public spaces from the people's point of view.

Keywords - Functional Characteristics, Public perception survey, Public space, Riverfront Public Spaces, Schematic mapping.

1. Introduction

The public is usually representing the people of that place. In some cases, the public's voice is very strong, influential, and motivating. This study takes one such case, where the people's thoughts and opinions are considered. The foremost topic selected to collect public opinion through an in-person interview survey conducted was the riverfront public spaces (open or semi-open). "The river and its city" this notation usually gives an imprint of enhanced river edge open public spaces, scenic spots, water sports, and walking promenades along the river, accessible to fresh water and close to nature. At the same moment, on the other side of the coin, it is not necessary that every river and its landscape should be intimate and exited in the setting. Each river varies in its morphology and environment. [15]. Here in the case of Vijayawada city, there is a different dimension of the riverfront public spaces from the people's point of view. That opinion says these river edge spaces are unsafe at certain times of the day, inaccessible in some locations, encroached and vulnerable river edges, and lack facilities to access riverfront spaces. The river system along Vijayawada city's banks is the mother of the three irrigation canals and also part of National Water Way – IV from Kakinada to Pondicherry.[18]. The river system's potential is quite credentialed, but the safety perception of these river edges remained questionable at Vijayawada.

With this background, the study was initiated to measure the real values of public perception about the

riverfront public spaces available today at Vijayawada. Before going into the public opinion questionnaire survey details, we shall recollect some key concepts related to the discussion here.

2. Concepts and Definitions

2.1. Public Space

The perception and function of public space have been dynamic over time and evolved based on the complexity of socio-cultural and economic conditions of that period accommodating the demand of public needs such as parks, shopping malls, food courts, etc., including indoor, semi-outdoor, and outdoor spaces. The UN-Habitat defines Public Spaces as "all places publicly owned or of public use, accessible and enjoyable by all for free and without a profit motive". These spaces must be multifunctional areas for social interaction, economic exchange, and cultural expression among a wide diversity of people[26].

2.2. Riverfront Public Space

The public spaces can be further classified into typology according to their characteristics, location, and size. Contemporary urban public spaces are classified as Parks, Square, Plazas, Memorials, Markets, Streets, Playgrounds, Open spaces, Greenways and parkways, Atrium/indoor marketplaces, and waterfronts[2].

The Waterfronts can be like harbors, beaches, riverfronts, piers, and lakefronts. In this context, the urban spaces situated next to the Krishna river, which allocates



the public usage in the current scenario, are considered riverfront public spaces.

2.3. Functional Characteristics

The design of any space is based on human dimensions, physical parameters, and function. Similarly, the riverfront public spaces can also be classified based on their location and functional characteristics, which are in operation today. This classification can be varied and will be more effective considering the city-specific functional characteristics. For example, the Vijayawada city-specific classification of riverfront public spaces is given in the below table. (Table 1).

Table 1. Classification of riverfront public spaces in the context of Vijayawada city

S.No	Types of RFPS	Functional Characteristics
1	Cultural Spaces	Ghats, temples, Crematoriums, Burial grounds.
2	Riverfront Parks and Resorts	Open green spaces, including walking tracks, play areas, sitting benches, Water sports, and Resorts.
3	Recreational spaces	Food courts, Gaming zones, and Commercial spaces.
4	Heritage spaces	Historical places and monumental structures

Source: Prepared by the author

2.4. Public Perception Survey

Public perception is people's opinion. The public user group can be classified according to their age group, gender, the purpose of visiting, and residence locational proximity. (Table 2). This may include people who visit the public spaces to relax and enjoy, and people who sell some essential items in those places can be called vendors/hawkers. These people were employed as facility providers in those public spaces.

A perception survey is an idea inspired to adopt the context into urban design and spatial planning methodologies as it relates to rationalism as a preferable methodology. This will allow us to understand human conditions more deeply [4].

A people-friendly public space can be achieved only when that space achieves all the needs and requirements of these different community categories. Hence a public opinion questionnaire survey is an efficient approach to measure their comfort, convenience, and safety at different times, days, and seasons[26].

Table 2. Classification of user groups for public spaces

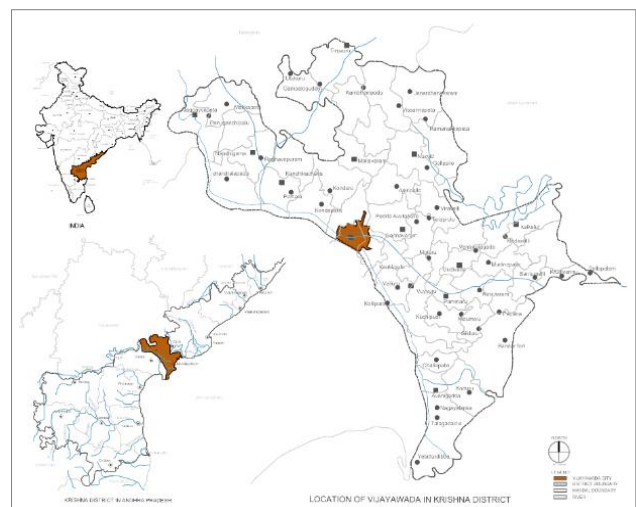
S.No	Parameter	User group Classification
1	Age group	Toddlers, Children, Young Adults, Adults, Seniors
2	Gender	Male, Female, Transgender
3	Primary purpose of the visit	General public, Hawkers/ Vendors, Service providers
4	Residence locational proximity	Local residents, Tourists/Travellers.

Source: Prepared by the author.

3. Profile of the Vijayawada City

Vijayawada City is known for the Prakasam Barrage across the Krishna River, which acts as a natural southern entity. It is located in the Krishna district of south coastal Andhra Pradesh. The city's climate and growth pattern are well-defined by its geographical characteristics by the natural systems like hills of the Eastern Ghats known as Indrakeeladri hills on the west, and the Budameru river in the north, the northern, north-western, and south-western parts of the city are covered by a range of hills[8].

The city's climate is tropical, with hot summer and humid and moderate winter. The city receives good rainfall from the South-West & North-East Monsoon. Vijayawada is the second-largest city in Andhra Pradesh, with an area of 61.86 sq. km and a population of more than 1 million (according to the 2011 Indian Census, the total population of Vijayawada + Outgrowth is 1,476,931). According to the Vijayawada Zonal Development Plan, the city's projected population by 2021 is 16.5 lakh[16]. Potentialized by its geographical position at the midpoint of the Andhra Pradesh State and well-planned connection



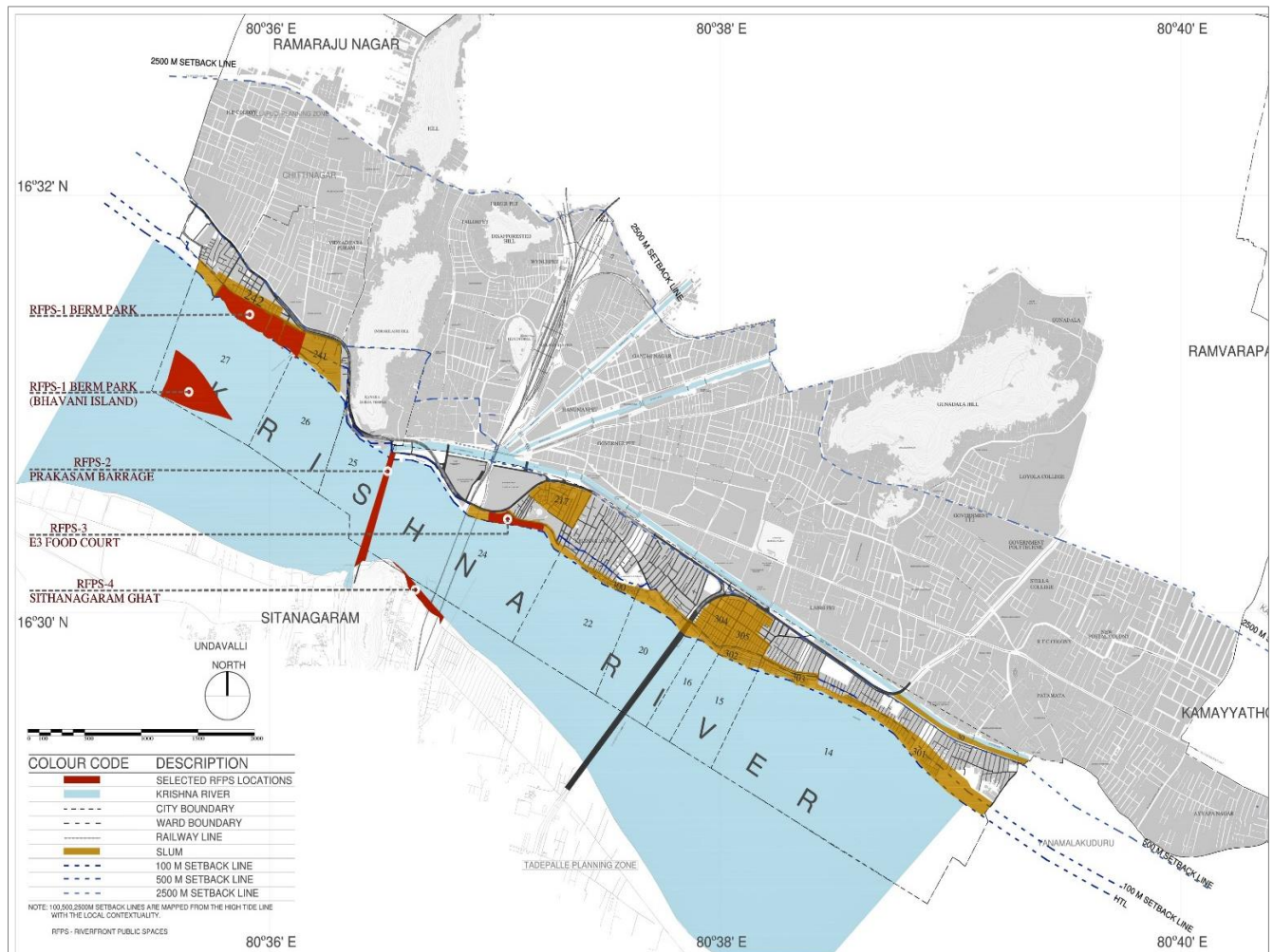
Map 1. Location map of Vijayawada City.

to other regions by road, rail, and air, it has not only grown as a major commercial hub in the region but also several educational institutes, including engineering and medical colleges, are also situated in the city. (Map 1).

A growing city like Vijayawada very much needed City level public open spaces. Even though the city has almost a 9km length of the Krishna river entity, the existing accessible riverfront public spaces are inefficient in serving as safe and active public spaces. One of the reasons for this scenario is the slum pockets within walking distance of 500m – 750m of these existing riverfront public spaces. 111 slums are spreading across the city, with a total population of 2,87,983. Among them, 10 slums of a population of 38 of 846, which is 13 percent of the total city's slum population, are located in 100 years return flood plain area[5].

4. Selection of Riverfront Public Spaces (RFPS)

In the current trend of websites and online knowledge, it was analyzed that online media can guide the public to choose their preferable public spaces valued through their social relations and experiences[10]. To develop people-friendly riverfront public spaces in Vijayawada city, as a preliminary study to assess the present-day conditions and characteristics of riverfront spaces scenario, some of the most visited and valued riverfront public spaces in websites were selected to conduct a formal public opinion in-person interview survey at those locations. Four spaces were selectively chosen as sample locations, following the criteria such as most frequently visited city-level riverfront spots, prominent tourists attractions, riverfront heritage, and cultural spaces, which are well connected to the major transportation corridor, including riverfront spaces in both upstream and downstream of Prakasam barrage. They are RFPS -1 Berm Park, RFPS -2 Prakasam Barrage, RFPS -3 E-3 Food Court, and RFPS - 4 Sitanagaram Ghat. These selected locations were spatially mapped. (Map 2).



Map 2 Selected RFPS locations in Vijayawada city riverfront area (ward map + slum pockets -2011 Census.)

Source:[25]; Analysis by the author.

4.1. RFPS -1 Berm Park

The Riverfront Public Space – 1- Berm Park consists of the Punnami Ghat, Haritha resorts, and Bhavani Island, authorized by the Andhra Pradesh Tourism Development Corporation. (Fig.). The Bhavani Island is accessible from this Berm Park through the jetties and boat services provided by the same authority in limited timings in a day. (Fig.). The Bhavani Island is located west of the Prakasam barrage on the upstream side, which was developed as a tourist destination. It accommodates recreational facilities for visitors like walking tracks, water sports, and a hotel. Currently, this is serving as the biggest recreational public space and the most visited tourist spot in the city, with a monthly average of 76,000 tourists visiting this place from January to April 2017.[17].



Fig. 1 View of Berm Park, Vijayawada.

Source: Capture by the author. (13th Jan 2018).



Fig. 2 View of Bhavani Island, Vijayawada.

Source: Capture by the author. (Jan, 2018).

4.2. RFPS-2 – Prakasam Barrage

The Prakasam Barrage, with a catchment area of 97,050 sq. miles, is an irrigation structure built on the Krishna river at the western edge of Vijayawada city from 1954 to 1957 in the place of breached out Krishna Anicut. Its length is 101.95m over the Krishna river, creating a scenic lake view. It controls the water levels upstream and plays a critical role in stabilizing floods during monsoons and maintaining water stock during the summer to supply drinking water and irrigation canals for cultivation. The Reservoir shaped by the Prakasam Barrage is a fabulous landmark for a pleasure cruise on the Krishna river in Vijayawada city. (Fig.). This place also serves as a public open space at the city level in a real scenario. Hence this was chosen for this survey and coded as RFPS -2.[11].



Fig. 3 Lightened Prakasam Barrage, Vijayawada.

Source: Capture by the author. (18:00 hrs, October, 2018).

4.3. RFPS – 3 E-3 Food Court

In March 2016, Vijayawada city got a new outdoor space to hang out with family and friends: Eat/ Enjoy/ Entertain (E-3) Food Court. This public open space is

located on Padmavathi ghat along with downstream of the Krishna river. Since the site is just located opposite the (Inter & Intra) Pandit Nehru Bus station, Vijayawada, the transportation is very comfortable to reach this place. As mentioned in the name E-3, this riverfront public space provides an eating zone, a relaxing riverfront zone, and a gaming zone for entertainment. This place also has a panoramic view of the river and the downstream of the Prakasam barrage. This is one most visited riverfront public spaces for outdoor dining with free outdoor children's play areas. With these considerations, this was been selected as RFPS – 3. (Fig. 4).



Fig. 4 Food Court, Vijayawada.

Source: Capture by the author. (25th September, 2021).

4.4. RFPS – 4 Sitanagaram Ghat

Sitanagaram ghat is an ancient Pushkara (river festival) ghat located on the southern banks of the Krishna river near Vijayawada. The pilgrims who visit the Kanaka Durga temple usually prefer to perform their cultural activities at this ghat. (Fig.1). Here, people can access the river water and enjoy the beautiful Prakasam Barrage view.

Even though this location does not fall under the jurisdiction of Vijayawada Municipal Corporation (VMC) limits, this space functions as one of the frequently visited riverfront public spaces. Hence this was selected as RFPS – 4.[13].

5. Public Perception Survey Design



Fig. 5 Sitanagaram ghat, Vijayawada.

Source: Capture by the author (18th September 2019).

The riverfront public spaces here include heritage and cultural values. The participatory people's perception survey approach will determine the public value of their attached urban spaces.[1]. This study includes the quantitative and qualitative approaches to accessing public perception in this context. The formal quantitative "in-person" public interview questionnaire was developed as a measuring tool. The qualitative approach includes the observations and photographs made in the selected spaces and spatial mapping of the tabulated data.

The questionnaire was designed with 19 simple closed-ended questions, which can be easily understood by the public and give answers as a measuring tool. These questions were intended to collect data regarding the effectual value, functional characteristics, public experiences and their perception of selected existing riverfront public spaces. [14]. The questionnaire contains the following aspects:

- Public preferences about transportation facilities
- Public preferences about recreational activities
- Public opinion on developing riverfront public spaces
- Personal particulars

The Vijayawada is regularly seen as colourful and prosperous in October every year due to two major reasons. One is the high-water level seen in Prakasam Barrage due to East Monsoon, and the other one is the high tourist flux of 17.7 lakhs in a day to visit Kanaka Durga Temple on the occasion of Dassara (Name of the festival).[17]. Obviously, during this period, the number of visitors to the riverfront public spaces is also high compared to the rest of the months in the year. With this understanding, the survey was conducted during the peak

hours, 6:00 am – 9:00 am and evening, 5:00 pm – 10:00 pm, on two selective weekdays and two weekends in October 2019.



Fig. 6 Picture of the author, taken while interacting with (public perception survey) at Berm Park, Vijayawada.

Source: Capture by the surveyor team.

A total of 200 people were interviewed, of whom conversed with 50 people at each selected RFPS. The collected information from questionnaires was tabulated and calculated using Excel software. The 19 questions were grouped into the categories like personal profiles of interviewed people, Transportation facilities use and their preferences to choose that riverfront public space, preferred activities and occasions at riverfronts, and suggestions to improve the riverfronts.

6. Results and Discussions

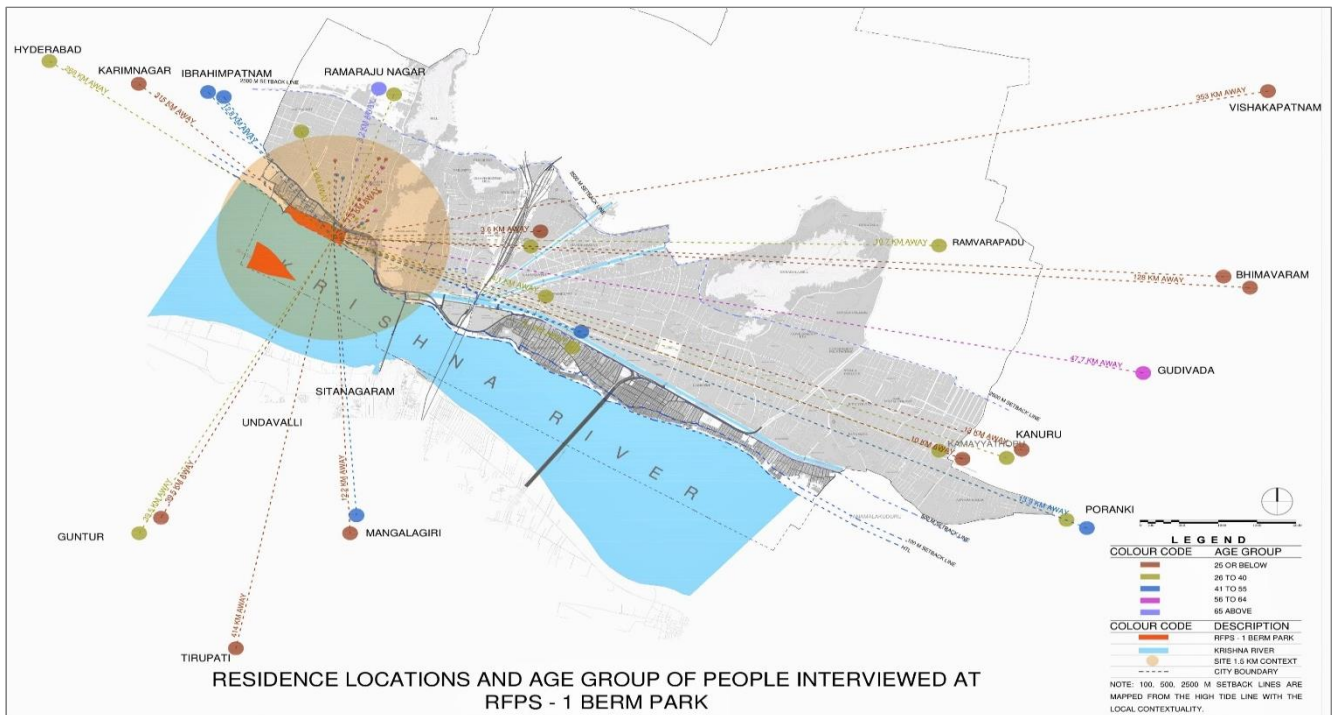
The results obtained for each category of questions mentioned earlier are discussed in the following paragraphs.

6.1. Residence location and age group of interviewed people

Schematic maps were prepared for each particular riverfront public space distinctly to detect the scenario of the spatial distribution of the residence locations of interviewed people according to the surveyed data. Two sizes of circular points were used to represent the locations of residences. The small points are to locate the spots within a radius of 1.5 km from the investigated public space. The larger points represent the remaining locations. The tourists or travellers' locations from the other settlements were marked outside the city limits in the direction of the positioning of their geographical locations with the travel distance mentioned on the connecting link to those points. The age group of interviewed people can be related to their locations with the help of colour codes specified to the points.

After mapping and analyzing the above-discussed parameters, it is evident that each RFPS has its unique character in attracting people group of different age groups approaching from diverse places. Let us begin the discussion of the findings of the residence locations of the people interviewed.

At RFPS-1 Berm Park, an equal amount of people was observed coming from within 1.5 km proximity and within the city, which is 36% each, followed by 28% of tourists visiting from the other settlements. (Map 3).



Source[25], Updation (2021) and analysis by the author.

At RFPS – 2, Prakasam Barrage, known for its heritage importance, 52% of people interviewed were tourists from other places and an equal amount of people visiting within a 1.5 km radius and within the city, which is 28% each. (Map 5).

At RFPS – 3 E-3 Food Court, 40% of people who interacted came from within 1.5km proximity, whereas 32% were tourists and 28% were from within the city. According to the observations noted, people from very close proximity are high because this RFPS acts as a major node and is located opposite the Pandit. Nehru Interstate Bus Station. This locational demands the pull factor because food stalls, even taxi drivers and auto-rickshaw drivers also frequently visit this place. (Map 4).

At RFPS-4 Sitanagaram Ghat, known for its rich cultural activities, 48% of people who interacted came from within a 1.5 km radius, followed by 30% from within Vijayawada city, and 22% were tourists. According to the jurisdiction boundaries, this RFPS is located outside the City Municipal boundary. The frequency of temple pilgrims and the significance of cultural activities at the ghat were observed as an accepted pull factor, where the jurisdictional barriers do not matter. (Map 6).

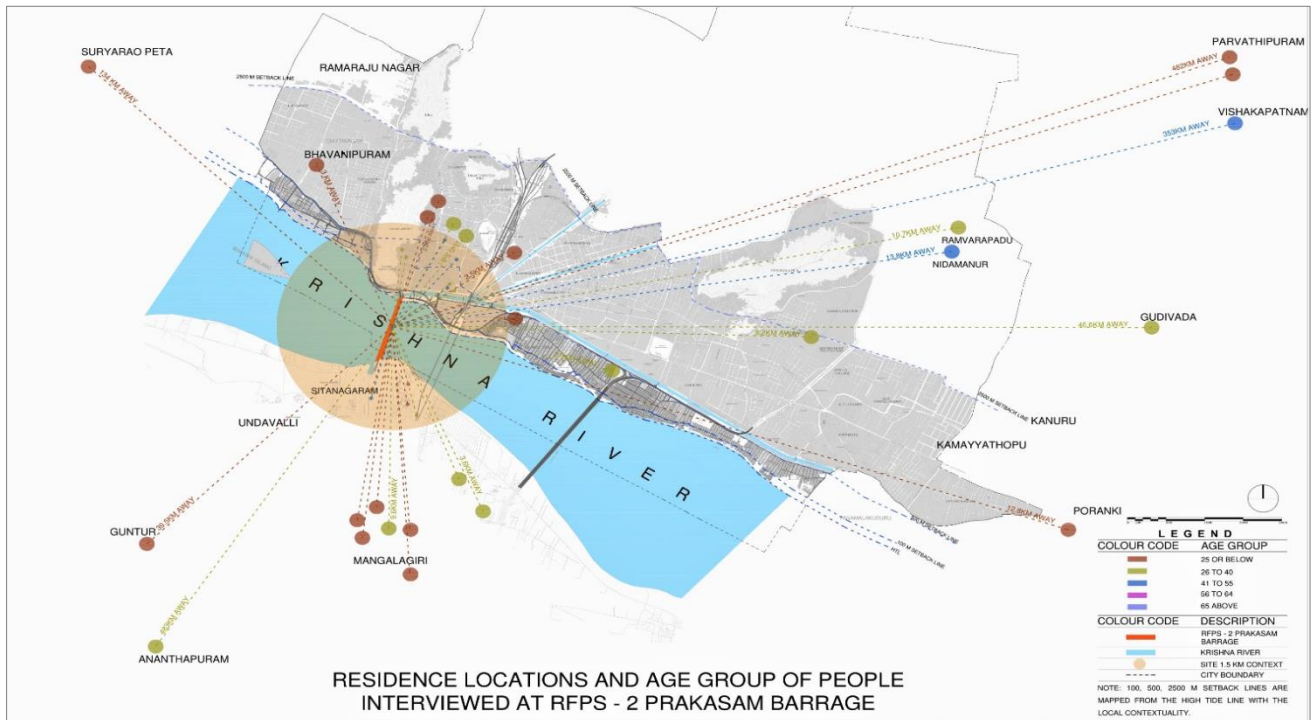
After observing the visitor's age group, the people age group 25 or below are visiting the RFPS -1, RFPS-2, and RFPS -3 because these three spaces attract more children

and young adults. They have recreational facilities like boating, food stalls, and play areas along the river's edge. (Table 3).

Table 3. Analysis of residence locations

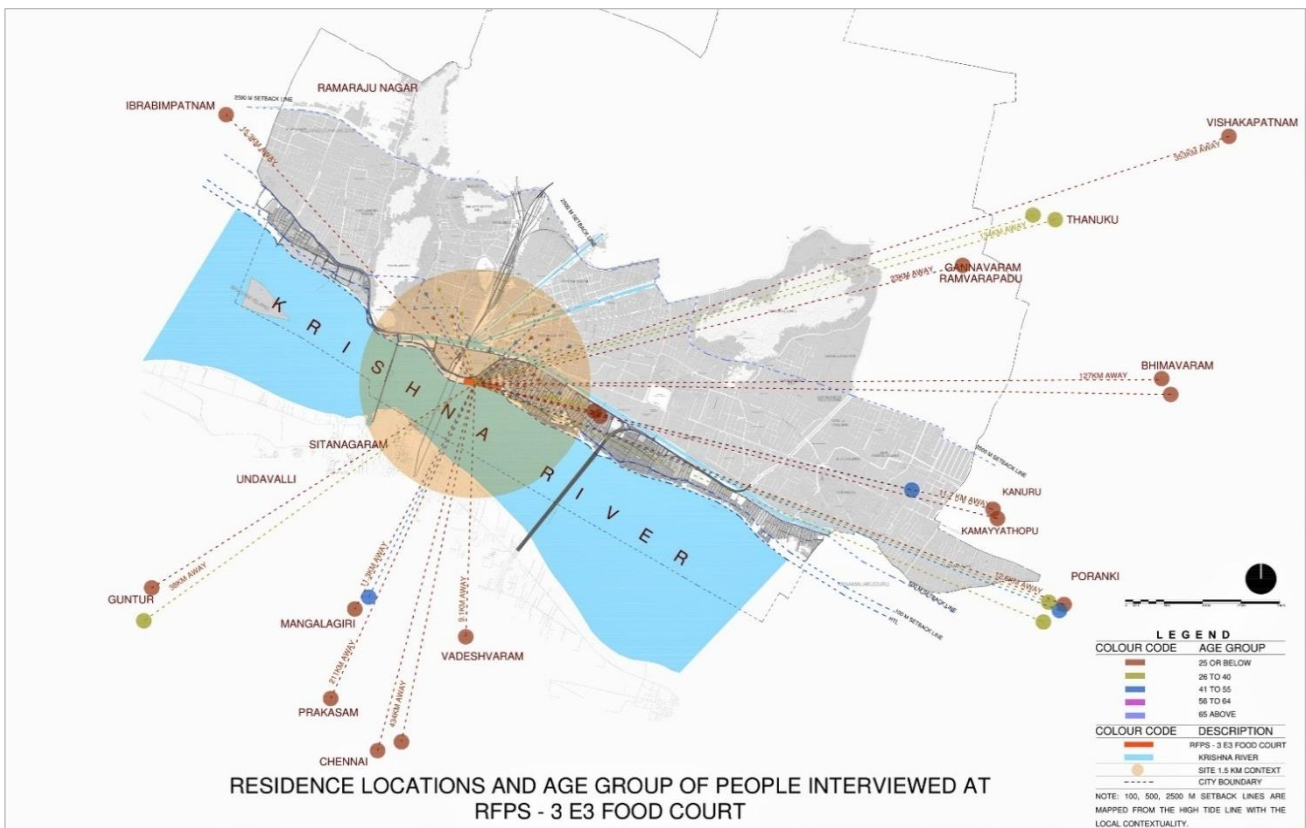
S.No	RFPS	No. of People interviewed residence locations		
		Within a 1.5 km Radius	Within the city, excluding the 1.5 km context	Tourists
1	Berm Park	18	18	14
2	Prakasam Barrage	12	12	26
3	E3 Food Court	20	14	16
4	Sitanagaram Ghat	24	15	11

Source: People perception survey, 2019, Analysis by author.



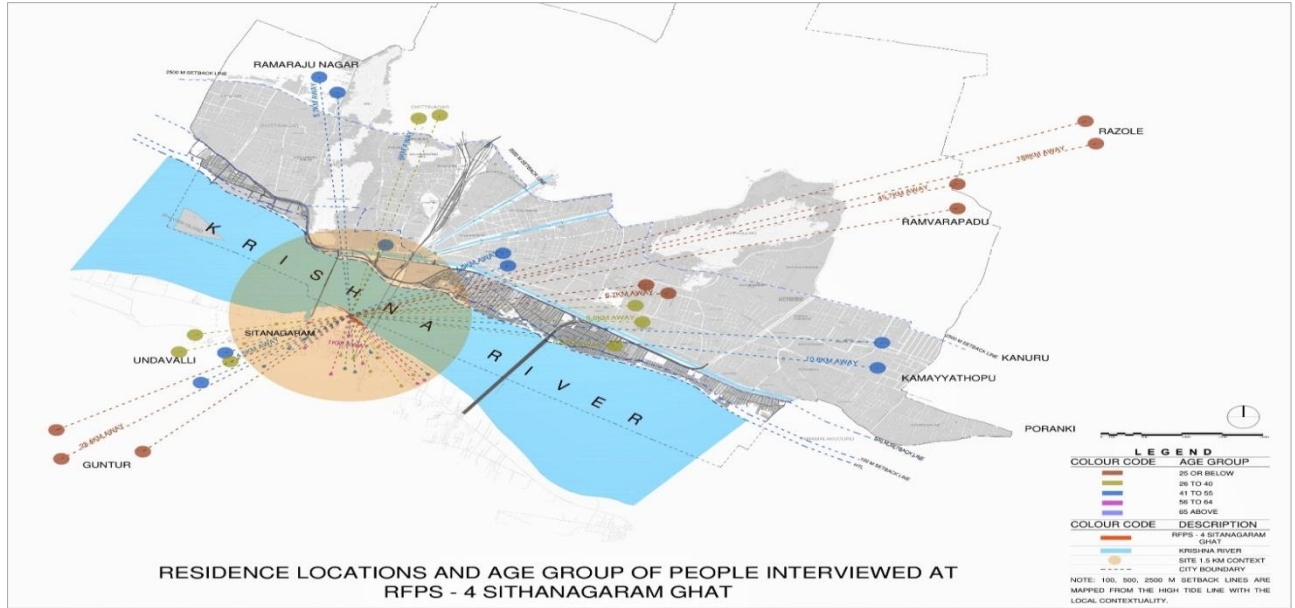
Map 5. Schematic mapping of spatial distribution of residence locations of interviewed people at RFPS – 2

Source[25], Updation (2021) and analysis by the author.



Map 4. Schematic mapping of spatial distribution of residence locations of interviewed people at RFPS – 3

Source[25], Updation (2021) and analysis by the author.



Source[25], Updation (2021) and analysis by the author.

Whereas RFPS- 4 has more visitors in the age group – 26-40. Most people who visited here came for their ritual activities, and a few were for sightseeing. Among four paces, only RFPS – 1 Berm Park was noticed as the most comfortable, convenient and safe public space. Hence only this place had visitors from all age groups. The rest of the other riverfront public spaces were not convenient for people of age above 56 years. (Fig. 7).

The existing public spaces do not provide adequate facilities and activities to meet the physical needs and psychology of elderly people. For example, they require more leisure spaces to sit, chat and relax, bright lighting and safe walking spaces.

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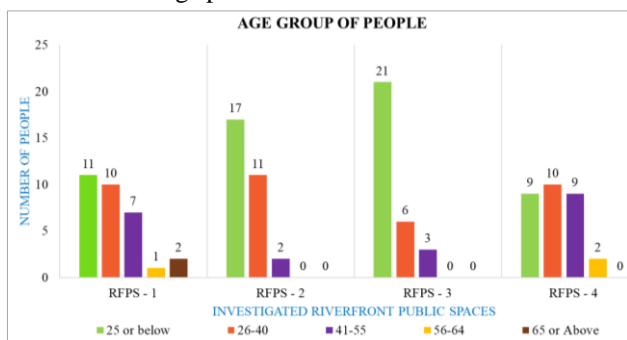


Fig. 7 Comparative analysis of number of people and their age group visiting the four selected RFPS.

6.2. Transportation Facilities and Public Preferences

To evaluate the efficiency of existing infrastructure and transportation facilities provided in operation to reach the riverfront public spaces, this study aimed to get

information about two parameters from the public. They are the mode of transport and the travel time. The results were mapped schematically concerning already mapped residence locations of people interviewed. (Map 7, Map 8, Map 9, Map 10).

The mapping and data bar chart analysis revealed that most people prefer private bikes and private cars to reach all four RFPS. The RFPS E-3 Food Court has an exceptional count of people using public transportation to reach it because of its locational parameters near PNBS. It also conveyed that all four RFPS were poor in providing pedestrian-friendly accessibility. As noticed in the results, the maximum time to reach any of these spaces was not more than 30 minutes by the highest number of visitors. (Fig. 8).

The survey results discovered that among the four RFPS, people spend more time than 1 hour at RFPS-3 (E-3 Food Court). (Fig. 9). Even though Berm Park provides boating and other facilities by the APTDC, Govt. of. A.P. and is accessible from morning 6:00 am to 8:00 pm; the public was attracted to spend more time at E-3 because the entertainment zone began.

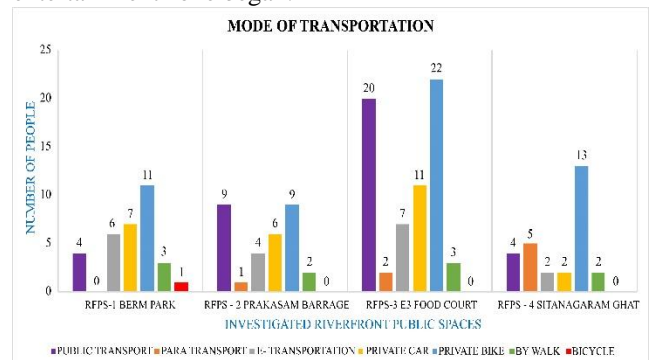
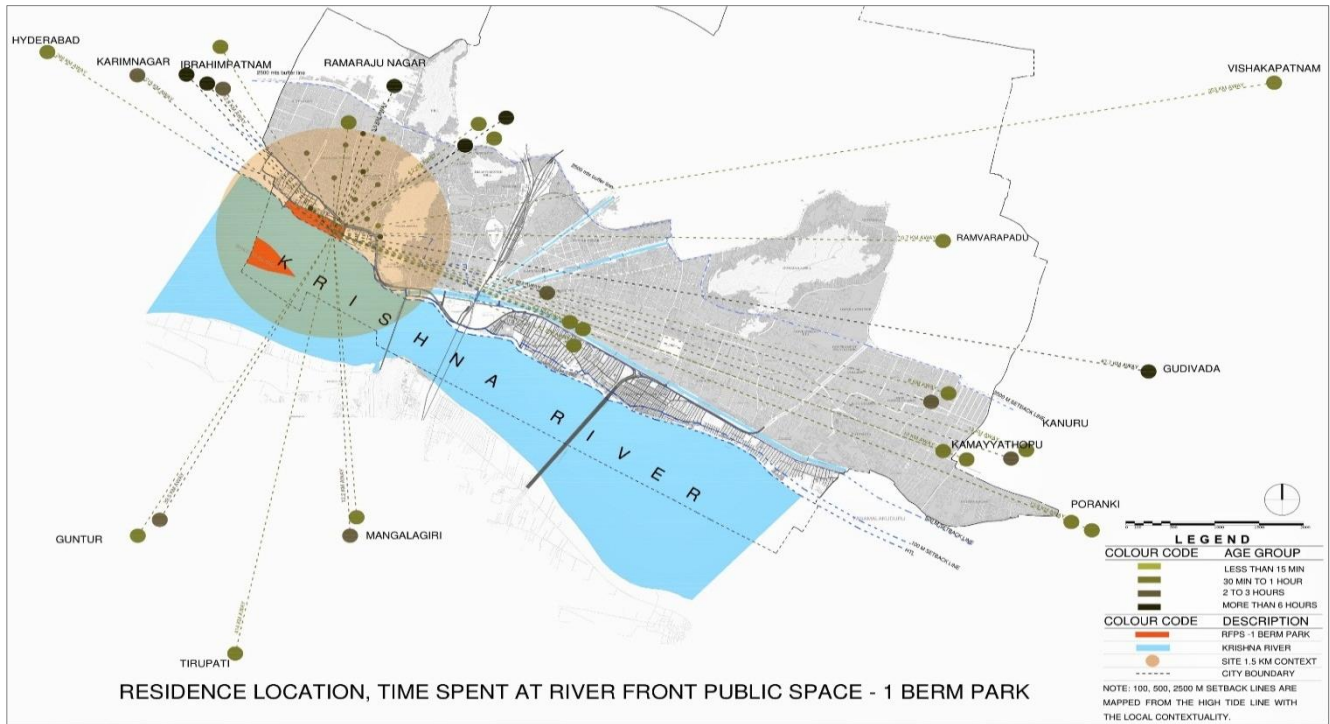
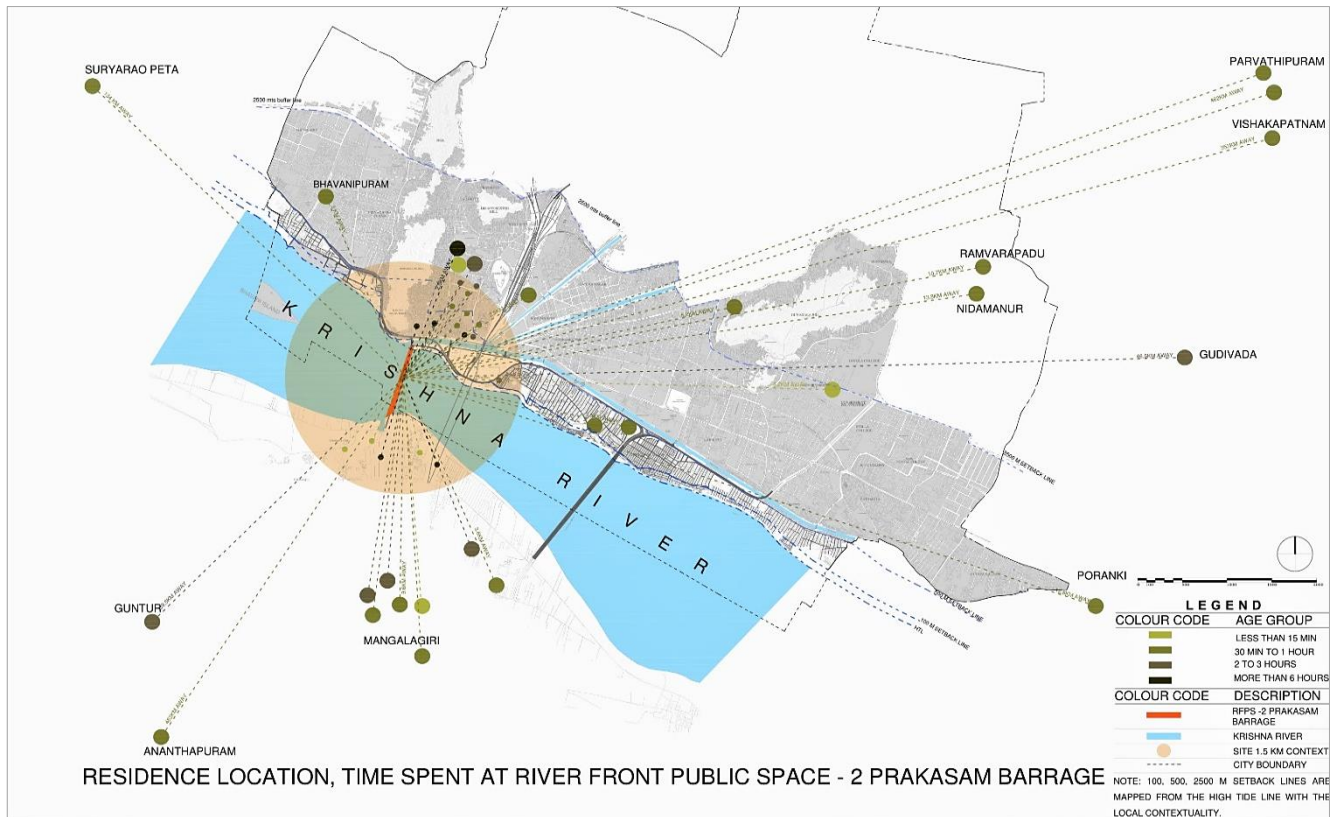


Fig. 8 Comparative analysis of mode of transport used by public to reach



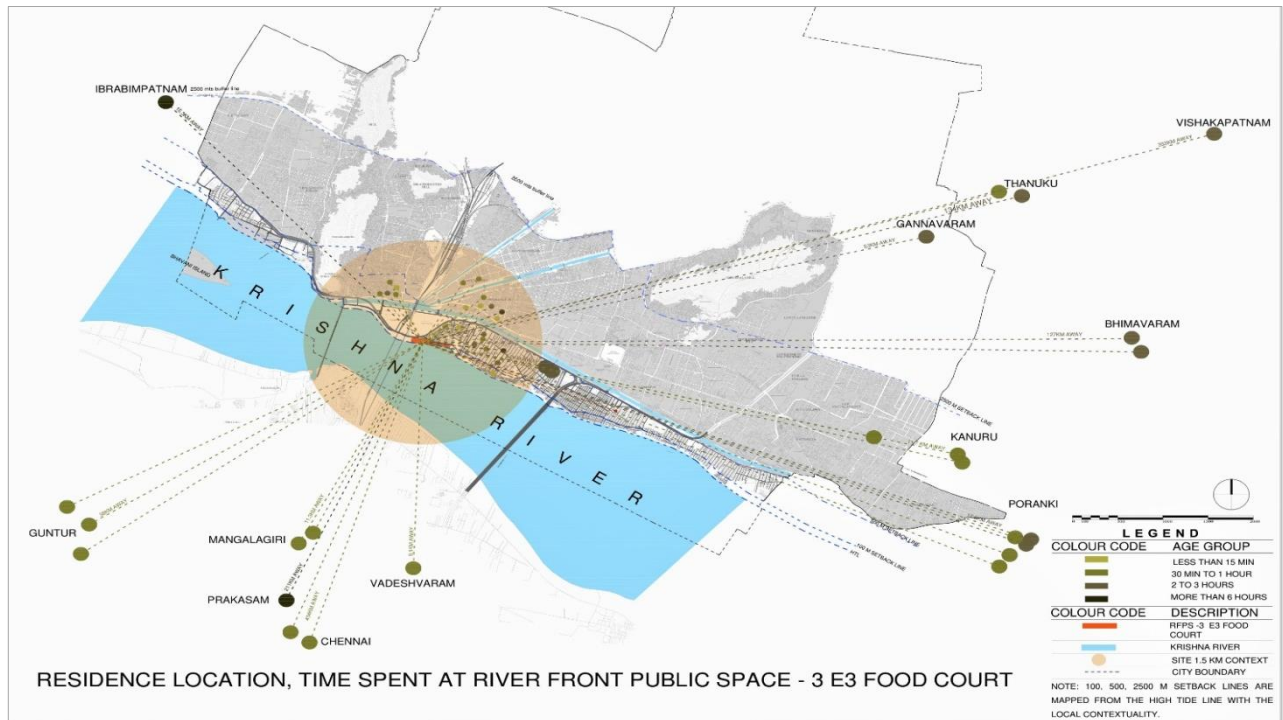
Map 7. Schematic mapping of time spent by interviewed people at RFPS – 1 including Bhavani Island.

Source[25], Updation (2021) and analysis by the author.



Map 8. Schematic mapping of time spent by interviewed people at RFPS – 2.

Source[25], Updation (2021) and analysis by the author.



Map 9. Schematic mapping of time spent by interviewed people at RFPS – 3

Source[25], Updation (2021) and analysis by the author.

RFPS -2 Prakasam Barrage is a movement spot. Hence people have less chance to stay long duration on the barrage road. There were no signs of provisional parking slots who visited this place. Coming to the RFPS -4 Sitanagaram ghat, most visitors were the neighbouring residents within 1.5 km of proximity. Due to the peaceful environment, people would like to spend more than one hour sitting and enjoying nature. Street vendors' movement was observed during the survey, which was the supportive need to make that space feel more comfortable to the public. The results of mapping the two parameters (time spent and residence locations) show that the people spending more time at RFPS – 1 were coming from very close proximity.

At RFPS – 2 more people were from outside the city and within the 1.5km proximity as well because Prakasam Barrage itself is a transportation corridor connecting the city to other settlements. So even the through traffic may stop and enjoy the scenery. In contrast to these two, at RFPS – 3 people came from outside the city, within the city, and tourists were collectively shown interest in spending more than 1 hour. This is because of its location next to the National Corridor and the recreational facilities provided, such as a play zone, which attracts children and adults to have fun, space for event hosting with a stage and open seating space, a live monitor to relax and watch the cricket matches and movies in an outdoor space.

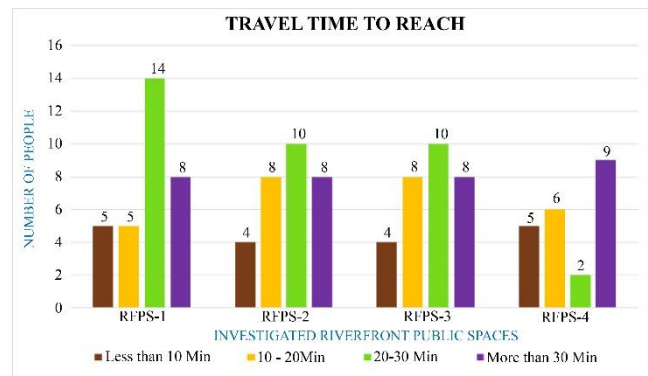


Fig. 9 Comparative analysis of travel time to reach the selected RFPS

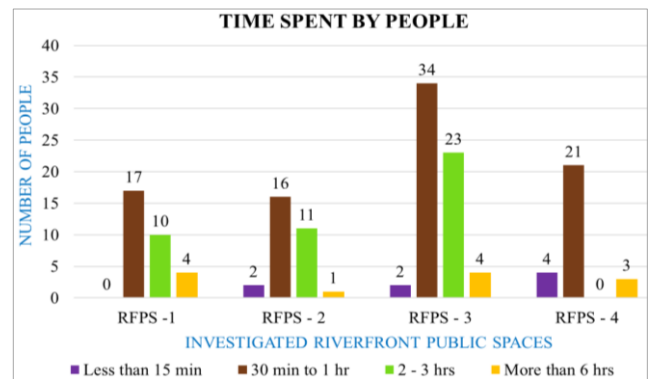
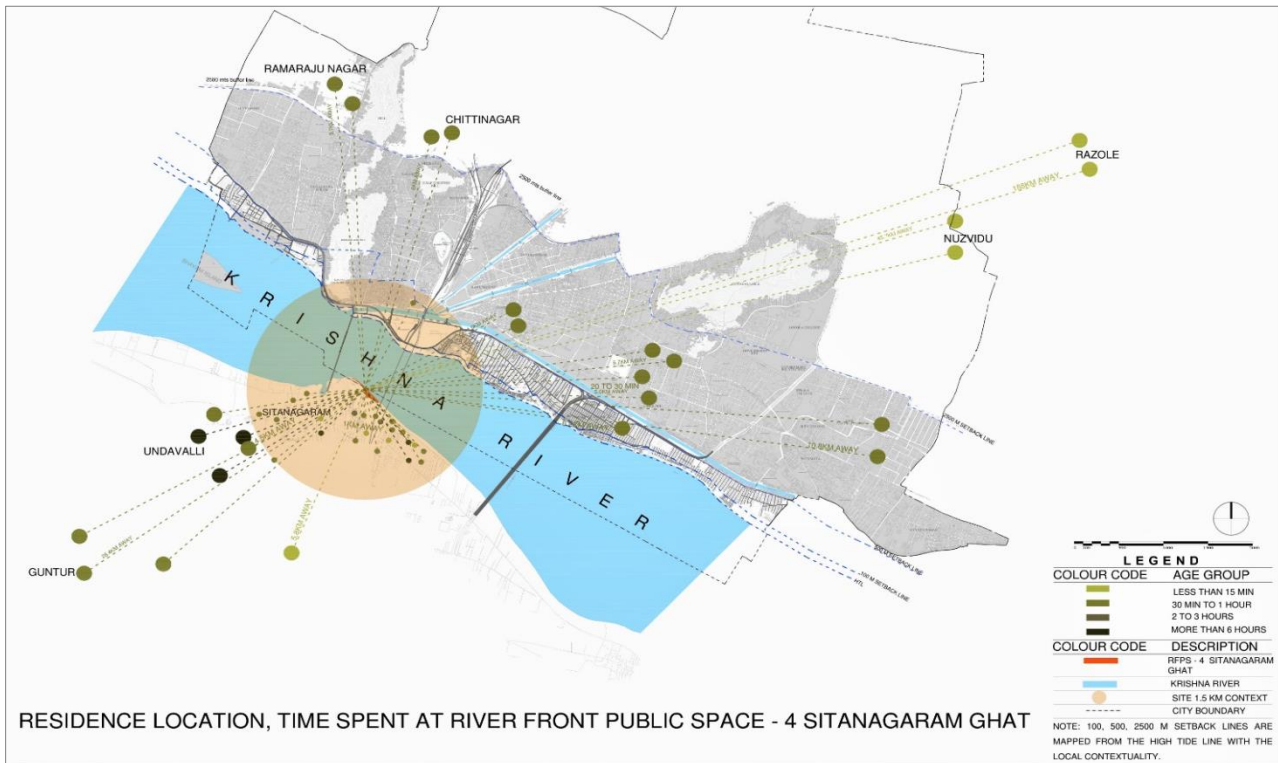


Fig. 10 Comparative analysis of time spent by the interviewed people



Map 10. Schematic mapping of time spent by interviewed people at RFPS – 4.

Source:[25], Updation (2021) and analysis by the author.

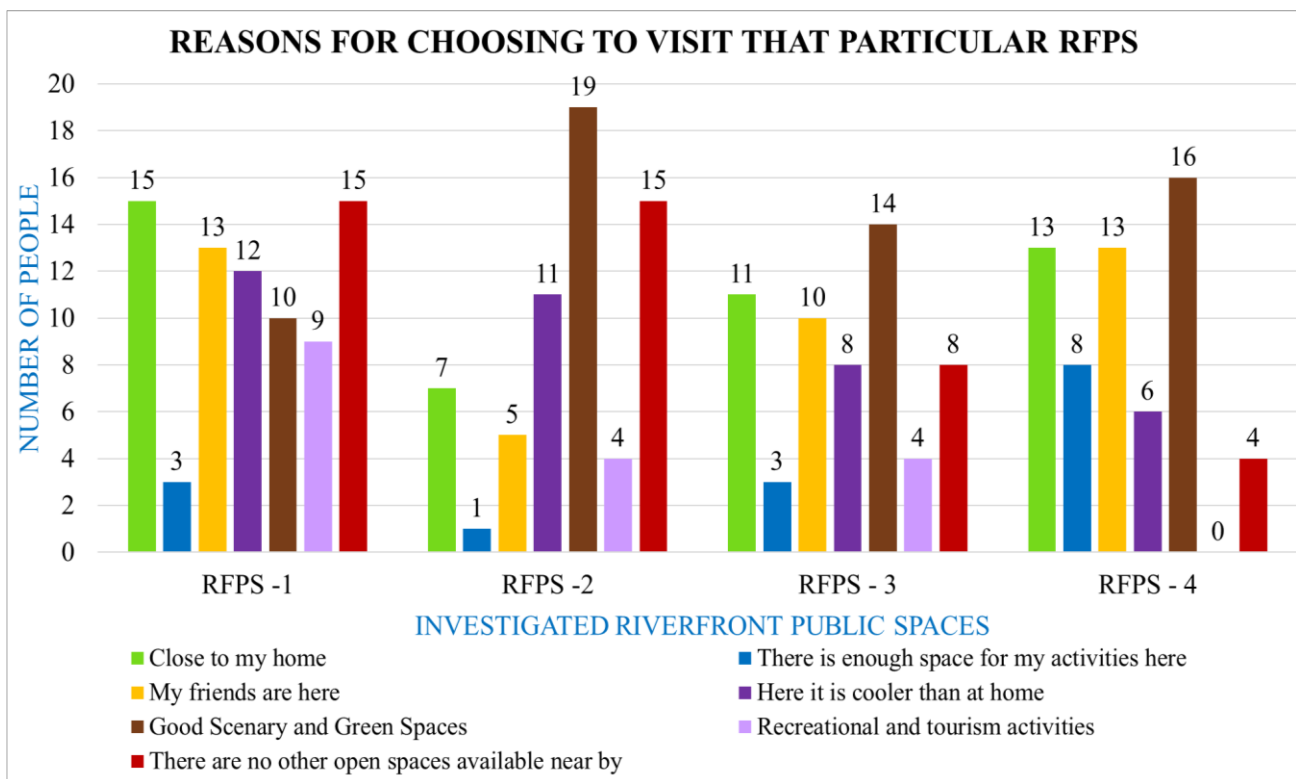


Fig. 11 Comparative analysis of reasons chosen to visit these RFPS by the public.

6.3. Recreational Activities and Public Preferences

Riverfront public spaces can be multifunctional. Each RFPS selected here has its unique character in function. So, to understand the public preference in choosing an activity and their comfort levels inexperience, this study facilitated a lot. The analyzed data illustrates that different space has different reasons expressed. (Fig.).

RFPS -1 Berm Park was perceived as the nearest big open and green space with much cooler weather conditions than at home. Along with the tourists visiting, residents also visited daily, considering the seating, green spaces, and play areas as neighbourhood parks along the riverside.

RFPS – 2 was preferred to visit to enjoy the panoramic view, particularly during sunsets. RFPS – 3 was preferred to enjoy the good scenery on the riverside, along with the dining area and gaming activities with friends and family together. RFPS – 4 was mostly chosen for its natural setting. No one chooses this location for riverside recreation. It is evident through the responses collected that the present scenario of existing public spaces design and management was not considered a good platform for improving the social interaction between the public. Because of the combined play and entertainment zone, there was little possibility of social communication at RFPS – 3. (Fig.).

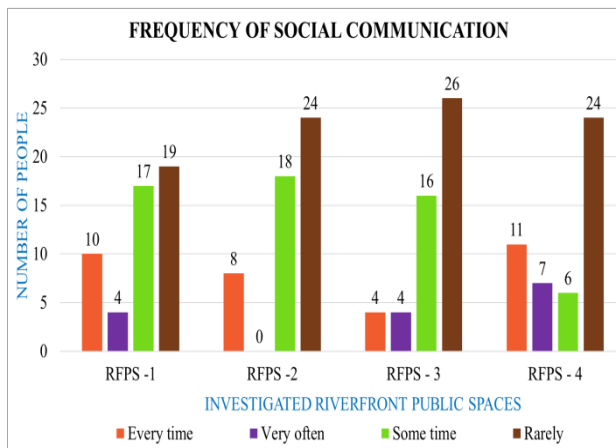


Fig. 12 Comparative analysis of social communication between people at four selected RFPS.

The primary purpose of a visit to these spaces varies according to the different user groups they belong to. It was evident that all the selected four RFPS have beautiful scenery and natural setting on the river edge, connecting people to nature and acting as a pull factor irrespective of the developed features and recreational facilities. These results remind us that it is a river city. (Fig.).

Specifically, the RFPS - 1Berm park served as a tourist spot and a city-level public space. That is why more people prefer this place to enjoy Bhavani Island's recreational facilities, including boating, fishing, nature trails, and children's play areas. At RFPS – 2, Prakasam barrage people prefer to go for a daily walk, and also, it was observed that many street vendors occupied space on

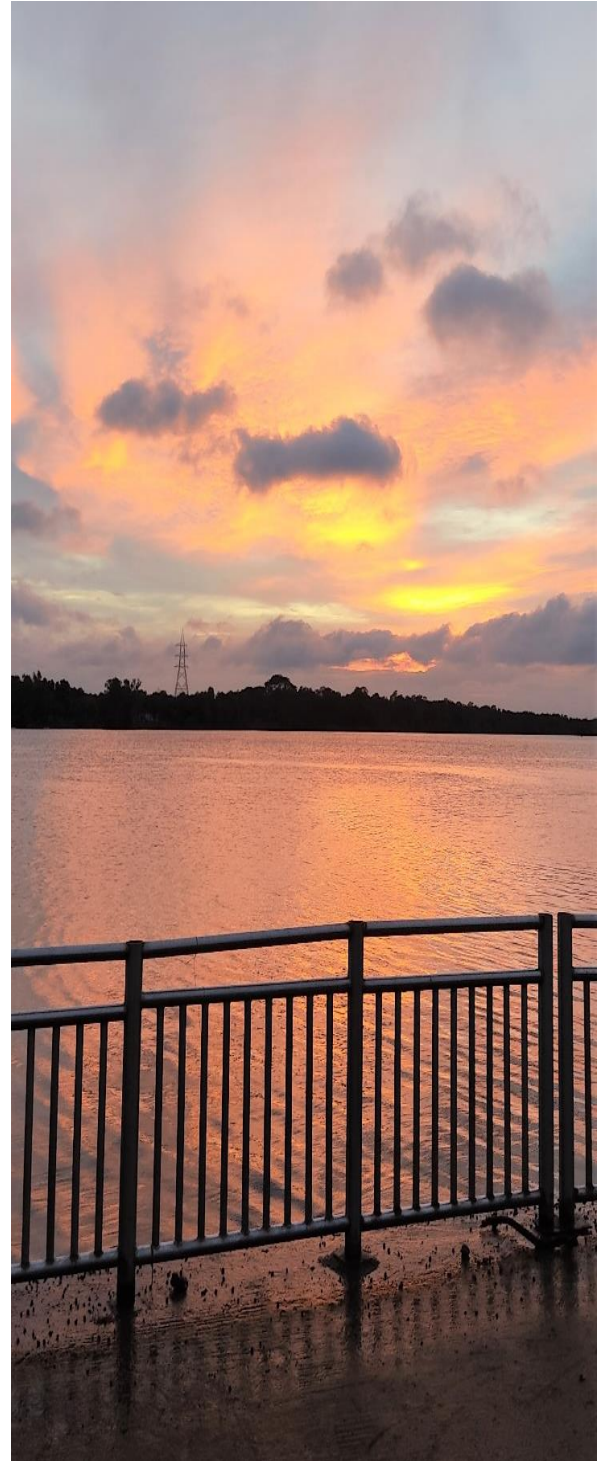


Fig. 13 Scenic sunset view at Berm Park.

Source: Capture by the author, November 2021.

the barrage during the golden hours of the day. At RFPS – 3, as noticed, 22 food stalls were functioning during limited timings in a day from 18:00 to 24:00 hrs. People were passionate about enjoying the open dining area with the cool river breezes. At RFPS – 4 Sitanagaram ghat, more public was visiting either for photoshoots or to perform river rituals. (Fig.).

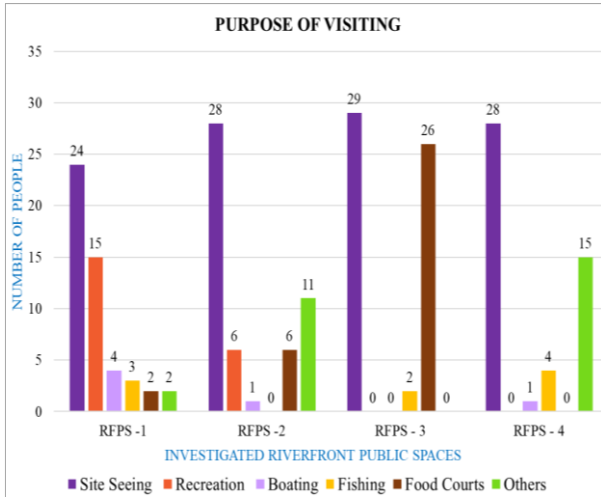


Fig. 14 Comparative analysis of primary purpose of public visit to the four RFPS.

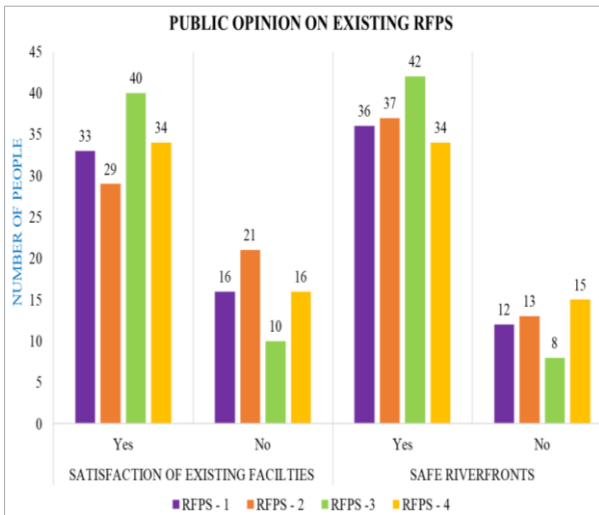


Fig. 15 Comparative analysis of public opinion about existing recreational facilities at four RFPS.

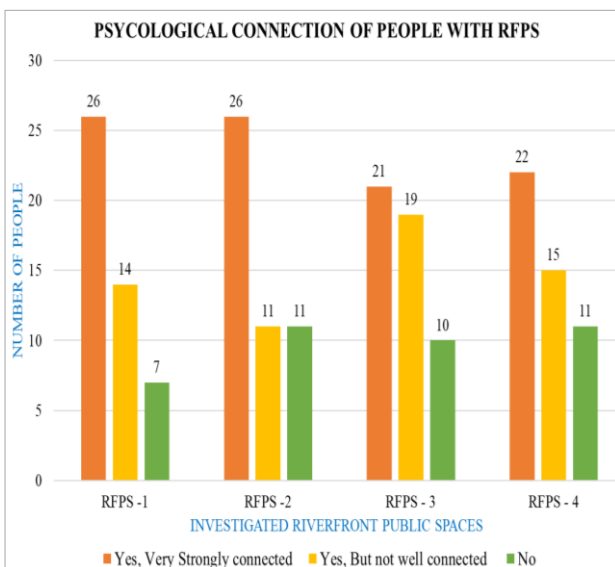


Fig. 16 Comparative Analysis of Psychological connection of people with that visited RFPS.

6.4. Public Opinion on developing riverfront public spaces

Interviewed people suggested diverse kinds of developments according to the nature of that public space. Comparative analysis of the data results shows that all four places are safe only in limited time to access women and children. All of them are friendly spaces for elderly people and the physically challenged. People were shown interest and utmost concern for conserving and maintaining the natural vegetation and riparian edge ecology. (Fig. 18). Among all the cases, they asked to improve more open green spaces like public parks, riverfront promenades, parking facilities, and public toilet facilities. (Fig. 17).

People recognized that the RFPS – 1 Berm Park site had many opportunities to develop entertainment and commercial features with the river water. In the case of RFPS-2 Prakasam Barrage, most people suggest creating a safe and convenient viewing deck to enjoy the view of Prakasam Barrage and the water, particularly when the gates will be open in peak monsoons. At the E-3 Food court, people suggested allocating more spaces to conduct city-level events/ gatherings with the beautiful landscape and also riverside enhanced walking and cycling tracks.

While coming to the RFPS – 4, it is to some extent different. The public demands to provide basic needs like changing rooms, public toilets, and waste disposal bins to perform the temple rituals conveniently. (Fig. 14, Fig. 15, Fig. 16). Street vendors were asked to create an organized space separately shown space to keep their stalls near the ghat. This space was highly unsafe for women and children, particularly after the sunsets. In many recent crimes, incidents were also noticed in this spot.



Fig. 17 Ariel view of Bhavani Island (RFPS -1), Vijayawada.

Source:[24].

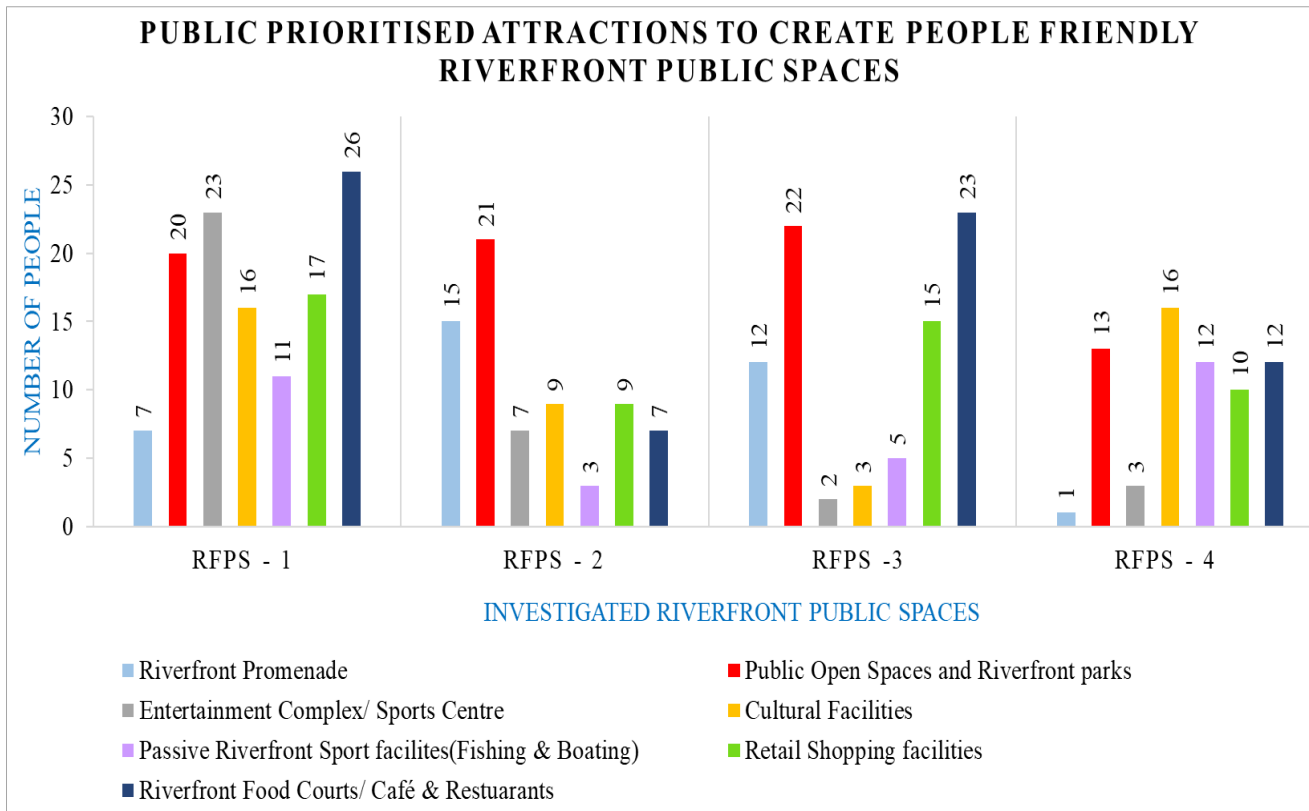


Fig. 18 Comparative analysis of public prioritised attractions to be facilitated at four RFPS.

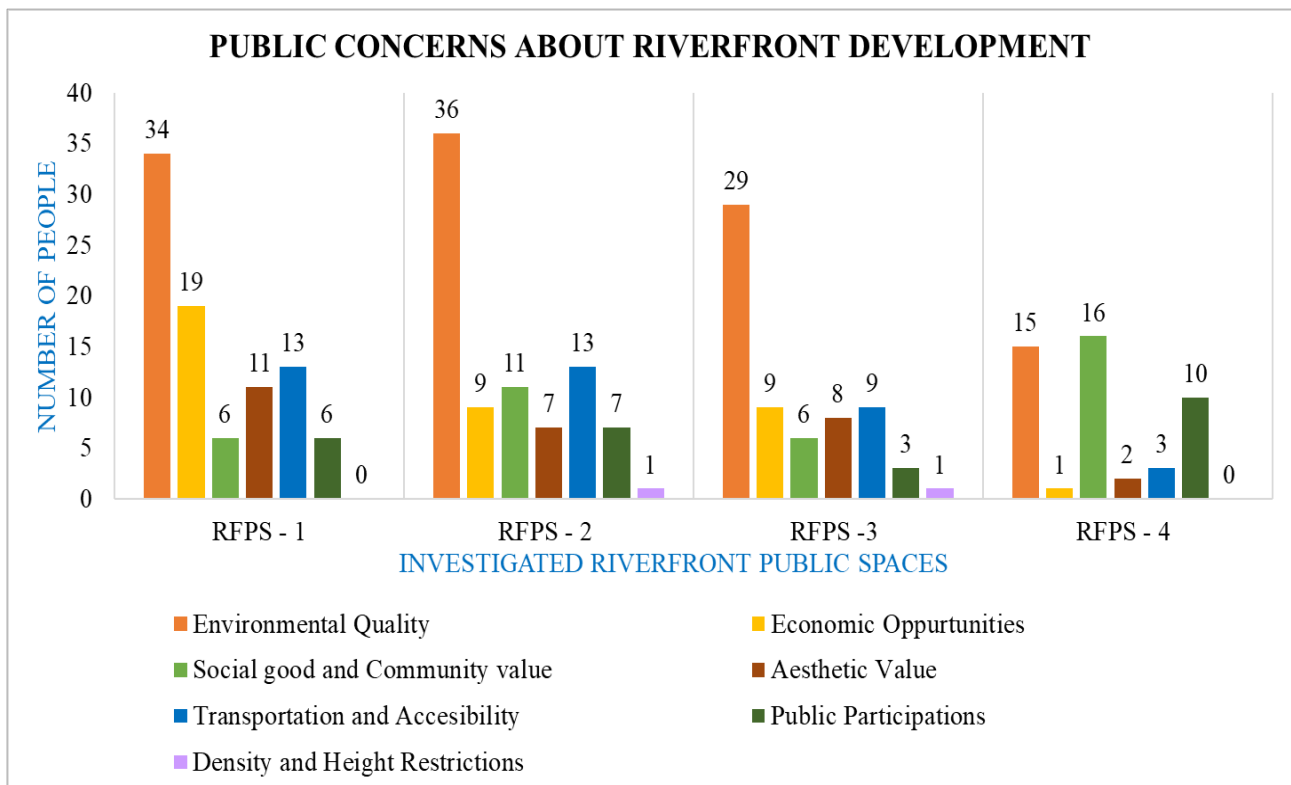


Fig. 19 Comparative analysis of public concerns at four RFPS.

6.4.1. Summary of People Perception Survey results

Each city and its public spaces are unique in their character and utility. Similarly, the survey results can also be categorized based on certain specific parameters considered for the questionnaire design, suitable to the local contextuality.

6.4.2. Age-Group

Among the four RFPS, only the RFPS – 3 E-3 Food Court has comfortable facilities and urban elements, making the space universally accessible. The remaining three RFPS lack certain necessary elements like safety railings, curb ramps, public seating, and footpaths.

6.4.3. Mode of Transportation

Even though all the spaces are connected to the arterial roads, the majority of the public are not utilizing public transport because of the availability of less frequency of buses and also the lack of nearby bus stops. E-3 Food court is an exceptional case here.

6.4.4. Time Spent

The RFPS -1 Berm Park attracts and engages the public for maximum time to spend at the riverfront because of the recreational facilities created on Bhavani Island like trekking, nature trails, water sports, boating, parasailing, Children play areas, riverside green spaces, and seating. RFPS – 3, E-3 Food Court is the next space where people would like to spend more time because of the food courts and games available at the river edge. However, this space is open to the public only in the evenings. The RFPS – 2, Prakasam Barrage, is a movement space. Since it is a transportation corridor, there are no specific spaces allotted for the public to enjoy the river and dam views. So, people used to hang out on the edges and footpaths along with the street hawkers, particularly during late at night. The RPPS – 4, Sitanagaram ghat, is specifically for cultural uses, and the public is not comfortable spending more than 30 minutes duration because of the unsafe environment presence. It is an isolated space during the night. In recent times more crime incidents are also recorded in this space.

6.4.5. Primary Purpose of Visit

In the case of all spaces, the river is a central attraction that pulls the public to visit these places. This shows the opportunity for the scenic beauty of nature for future prosperous developments.

6.4.6. Safety

People are not considering these riverfront public spaces safe at all the timings. In their voice, these are not safe public spaces for women and children alone.

Safe and accessible public spaces are essential elements for a liveable and prosperous city, where the facilities are needed to the designed and maintained that makes the public feel safe from crime and violence.[9].

In this instance, one aspect can be highlighted here, suggested in the global public space tool kit, "public space can act as the vehicle for women and girls and their right to the city." [6]. The public spaces where we observed that

the status of women is still inferior to men reveal the truth that their access to public spaces is always susceptible.[12].

6.4.7. Frequency of Social Communication

In all cases, the space encourages very little social communication for the public. At this point, it is a global challenge for many public spaces. The weakening of social consistency and communication is mentioned as one of the constraints for creating and maintaining good joyful public spaces.[6].

6.4.8. Public concerns and preferences for future developments

For each space, people need different kinds of requirements. At RFPS -1, they visualize the space as more enhanced with beautiful riverfront promenades, Commercial spaces, Water sports, Food courts, Play zones, and Green spaces. RFPS -2 is in great need of parking spaces, allocated viewing decks, and organized hawker-friendly public spaces. RFPS – 3 is lacking with enough green spaces, river edge plantation, and cycle tracks. RFS-4 requires more safe lighting and monitoring systems and public seating.

6.5. Wide-ranging Suggestions Applicable to all selected RFPS

Public satisfaction is very decisive in making any scale of public spaces successful and functional. Here it is determined that the Krishna river and Vijayawada city are harmonized through pleasing ecological conditions. The human interventions must be sensible to maintain that humans and nature co-exist. This discussion is being concluded with the set of characteristics recommended by the public listed below:

- Conserve the river edge vegetation and promote the existing biodiversity.
- Provide river edge promenades and a variety of recreational activities.
- Improve equally accessible and sociable public spaces.
- Ensure the safe riverfronts is specific to the women and children through all the times in a day and seasons.
- Provide environment-friendly public toilets.
- Promote the parking spaces.
- Organized spaces for informal economic sector users such as street vendors and hawkers.
- Integrate and improve transit facilities for public and para transportation.
- Create awareness about green practices and customs in public space usage.
- Improve the effective riverfront public spaces management.

The future design and management of riverfront public spaces can follow the Crime Prevention through Environmental Design (CPTED) concept recommended by International CPTED Standards and Delhi Arts Commission. They recommend the fundamental principles which can meet people's perception values, such as a balanced conceptual approach,

cost-effectiveness, sustainability and resilience, a green environment (ecological) approach, adaptive application and an evidence-based approach. ([3], [19]).

The UN-Women (United Nations Entity for Gender Equality and the Empowerment of Women), U.N.- Habitat, Department of Women and Child Development, Government of NCT (National Capital Territory) of Delhi, collaboratively suggest a practical guide on *Building Safe and Inclusive Cities* for Women that includes the more sensible design aspects for intervention areas and the city's public spaces network. It is recommended at the time of framing the redevelopment strategies and policies in equally accessible public spaces to accomplish the functionality of riverfront public spaces.[21].

7. Conclusion

Vijayawada is a restless city with very few left open and green public spaces. It was investigated and proven

that there is an imperative need for environmental restoration connected to the restoration of human psychology as well, particularly for urban citizens. For this city, the riverfront spaces are the most favourable spaces where people can stress relief through physical activities at riverfront parks. The quality of public life is necessary to measure, analyze and consider the recommendations for developing the city level's public spaces.[7]. This stood as a motivation. The public opinion survey conducted provides an indistinct depiction of the level of functioning of selected intimate riverfront public spaces. Certain basic facilities were lacking, and also identified some of the shady pockets were left ignored. At the same time, the redevelopment of riverfronts in Vijayawada, these lacking facilities suggested by the public, which were discussed in this paper, can be considered to provide in future and make them successful people-friendly public spaces.

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