Research Paper

Growth and Distribution of Marine Fisherman Population in Coastal Districts of Maharashtra: A Geographical Study

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Abstract-
Along with giving millions of fisherman jobs and generating significant foreign cash for the nation, marine fisheries play a significant role in delivering protein-rich food to the world's expanding population. The greatest economic activity sector in India is agriculture. For a relatively large section of the population, it not only offers food and raw materials but also jobs. Fisheries, one of the agricultural resources, play a significant role in the Indian economy, particularly in terms of generating foreign cash. The five coastal districts of Thane, Greater Mumbai, Raigad, Ratnagiri, Sindhudurg. Additionally, because fishing requires a lot of labour, it will help the underprivileged in society find gainful employment. It also provides a stable source of income for a sizable portion of the economically disadvantaged population, particularly those living along the country's coast. Population growth is the term used to describe the gradual rise or fall in a region's population over time. This change could be advantageous or detrimental. It can be expressed as a percentage or in absolute amounts. Population growth and decline are important indicators of a region's economic health, social development, and historical and cultural heritage.
Keywords-Population Distribution & growth, Fisherman, social progress

1. Introduction

With 60% of the world's population, Asia is the largest continent. India is one of the biggest and most populated nations in Asia, with the widest range of jobs for a living. The majority of the population in the nation relies on agriculture and related industries like fishery for their living. Since the beginning of time, fishing has been the most traditional and significant source of income for those who live along the country's coastline. The sea environment and this natural resource together offer coastal residents chances for a living. The socioeconomic development of the fishing community is greatly influenced by the fishing sector. (Jonwal and Deshmukh, 2017).

The socio-economically underdeveloped artisanal and small-scale fishers who depend heavily on the oceans and seas for their livelihoods dominate the marine fishing sector. (National Fisheries Policy, 2020).Fisheries resources have a significant impact on fishermen's socioeconomic condition. In India, it is believed that more than 12 million people directly participate in fishing, and that 60 million rely solely on the fishing sector for their income. (Rao et al., 2016) When boosting national income, creating jobs, and earning foreign exchange, the fisheries sector is crucial to the expansion of the Indian economy. In many regions of the world, fish and fishery products are acknowledged as the most affordable source of protein and a significant component of many people's diets. In India, more than 12 million people are thought to be actively involved in fishing, and around 60 million rely solely on the industry for their living (Rao et al. 2016).

In the state of Maharashtra, there are about 3,86,259 fishermen, made up of 81,492 fishing households living in 456 fishing villages.There are about 62,614 fishers working in the marine fishing industry(Anonymous2017).A major barrier to the design and implementation of various programmes for their enhancement is the lack of knowledge about the socioeconomic circumstances of fishing communities (Shankar 2010; Saxena et al. 2014).Marine fisheries productively employ the vast majority of coastal communities worldwide, and a sizable number of these are small-scale fishers living in developing countries (FAO, 2018).

2. STUDY AREA

The Konkan is located between latitudes North 13° 30′ to 20° 10′ and longitudes East 74° 10′ to 74° 40′.The confined area of coastline between the Arabian Sea and the Western Ghats escarpment is known as the "Konkan." The 'Konkan' region is where the well-known Western Ghats are located. The northern boundary of the "Konkan" is defined by the "Damanganga" River, which divides the states of Maharashtra and Gujarat. It goes all the way to "Terekhol" Creek in the south. The "Konkan" strip is a separate physiographic zone of the State that stretches for around 720 km north-south. The 'Konkan' region

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has a dissected topography, and its typical East-West extension is 40–50 km. This extension varies greatly within the coastal plain and is smaller from north to south (Karlekar, 2002). Geographically speaking, the Konkan is the Maharashtra state's western coastline region. The Western Ghats and the Arabian Sea are separated by a small strip of land. The Konkan region is home to the famous Western Ghats. From sea level, it rises to a height of 300 metres. From Goa to Tapi basin, the Konkan region is between 27 and 48 km wide and 800 kilometres long. Its 30,746 km2 is divided into 6 administrative divisions: Sindhudurg, Thane, Raigad, Ratnagiri, and Mumbai and its suburbs.

LOCATION MAP:STUDY AREA
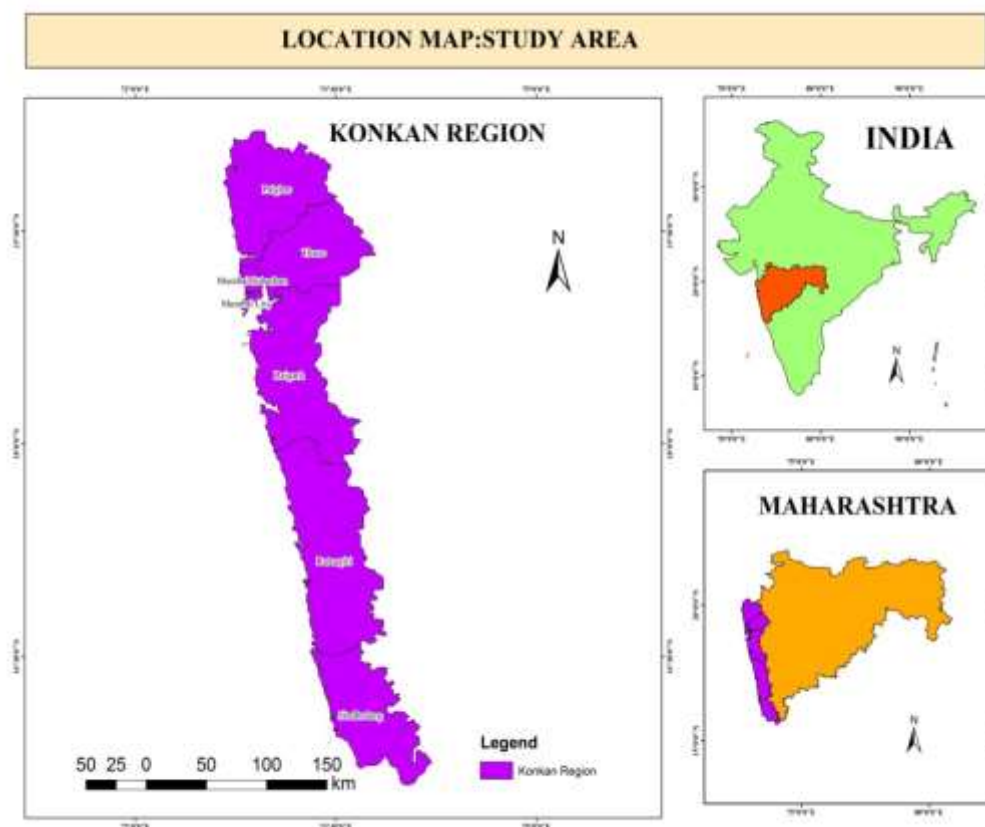
3. Objectives
For the present study following objectives have been framed.
1. To look into spatial distribution of fisherman communities at district level in Sothern Maharashtra.
2. To examine the growth of fisherman communities in study area.

4.Database And Methodology
The particular study's data came from secondary sources.Secondary information was gathered from a varie ty of sources.

Secondary Data
The secondary data will be collected from the marine fishing Census reports published by the Government of India for 2005 and 2010 & 2016 Primary Census Abstract of Maharashtra 2005-2010, Socio- economic Review and District Statistical Abstract of Sindhudurg Sothern Konkan, Dissertations, Books, Journals, and Articles etc.

Methodology
Different quantitative and statistical procedures are used to process, modify, and analyse the data that was gathered from secondary sources.
Following techniques will be employed for the proposed study.
Growth Rate of Population

$$P2 – P1 \qquad Where, r = Growth\ rate$$

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r = ---------------- x 100   P2 = Current Year Population
        P2   P1=Previous Year population

1. GIS Technique: GIS techniques are used for making various Map related the Marine fisherman population in the study region.
2. GIS Technique: GIS techniques are used to create numerous maps that are related to the population of fishermen in the study area.

5. Maharashtra Spatial Distribution Of Marine Fishing Population In Konkan 2005

India's impoverished communities are made up primarily of marine fishermen. The Konkan region of Maharashtra is where most of the marine fishing communities are concentrated. Additionally, there are five districts with a population. According to the 2005 Marine Fisheries Census, Maharashtra was divided into five districts: Thane, Greater Mumbai, Raigad, Ratnagiri, and Sindhudurg. The population of marine fishing population in Konkan Maharashtra was estimated to be 319397. Sindhudurg district marine fishing population was the lowest in all of Konkan region, only 7.51 per cent.

The population of Sindhudurg looks to be declining because large marine fishing communities use laser lights to catch fish, leaving small marine fisherman without access to food and because the younger generation travels to Mumbai for employment and finds lucrative jobs there. Second In Ratnagiri, 15.2 per cent population, Greater Mumbai, 15.68 per cent, and Thane, 27.34 per cent. And the highest population observed in Raigad is about 33.96 per cent. This is because 103 villages in Raigad are engaged in marine fishing activities, and as a result of people migrating from West Bengal, Bihar, and UP, the population has grown significantly. Then average male population is 50.95 per cent, while the average female population is about 49.05 per cent. Much more males and females in this region, but less development. Male marine fishermen are concentrated in the following districts: Ratnagiri 49.37 per cent, Greater Mumbai 50.43 per cent, Raigad 51.35 per cent, Sindhudurg 51.88 per cent, and Thane about 52.22 per cent. Nevertheless, Thane, Sindhudurg, and Raigad have the lowest female populations, with 47.78 per cent, 48.02 per cent, and 48.65 per cent, respectively. Ratnagiri comes in maximum at 50.63 per cent because Ratnagiri district has a total of 167 km of coastline, so there are a large number of women engaged in fish sales, net making, and curing & pilling processing.

Table 1
Maharashtra Spatial Distribution Of Marine Fishing Population In Konkan 2005

Sr. No.	District	Total Marine fishing Population Percentage	Male Population Percentage	Female Population Percentage
1	**Thane**	27.65	52.22	47.78
2	**Gr. Mumbai**	15.68	50.43	49.57
3	**Raigad**	33.96	51.35	48.65
4	**Ratnagiri**	15.20	49.37	50.63
5	**Sindhudurg**	7.51	51.38	48.62
	Average	**20.00**	**50.95**	**49.05**

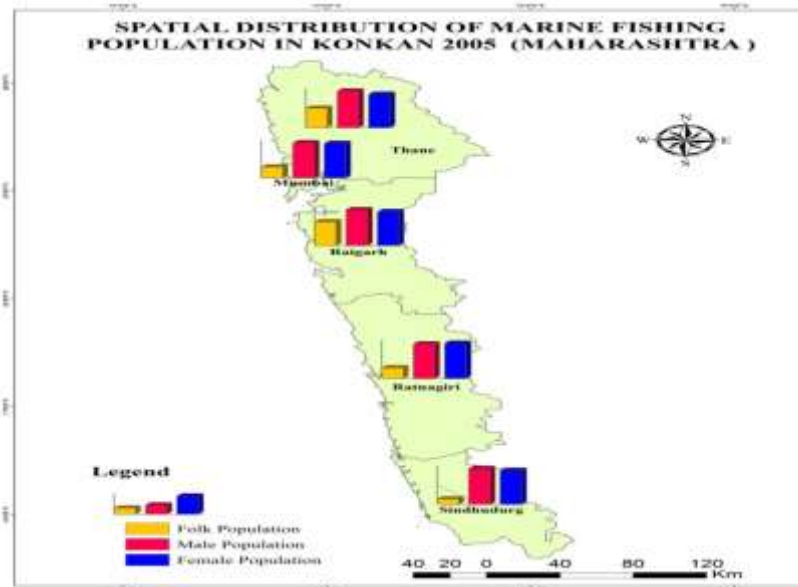*Source: Marine Fishing Census 2005*

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Fig.1

6. Maharashtra Spatial Distribution Of Marine Fishing Population In Konkan 2010

The overall marine fishing population of Maharashtra's Konkan region is estimated at 3862259 people, According to the 2010 Marine Fishing Census. Which only considered five districts' populations the lowest number of marine fishing communities was observed in Sindhudurg, about 8.09 per cent. Followed by Gr. Mumbai 10.60 per cent, Raigad 17.26 per cent, Thane 31.55 per cent maximum Ratnagiri about 31.99 per cent due to In Ratnagiri having the highest number of the population due to 7500 families are involved in fishing and 15-20 tons of fish are exported to European countries with a turnover of cores. They looked at population density by district and discovered positive and negative population concentrations. However, in fishing settlements along the coast, there is a male population of an average of about 51.07 then female 48.93 per cent. Male marine fishermen concentration lowest was in district 49.75 per cent of Raigad, and second Greater Mumbai 51.15 per cent, Sindhudurg 21.29 per cent, Ratnagiri came in 51.58 per cent. Thane received 51.59 per cent of the vote due to the Dahanu and Vasai marine fishing spots, the significant number of male marine fisherman in Thane, and the city's dense population. Furthermore, the female population in Thane is 48.41 per cent second, Ratnagiri 48.42 per cent, Sindhudurg 48.71 per cent, Gr. Mumbai, 48.85 per cent and Raigad, 50.25 per cent, due to In South Konkan, Raigad district has the highest total coastline of 240, so female are more involved in fishing activities.

Table 2 Maharashtra Spatial Distribution Of Marine Fishing Population In Konkan 2010

Sr. No.	District	Total Marine fishing Population Percentage	Male Population Percentage	Female Population Percentage
1	Thane	31.55	51.59	48.41
2	Gr. Mumbai	10.60	51.15	48.85
3	Raigad	17.26	49.75	50.25
4	Ratnagiri	31.99	51.58	48.42
5	Sindhudurg	8.59	51.29	48.71
	Average	**20.00**	**51.07**	**48.93**

Source: Marine Fishing Census 2010 of India
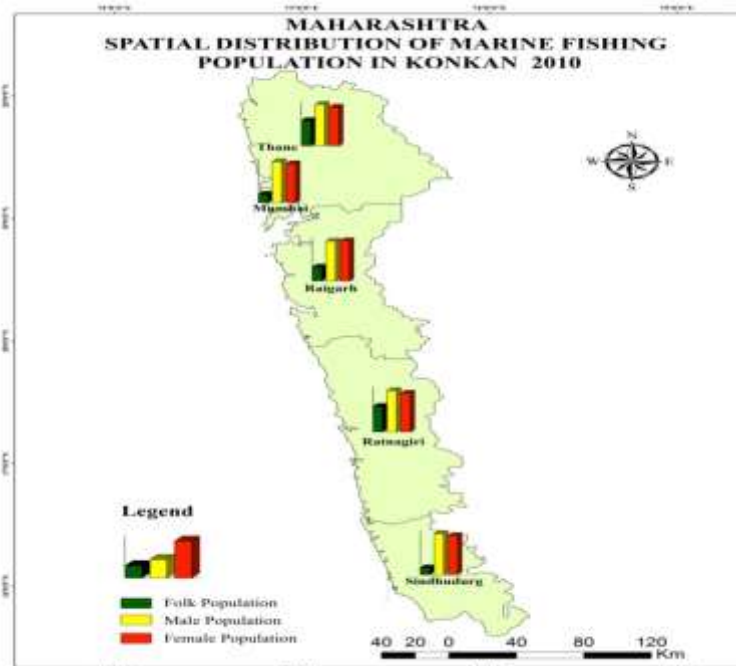
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Fig.2

7. Maharashtra Spatial Distribution Of Marine Fishing Population In Konkan 2016

According to the marine fishing Census 2016, the population distribution of Maharashtra in Konkan is about 364899, which is calculated for only seven district populations. Before the Census of 2005, Palghar was part of Thane tehsil; after 2016, they split Thane district. There is marine fishing least population Mumbai city 2.0 per cent, second Thane 5.54 per cent, Mumbai Suburban 6.9 per cent, Followed by Sindhudurg 8.77 per cent, Ratnagiri 19.63 per cent and Palghar 25.95 per cent the last for, Raigad District for around about 31.19 per cent because Raigad has a coastline of about 240 km and a continental self-area of 2100 km and its main landing centre Alibag and Raigad has seen an increase in population. Marine fishing communities it is Male population Average about 50.68 per cent then female population About 49.32 per cent.

They have a male population minimum difference concentred male Population Minimum Mumbai city at about 49.32 Per cent because Mumbai City has a low coastline and low continental shelf, and new-generation fisheries are less diverted hence population is less visible. Second Ratnagiri 50.21 Per cent, Palghar is 50.48 Per cent, Thane 50.58 Per cent, Raigad 51.51Per cent, Mumbai Suburban 50.81 Per cent, maximum Sindhudurg 51.69 Per cent. There are differences between the Marine fishing Census 2005 and 2010 maximum difference, but the population distribution is not uniform in the study region. In the population to district and fond out positive and negative population Concentration then Female Population minimum Sindhudurg 48.31 per cent because since most of the female in Sindhudurg pass 12th go to Mumbai for employment, second Raigad 48.49 per cent, Mumbai Suburban 49.19 per cent, Thane 49.22 per cent, Palghar 49.52 per cent, Ratnagiri 49.89 per cent, and last one Maximum Mumbai city is 50.58 per cent. Due to Mumbai City has less sea coast but since Mumbai is a metropolitan city, there is a large number of women here because of the large number of females coming from outside districts and states.

Table 3 Maharashtra Spatial Distribution Of Marine Fishing Population In Konkan 2016

Sr. No	District	Total Marine fishing Population Percentage	Male Population Percentage	Female Population Percentage
1	Thane	5.54	50.78	49.22
2	Palghar	25.95	50.48	49.52
3	Mumbai Sub.	6.90	50.81	49.19
4	Mumbai City	2.02	49.32	50.68
5	Raigad	31.20	51.51	48.49

6	**Ratnagiri**	19.63	50.21	49.79
7	**Sindhudurg**	8.77	51.69	48.31
8	**Average**	14.29	50.68	49.32
	Total	100	355	345

Source: Marine Fishing Census 2016 India,

Fig3

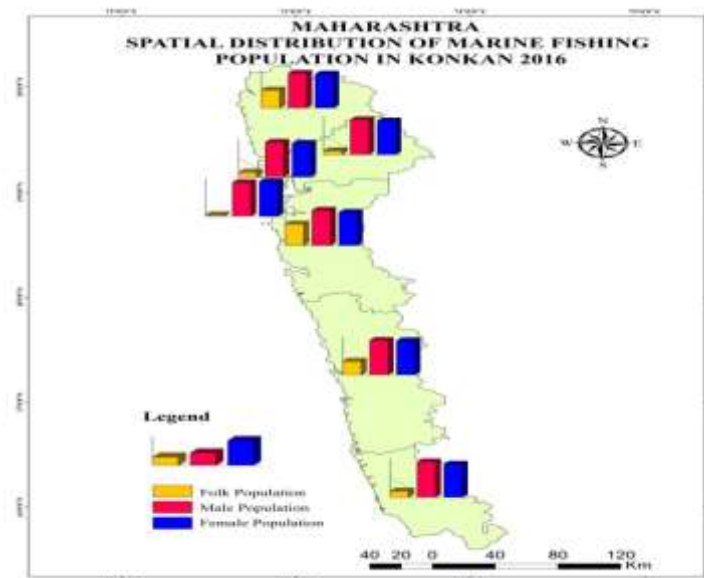**8. Growth Rate Of Marine Fishing Population In Konkan 2005-2010**

The maritime fishing industry in Maharashtra's population in the Konkan region increased by roughly 17.31 per cent between 2005 and 2010. Raigad has the lowest tehsil with (-62.66) per cent, second Gr. Mumbai has a negative growth rate of (-22.27) cents. Following the Positive growth rate in Sindhudurg (about 27.67 per cent) and Thane 27.53 per cent, Ratnagiri is 60.71 per cent because Rajiwada is the satellite landing centre in Ratnagiri town. In contrast, Mirkarwada harbour is a crucial fish landing and assembling centre of the Ratnagiri District. Ratnagiri District was built by the state fisheries department as part of a project supported by the federal government. The Ratnagiri area is renowned for its extensive coastline, accessible harbours, and relative proximity to the Arabian Coast. Fishermen should be encouraged to enrol in various training courses to advance their abilities in particular fields and increase their income. Fishers need to be encouraged to pursue alternative forms of employment. A suitable extension linking mechanism needs to be created for efficient technology transfer

Table 4 Growth Rate Of Marine Fishing Population Inkonkan, 2005-2010

Sr. No.	District Name	Total Marine Fishing Population 2005 Percentage	Total Marine Fishing Population 2010 Percentage	Growth of Marine fisherman Percentage
1	Sindhudurg	7.51	8.59	27.67
2	Ratnagiri	15.20	31.99	60.71
3	Raigad	33.96	17.26	(-62.66)
4	Gr. Mumbai	15.68	10.60	(-22.27)
5	Thane	27.65	31.55	27.53
	Average	20.00	20.00	38.63

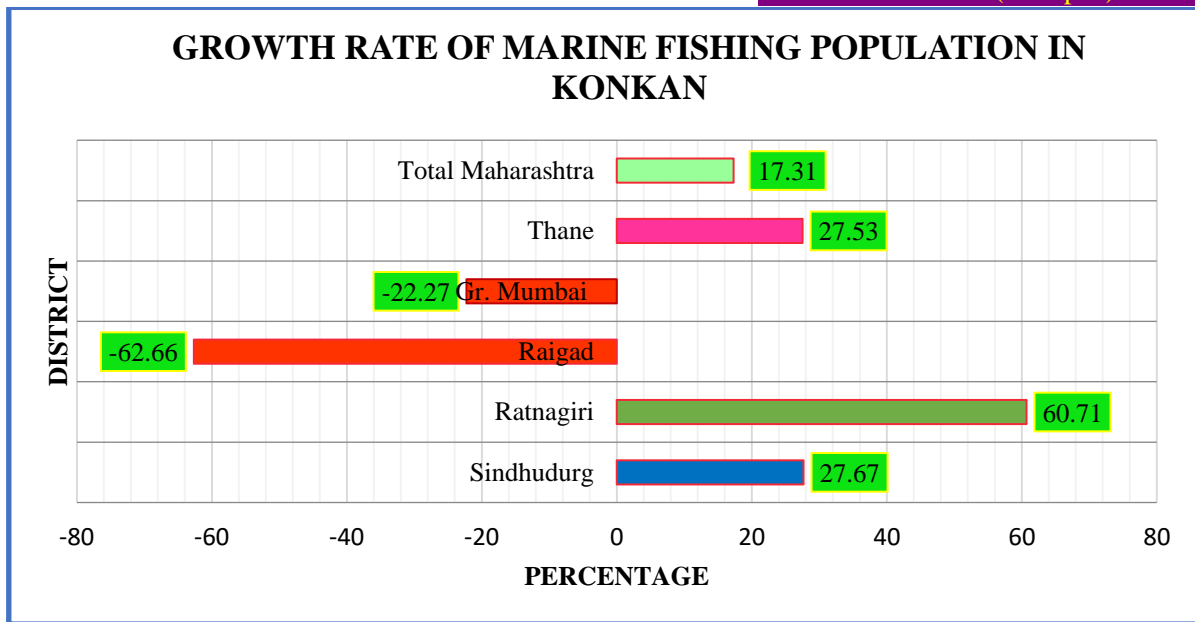*Source: Marine Fishing2005-2010 Census*

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Fig.4

9.Growth Rate Of Marine Fishing Population Konkan 2010-2016

The decreased Maritime fishing industry Maharashtra's population in the Konkan region by roughly (-5.85) per cent 2010 - 2016. This is determined by Thane district growth rare lowest at about (-6.0) cent second Raigad having a negative growth rate with an (-8.54) per cent. Because Raigad has a lot of hilly and forest topography, fishermen move from one place to another in urban areas for business. Rural people move to urban areas for charity, Mumbai, Thane Pune. Following the Positive growth rate, Sindhudurg in the coastal district had a minimum growth of about 3.63 per cent, and Ratnagiri 6.89 per cent, maximum growth rate from Gr. Mumbai 25.94 Per cent because A lot of fishing people migrate to the metropolitan area and people come here for work, and there is not much work in the rural areas, and the lack of amenities and the living conditions of the people here seem to have improved. We see it growing.

Table 5 Growth Rate Of Marine Fishing Population Konkan 2010-2016

Sr. No.	District Name	Total Marine Fishing Population 2010 Percentage	Total Marine Fishing Population 2016 Percentage	Growth of Marine Fishing Percentage
1	**Sindhudurg**	8.59	8.77	3.63
2	**Ratnagiri**	31.99	19.63	6.89
3	**Raigad**	17.26	31.20	-8.54
4	**Gr. Mumbai**	10.60	8.91	25.94
5	**Thane**	31.55	31.49	-6.0
	Average	19.99	20	4.38

Source: Marine Fishing Census of India, 2010 & 2016

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GROWTH RATE OF MARINE FISHERMAN POPULATION KONKAN 2010-2016
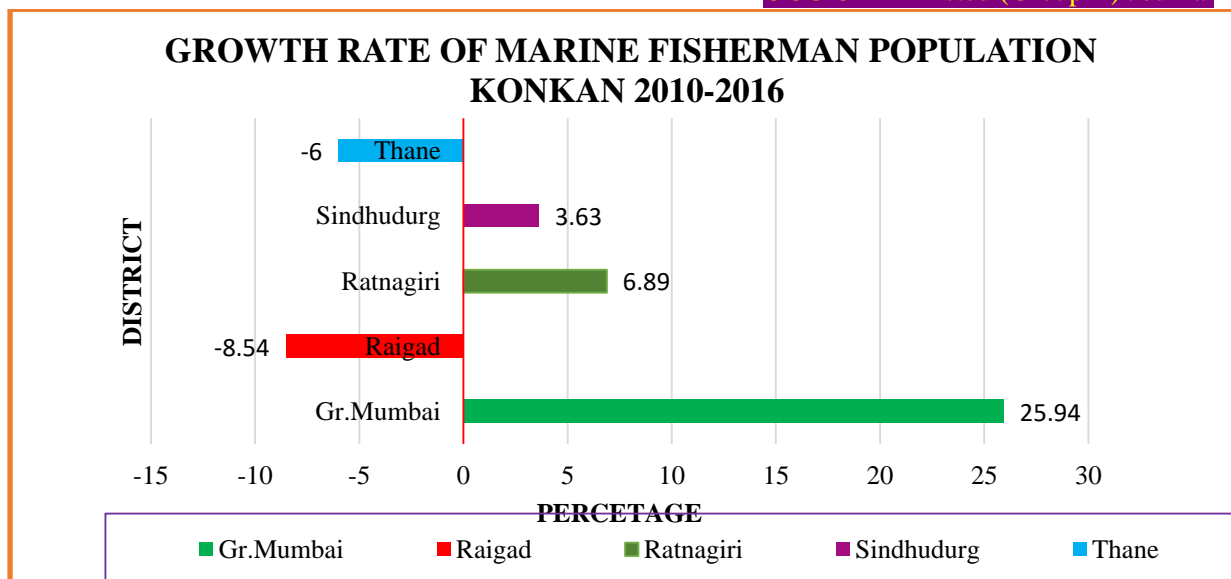

Fig.5

10. Conclusion

In the south Konkan of Maharashtra state, the current study sought to explain the patterns of population distribution. A few physical and economic criteria have been used to analyse this. The region has a skewed distribution of population. There are areas with a dense concentration, and there are areas with a very sparse concentration. This difference is mostly related to both the physical characteristics and the economic structure of the various studied areas. Raigad district makes up roughly 33.96 per cent of the marine fishing communities Maharashtra in Konkan, according to the marine fishing census of 2005. Male and female populations of marine fishing communities, as well as those who commute daily from Mumbai to the nearby metropolis, have decreased in the nearby areas of Kharghar, Panvel, Karjat, Uran, Pen, Alibag, PaliMahad, and industrial location area Panvel after Sindhudurg district, where the majority of the marine fishing population is landless and illiterate. Ratnagiri represents roughly 31.99 per cent of the entire marine fishing population according to the 2010 marine fishing census. Male and female marine fishing populations were at their highest levels because some marine fishing cooperative organizations helped promote marine fishing trade and scientific methodology. Moreover, the deep landing centre We have data from the marine fishing census from 2005, which shows that Sindhudurg district has the highest proportion of marine fishers overall. Malvan is a well-known market, while Achara, Kolam, and Kali are important creeks with plenty of labour. Due to the large number of migrants from Mumbai who moved there without taking use of the facilities, Kudal Tehsil has communities that engage in marine fishing activities.

2005 and 2016 are the same Raigad district has a negative growth rate of -62.66 per cent since a lot of people moved there from Mumbai's urban area to this coastal and hilly region with abundant rainfall. We are Maharashtra in Konkan marine fishing census 2010-16 overall growth rate 5.85 per cent. The District of Raigad has the greatest growth rate at 41.33 per cent, which is a positive growth rate close to a major city. Increase in marine fishing population in Sindhudurg Tehsil between 2005 and 2010, with the highest marine fishing population in Devgad Tehsil at 46.66 per cent along this region's longest coastline. It is the largest fishing market, and because so many people moved close to the city of Mumbai, Kudal growth rate has decreased to -274.6 per cent. He is a low educated individual who participates in a low percentage of youth activities like fishing. Census 2016 growth rate is the same as it was in 2015.

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