Exploring the Relationship Between Disasters and Tourism in India: A Quantitative Approach

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Abstract

This study examines the impact of natural disasters on India's tourism industry, leveraging secondary data from Indian Tourism Statistics 2022, National Disaster Management, and other reputable sources covering 2020-2021. Utilizing growth analysis, Karl Pearson's Correlation Coefficient, and regression analysis, the research reveals a significant relationship between disasters and tourism. Notably, domestic tourist growth increased by 10% from 2020 to 2021, while foreign tourist arrivals declined by 5%. Meghalaya and Jammu & Kashmir emerged as exceptions, with 85% and 74% increases in domestic tourist arrivals, respectively, indicating minimal disaster impact. The findings underscore the vulnerability of tourism to natural disasters, emphasizing the need for resilient and sustainable tourism strategies.

Keywords: *Natural Disaster, Tourism Industries, India, Disaster resilience, Domestic & International Tourism*

1. Introduction

Exploring How Disasters Affect Tourism in India

Disasters are events which happen without warning, a natural disaster will reduce the development of the place and also create fear among the people, natural disasters have a major impact on tourism industries, due to fear people will reschedule their tourism

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plans. Due to natural disasters, the roots of the tourism destination are blocked. Many tourist places in India are vulnerable to natural disasters in Uttar Pradesh Varanasi is a spiritual place which attracted 4 million tourists (2020 to 2021) but it is susceptible to floods most the flood happen because of the Ganga river, the Kerala Backwaters are a beautiful river which attracts more than 6 lack tourist between 2020 to 2021 this place is also vulnerable for natural disaster, in Kerala Backwaters the flood happened every year due to monsoon (Balakrishnan Nair & M R, 2020) they stated that the flood in 2018 as a major impact on tourism sectors, the house Botes are used for recuse peoples hotels are transformed into disaster shelter this flood affected the medical tourism of Kerala, backwater tourism and ecotourism. In Himachal Pradesh Shimla & Manali are beautiful places which attracted more than 10 million (2020 to 2021) tourists they are vulnerable to Earthquake, Andaman and Nicobar Islands are places have Radhanagar Beach, Laxmanpur Beach, Ross Island, Limestone Cave, Mud Volcano, Coral Reefs which attract more than 4,40,000 (2020 to 2021) tourist which is Vulnerable for Cyclone this place face average of two cyclone a year. In 2020 Cyclone Amphan & Cyclone Nivar affected the place in 2021 Cyclone Yaas affected the place, the Darjeeling hills of west Bengal is also know has eastern Himalayan jewel this place has varies destination like tiger hills, Kanchenjunga view point, Darjeeling Himalayan Railway, Japanese Peace Pagoda, Rock claiming, white water rafting, where more than 5,50,000 tourist use to visit the places between 2020 to 2021 but still it is vulnerable to landslides 14 landslide happen between 2020 to 2021 (Rosselló, Becken, & Santana-Gallego, 2020) he study stated due to natural disaster like Earthquake, tsunamis, flood, Wildfire, Strom led to reduce the tourism arrivals for some destinations which is found by Correlation coefficient (Mark, 2020) the report show the Direct and Indirect Impact on tourism sector due to natural disaster, the study covers Direct Impact as building damages, infrastructure damages, assets and cultural damages and Indirect damages covers delay in supply chain management, financial damages affected the Good will of the firm. The study gives the data which show food, beverage, and Tabacco have a high impact on the tourism industries

The Vulnerability of India's Tourism Industry to Disasters

As we discussed above many tourist places in India are affected by natural disasters the reasons for vulnerability are most of the tourism destinations are located in coastal areas, hills, and floodplains. The climate conditions also led to natural disaster in India, there is lack of planning in tourism infrastructure development the communication and evacuation is slow during and after disaster, following are the states which affected mostly by disaster, Goa, Odisha, Rajasthan, Darjeeling, Uttarakhand Himachal Pradesh are the states mostly affected by the natural disaster (Meher, 2024) the study stated in Odisha three cyclone is recorded in 2021 has Yass, Gulab, Jawad, in 2013 more than 2,200 crore damages where recorded during Cyclone Gulan, also 1.35 million people are affected by the disaster (Lamba & Jat, 2022) the study show most vulnerable Place in Rajasthan, the high risk area of Rajasthan are Barma, Jalore, Jaisalmer, Bikaner, Jalore, Alwar and Bhagalpur (Pal, Biswas, Mondal, & Pramanik, 2016) the research explain the history of flood in Darjeeling, the biggest landslide was happened in the year 1968, Darjeeling use to face many earthquakes from the year 1885 till now, due to this many tourism destination in Darjeeling are affected by continuous flood.

Tourism and Disasters:

A Growing Concern in India: Tourism is a service industry classified into many types like Eco tourism, Adventure tourism, Educational Tourism, Health Tourism, Domestic tourism, heritage tourism, Inbound tourism, and Outbound tourism, the activity during adventure tourism is Hiking where the tourist travels by walk to admire the new places, trekking is nothing but going inside the forest, mountain climbing, Zip lines, cycling, Caving is travelling inside the cave to explore new findings. Nowadays education Tourism increased in India many students from Sri Lanka, Nepal, Afghanistan, and Africa visit India for education. The development of hospitals in India led to improvement in health tourism in India 5,00,000 people visited India for health care in 2020. The major cities in India have separate hospitals for Cardiology, Neurology, organ transplants, genetic testing, and wellness treatment which developed health tourism in India (Praveenadevi, et al., 2024) the study stated that health tourism in India has the following advantages as online treatment, documentation preparing, convenient foreign exchange services, infrastructure facilities are the leading factors which develop the health tourism in India, The people travel inside their countries are known as Domestic tourist, in India majority of the people are interested in domestic tourism following are the famous tourism destination in India Alappuzha, Andaman, Munnar, Srinagar, Beach in goa, Thrissur waterfalls, Kanjira, Rajasthan Desert. (Kumar & Sharma, 2023) The study stated that increasing the value of the destination heritage is the most important factor. For improving the heritage of the place, the local people are willing to work for the growth of heritage tourism in India. If the people of India visit other countries it is known as outbound Tourism, if foreign travellers visit India is known as Inbound tourism (Sharma, Mohapatra, & Giri, 2022) the study stated ICT Play a significant role in improving Inbound Tourism in India, the researcher put forward the infrastructure development in technology are the government steps to improve the Inbound tourism in India

There are two types of disasters they are Natural disasters & Man-made disasters. In India, more tourist places are affected by natural disasters than Man-made Disaster, natural disasters like Earthquake, Flood, Landslide, Cyclone, Clod waves & Heat waves happen usually, tourism sectors in India as disaster management which cover pre-disaster plans, during disasters & after disasters. Before disaster the disaster management was used to frame the plans such as investing in Insurance policy, document safety, Guest Safety, and analysing the previous disaster to know the impact of the disaster. During a disaster, the important factors are acting fast, communicating fast, organising quickly, gathering information from the government, and replacing the guests in a safe place. After the disaster the sectors mainly focused on how to restart the business, recover from the financial issues, make an Insurance claim, getting government help are some of the disaster management practises in India (Albattat, Mat Som, & Alaa, 2014) The study stated that some of the high-class hotels have implemented disaster management in their hotels but small hotels in Malaysia have not had any disaster prevision plans, the government has taken steps to promote the Hotels industries after the disaster the hotels use to provide a discount for the guest, increasing the quality of the services, organising some events, are the development steps in the hotels to bring back the business from the disaster.

Disaster Resilience in India's Tourism Industry:

Tourism is the sectors which depend on the travellers, the purpose of the travel differs according to the needs of the people, Some people may use their holiday to enjoy themselves with their families, some may be interested in exploring new places, many people visit the place which is popular for the tourist, some peoples travelling purpose may be business too, peoples use to travel to the historical place to learn and gain knowledge, the people may go for a regional place for relaxation, but there is some factor which influences the decision of the travellers, in this scenario, media is always spreading the negative news about the tourism destination after any natural or man-made disaster, by putting up the names & Numbers of the Death, affected & places created fear among the travellers, and many travellers use to changed their tourism destination due to negative news about the destination. There are many indirect Impacts happen due to Natural & man-made disasters such as the destruction of buildings, and roads, flooding in airports, damage in hotels, shortage in drinking water, effect on the transportation network of the state and lack of natural resources, this is some other reasons which are considered an as difficult time for the tourist during their stay, its factors also create a negative impact on the word of mouth (Barbhuiya & Chatterjee, 2019) The study put forward that natural disasters have influenced foreign tourists to visit India after any natural or man-made disaster, on the other hand, domestic tourism is not affected by natural disasters but this tourism is impacted by political interruptions. (Bharadwaj & Athulya, 2022) stated that tourism is a growing sectors in the world which provide employment opportunities but still tourism destinations are vulnerable to natural disasters. (Sharma, Dogra, & Sonia, 2024) They explain that various methods such as Technology, digitalisation, business model innovation partnership and coordination tourism behaviours are the factors which help to rebuild the tourism destination after any natural or man-made disaster.

2. Literature Review

(Barbhuiya & Chatterjee, 2020) The disaster has different types of Impact on the places there are varies types of natural disaster happing in this world the research analysed the impact of Natural & Man Made disaster of all the states of India, for the study they used many different destination like Beaches, Hill Stations, Important monuments of India, the study stated that Domestic tourism arrivals in Tamil Nadu was 15.36 crores from 2008 to 2014 and in Andhra Pradesh Domestic tourism arrivals was 14.89 crores between 2008 to 2014 they stated after the natural disaster the Domestic tourism is not had any major Impact, the recovering process also not taken many days while comparing to Foreign tourism arrivals the foreign tourism has a huge Impact due to natural disaster, after the disaster to increase the number of foreign tourist has taken many days to recovery from the damages, the Maharashtra received 31,72,976 foreign tourist in between 2008-2004 followed by Tamil Nadu received 27,43,214 foreign tourist between 2008-2004, the researcher used Multi Regression for finding the framed hypothesis.

(Sadikhova, 2021) The study stated pull and push factors towards the tourism destination they explain the tourism has a direct Impact because of natural disaster, this reduce the inflow of tourist to certain destination, due to natural disaster the pull factor are affected by unexpected events, for example the Doubt about the safety & security measures of the places. They pointed out there is a negative impact among the travellers in choosing the destination after the natural disaster news, the study stated the Impact of Yogyakarta earthquake (2006), Flood in Jakarta (2013), Tsunami (2004) in Thailand, Hurricane Katrina (2005) in USA, Volcano eruption (2010) in Iceland, the study also show the short term and long term Impact of natural disaster, after the disaster the tourism sectors are slowly recover from the damages, by building the effective communication system the negative impact of the natural disaster can be reduced.

(Balakrishnan Nair & M R, 2020) The paper explains the impact of the natural disasters, the study focused on the important in recovering management after disaster the researcher used Faulkner's crisis management model, this research paper covered

Kerela flood 2018 to study the recovery process such has rescue operations, effective communication, government support, marketing strategies, after the natural disaster to restore the tourism sector. (Liu , Pahrudin , Tsai, & Hao, 2024) The study explains the importance of disaster management it was stated after the bombing in bail the tourism sectors was very badly affected, this happen because of lack of pre disaster plans, for the growth of tourism the sectors must had better disaster management for the sustainable growth, this study explain the challenges and opportunities in the disaster management & tourism sectors, after recovering from the disaster. The bail tourism place is developed slowly after implementing various actions by government & Industries (Genc, 2018). The study mainly focused on four models such has Destination Image, Community Activity, Total revenue & Impact of Natural disaster on tourism sectors, they explain the poor crise management has a long lasting effect on the disaster this paper stated the continuously checking over the security & safety measures, natural evens studying the past disaster ill reduce the impact of the natural disaster.

3. Methodology and Data

3.1 Tools

From the following multiple regression equation the impact faced by Domestic Tourism and Foreign tourism by the natural & man-made disaster are measured:

$$DO=\beta_0+\beta_1\,AF+\beta_2\,DE$$

$$FO=\beta_0+\beta_1\,AF+\beta_2\,DE$$

DO is Domestic tourist, AF is Affected by natural disaster, DE is No of Death by Natural Disaster, FO is foreign tourism this equation is performed to find the relationship between Disaster Affected & Death with Domestic & Foreign tourist this tool was calculated manually using excel page this one is previously used by (Barbhuiya & Chatterjee, 2020) in there research they used multiple Regression analysis to find Domestic tourism & Foreign tourism relationship between fatalities, Internal conflict.

The Karl Pearson's Correlation Coefficient was analysed to find the relationship with all the data's this calculation is performed by SPSS Software. The Growth Percentage is used to find the difference between 2020 and 2021 this was calculated manually, for this study the Reliability test is calculated and Cronbach's Alpha value is given for Affected, Death, Domestic Tourism, & Foreign Tourism.

3.2 Data

For this study secondary data was collected these data are collected from Indian Tourism Statistics 2022, National Disaster Management, and other reputable sources covering 2020-2021, the tourism data are collected from varies transportation sectors like Airports Harbour, Railway authority, disaster related data's were gathered from National disaster Management, State Disaster Management & District Disaster Management Departments.

3.3 Area

The study area for this research is India, this research try to cover all the states of the country, totally 35 places are covered by this research paper has we see India is called as subcontinua of the world by analysing this data it will enable us to understand varices types of people and culture, previses researcher (Gantait , Mathew, Chatterjee, & Singh, 2024) as stated from 2005 to 2018 total of Rs 13,43,97,381 fund was raised from the ecotourism in India.

3.4 Hypothesis

To find the disaster impact on tourism sectors the following alternative hypotheses are framed:

H1: There is a close relationship between the number of people Affected by Natural disasters with Domestic tourism

H2: There is a close relationship between the number of people deaths by Natural disasters with Domestic tourism

H3: There is a close relationship between the number of people Affected by Natural disasters with foreign tourism

H4: There is a close relationship between the number of people deaths by Natural disasters with foreign tourism

3.5 Limitations

The study has several limitations that impact its accuracy and reliability. One major concern is its heavy reliance on secondary data, which may compromise accuracy and reliability. Additionally, the analysis has a narrow focus on disaster deaths and affected, overlooking other crucial factors that might influence tourism, such as economic indicators, infrastructure development, and government policies. The study's geographic scope is also limited to India, which restricts its generalizability to other regions and potentially neglects unique external factors. Furthermore, the analysis only considers data from two years, restricting insights into long-term impacts and trends. Another limitation is the study's reliance on annual data, which may mask seasonal or quarterly fluctuations in tourism demand. Lastly, the analysis may benefit from alternative model specifications or estimation techniques to provide more comprehensive insights. Overall, addressing these limitations is crucial to enhancing the study's validity and applicability.

4. Result and Discussions

The data’s which was collected from varies sources was put for the reliability test by using Cronbach’s Alpha and the following table show the reliability of the data.

Table 1 : Result of Reliability test for number of people affected, death during 2020 and 2021 & Number of Domestic, Foreign Tourism activities inside India for 2020 and 2021

S:No	Variables		Cronbach's Alpha	Cronbach's Alpha
1.	Affected	2020	.999	.956
		2021	.999	
2.	Death	2020	.927	.937
		2021	.927	
3.	Domestic	2020	.969	.984
		2021	.969	
4.	Foreign	2020	.536	.321
		2021	.536	

The above table show reliability test for the number of people affected by natural disaster during 2020 and 2021 the Cronbach's Alpha 0.956 is closer to 1 which show the dates had high reliability the data can put for several test. The number of people died in natural disaster across India during 2020 and 2021 data had high reliability value of 0.937. the number of domestic tourist visited varies places across India data had a high reliability with Cronbach's Alpha value 0.984. for Foreign tourism the Cronbach's Alpha value is lesser than .75 which show less reliability value of 0.321.

Table 2 : Number of Affected and Death across states of India, Domestic tourist and foreign tourist arrivals across the states of India

Years	2020[a]		2021[a]		2020[b]		2021[b]		Domestic	Foreign
State	Affected	Death	Affected	Death	Domestic	Foreign	Domestic	Foreign	Growth	Growth
Andhra Pradesh	77,000	95	1,10,500	155	7,08,28,590	67,591	9,32,77,569	27,551	24%	-1.45%
Assam	56,000	140	79,500	215	12,66,898	7,285	14,09,161	536	10%	-12.59%
Bihar	48,000	125	65,000	175	56,38,024	3,08,080	25,01,193	1,046	-125%	-293.53%
Gujarat	25,000	60	48,000	110	1,94,64,517	2,10,047	2,45,25,210	11,319	21%	-17.55%
Karnataka	45,500	95	62,500	155	7,74,53,339	1,65,325	8,13,33,659	72,487	5%	-1.28%
Kerala	25,000	75	37,500	115	49,88,972	3,40,755	75,37,617	60,487	34%	-4.63%
Maharashtra	52,500	160	80,000	280	3,92,34,591	12,62,409	4,35,69,238	1,85,643	10%	-5.80%
Odisha	89,000	130	1,25,000	215	46,22,273	10,206	37,42,221	2,269	-24%	-3.49%
Tamil Nadu	99,000	120	1,45,000	185	14,06,51,241	12,28,323	11,53,36,719	57,622	-22%	-20.31%
Uttar Pradesh	86,000	190	1,22,000	285	8,61,22,293	8,90,932	10,97,08,435	44,737	21%	-18.91%
West Bengal	78,000	200	1,11,000	150	2,88,41,732	4,63,285	2,43,25,984	34,828	-19%	-12.30%
Arunachal Pradesh	21,235	27	26,000	65	42,871	961	1,02,915	182	58%	-4.28%

Years	2020[a]		2021[a]		2020[b]		2021[b]		Domestic	Foreign
State	Affected	Death	Affected	Death	Domestic	Foreign	Domestic	Foreign	Growth	Growth
Chhattisgarh	23,000	60	45,000	120	28,10,227	2,322	47,47,417	8	41%	-289.25%
Dadra & Nagar	2,500	12	6,000	25	1,04,959	222	1,97,802	80	47%	-1.77%
Daman & Diu	4,000	20	9,000	40	2,97,436	1,382	4,63,420	105	36%	-12.16%
Goa	13,000	0	28,000	0	32,58,715	3,02,751	33,08,089	22,128	1%	-12.68%
Haryana	8,000	30	16,000	55	21,14,731	17,474	20,25,450	4,578	-4%	-2.81%
Himachal Pradesh	13,500	45	26,000	70	31,70,714	42,665	56,32,270	4,932	44%	-7.65%
Jammu & Kashmir	10,500	30	19,500	55	25,19,524	5317	1,13,14,920	1,650	78%	-2.22%
Jharkhand	16,500	40	27,000	65	25,74,704	490	33,83,642	1,637	24%	0.70%
Lakshadweep	6,000	15	12,500	30	3,462	413	13,500	4	74%	-102.25%
Manipur	13,500	40	25,500	65	49,669	3,139	49,371	648	-1%	-3.84414%
Meghalaya	11,500	40	21,000	65	24,734	2,311	1,54,409	411	84%	-4.62287%
Mizoram	7,500	25	14,500	50	30,890	265	87,232	234	65%	-0.13248
Nagaland	4,500	12	11,500	12	10,979	518	23,968	325	54%	-0.59385

Years	2020[a]		2021[a]		2020[b]		2021[b]		Domestic	Foreign
State	Affected	Death	Affected	Death	Domestic	Foreign	Domestic	Foreign	Growth	Growth
Puducherry	8,000	20	17,000	40	11,14,942	92,080	12,53,213	321	11%	-285.854
Punjab	15,000	45	28,000	75	1,66,92,197	3,59,114	2,66,40,429	3,08,135	37%	-0.16544
Rajasthan	61,000	55	1,20,000	90	1,51,17,239	4,46,457	2,19,88,734	34,806	31%	-11.827
Sikkim	8,000	30	15,000	55	3,16,408	19,935	5,11,669	11,508	38%	-0.73227
Telangana	29,000	75	29,000	75	3,99,97,001	46,694	3,20,00,620	5,917	-25%	-6.8915
Tripura	13,500	40	25,500	65	1,27,815	31,877	1,77,816	5	28%	-6374.4
Uttarakhand	20,000	65	37,500	105	70,05,264	41,339	1,94,34,475	8,532	64%	-3.84517
Madhya Pradesh	44,000	130	60,000	180	2,35,19,632	99,819	2,55,54,067	41,601	8%	-1.39944
	11,15,235	2,333	17,04,500	3562	60,50,56,809	64,94,207	67,03,03,464	9,53,992	10%	-5.8074

[a]*National Disaster Management report 2020 to 2021 (https://ndma.gov.in/index.php/Resources/AnnualReports)*

[a]*Relief Web (https://reliefweb.int/disasters?list=India%20Disasters&advanced-search=%28C119%29)*

[b]*Indian Tourism Statistics 2022 (https://tourism.gov.in/sites/default/files/202209/India%20Tourism%20Statistics%202022%20 %28English%29.pdf)*

The above table show the number of disaster and Death in the states of India, and the study stated total number of Domestic & Foreign tourist visited the states across India here we discussion top 3 states which was most affected & Least affected by the natural disaster.

Tamil Nadu was affected by many natural disasters such as Cyclone Nivar which killed 14 people. This disaster has had an impact on tourist places (Vilvijayan & Lalitha, 2021) like Marina Beach, Mahabalipuram, Puducherry Beach, Aurobindo Ashram, Nagapattinam Beach, Port Town, Cuddalore Beach, Devanampattinam Beach, Viluppuram Temple followed by the state was affected by Cyclone Burevi in December 2020 which affect the following tourism places Vivekananda Rock Memorial, Thiruvalluvar Statue, Kanyakumari Beach, Muthu Nagar Beach, Tiruchendur Murugan Temple, Ramanathaswamy Temple, Dhanuskodi, Meenakshi Amman Temple, Courtallam Falls. In the year 2021 Cyclone Yaas had some impact on tourism places like Marina Beach, Elliot Beach, Fort St. George, Silver Beach, Pichavaram Mangrove Forest, Velankanni Church, Nagapattinam Beach, Promenade Beach, Serenity Beach, Shore Temple, Mahabalipuram Beach followed by in the year 2021 November Monsoon Flood affected (Rinisha & Lakshmanan, 2022) the tourism places like Marina Beach, Kapaleeshwarar Temple, San Thome Basilica, Elliot's Beach, Short Temple, Mahabalipuram Beach, Kanchi Kailasanathar Temple, Kamakshi Amman Temple, Ooty Lake, Botanical garden's, Doddabetta Peak, Rock Memorial, Thiruvalluvar Statue, Kanyakumari Beach, Silver Beach, Annamalayar Temple, Courtallam falls, Brihadeewarar Temple the total affected people was 2,44,000 in 2020 & 2021.

The second most affected state was Odisha which faced many natural disasters like Cyclone Amphan in May 2020 (Gupta, Bhattacharya, Thapa, & Kaur, 2021) affected tourist places such as Puri, Chilika Lake, Sun Temple, Bhitarkanika National Park, Gopalpur. Followed by in the year 2021 Cyclone Yaas (Mandal , Mandal, Das , Payra, & Bhanja, 2023) affected major tourist places like Puri Beach, Jagannath Temple, Chandipur Beach, Digha, Sun Temple and in September 2022 Cyclone Gulab as left the Impact in Gopalpur beach, Taptapani, Chandragiri Monastery, Berhampur, during December 2021 another cyclone Jawad affected the following tourism destination

Jagannath Temple, Chilika lake, Konark Beach as per the above table total of 2,14,000 people are affected by natural disaster in Odisha.

The third most affected state in India was Uttar Pradesh where a total of 2,08,000 people were affected by the natural disaster The following are the major tourist places affected by natural disasters in the years 2020 to 2021 (Arya & Singh, 2021) this state mostly affected by flood the places are Kashi Varansi temple, Ghats of Varanasi, Sangam, Allahabad fort, Ram Janmabhoomi Temple, Krishna Janmabhoomi Temple, Yamuna River Ghat, Taj Mahal, Agar Fort, due to Heat wave some of the tourism destination in Uttar Pradesh are affected those place are Taj mahal, agar fort which affected by 400C in summer season, Kashi Vishwanath Temple, Allahabad fort, Sangam, Bara imambara, Rumi Darwaza, Chota Imambara, Yuman River, ISKCON Temple.

Dadra & Nagar Haveli is a union territory that is less affected by natural disasters, with a total of approximately 8,500 people affected during the years 2020 and 2021. It is a small region with an area of 603 square kilometres. This territory is covered with mountains, lies outside the earthquake-prone zones, and is located near the Arabian Sea, which is relatively less affected by cyclonic events. The union territory has effective disaster preparedness plans that help minimize the impact of natural calamities. However, some tourism destinations were impacted during Cyclone Tauktae in May 2021, including Jampore Beach, Devka Beach, St. Jerome Fort, Vanganga Lake Garden, Tribal Cultural Museum, Dudhni Lake, Hirwa Van Garden, and the Lion Safari Wildlife Park, as noted in a study conducted by Sarkar (2024).

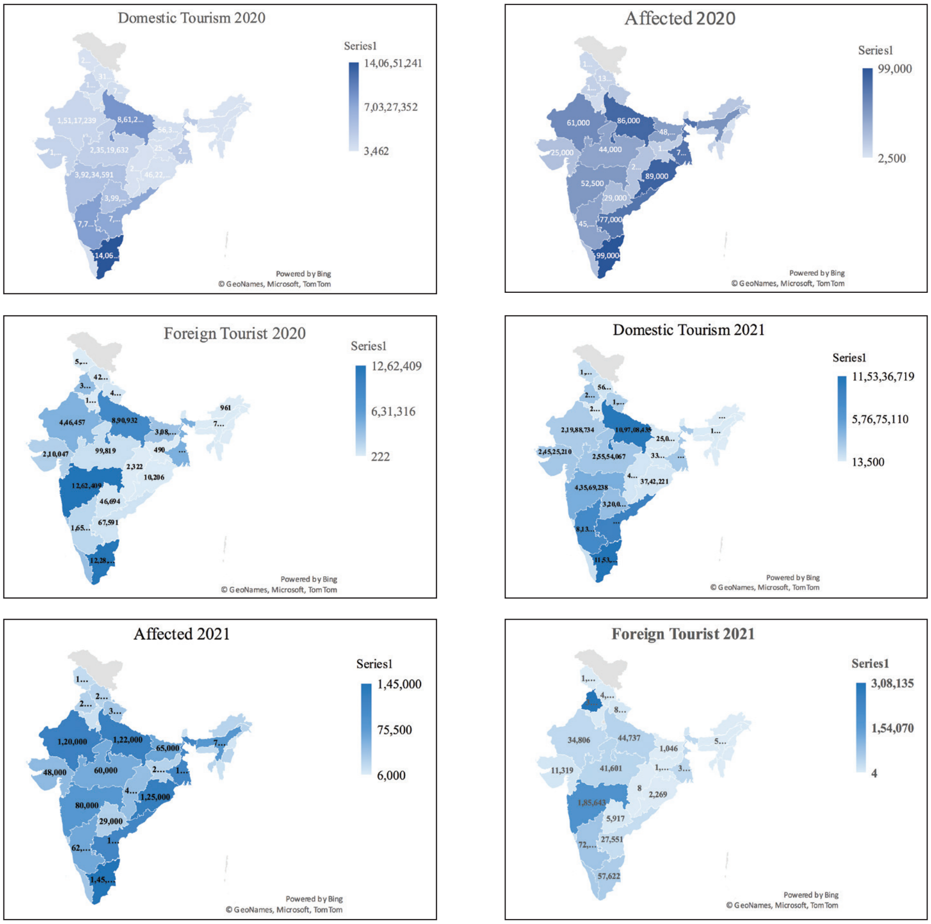
The second less affected place was Daman & Diu, a union territory of India. The reason behind the lesser impact is its relatively low population; the smaller number of people residing there reduces the overall impact of natural disasters. Another reason for the lower impact is the proactive measures taken by the central government, including advanced warning systems, disaster management plans, and evacuation strategies, which have helped minimize disaster risks in the coastal areas. Additionally, this territory is located near the Arabian Sea, which experiences fewer natural disasters compared to the Bay of Bengal. The main tourism places affected by heavy rain include

Jampore Beach, Devka Beach, and Daman Fort. The data shows that during 2020 and 2021, approximately 13,000 people were affected by natural disasters in this region.

The third less affected place is Nagaland, the 16th state of India, where around 16,000 people were affected by natural disasters in 2020 and 2021. The lower impact is attributed to the absence of large rivers, which minimizes flooding risks. Moreover, no significant earthquakes were recorded in those years. Another contributing factor is its relatively small population of about 2.2 million, which is low compared to other Indian states.

Now let us discuss about the growth of tourism in both Domestic and Foreign here the growth percentage is calculated and we discuss the Top three states which have High growth percentages and Lowest growth percentages in Domestic and Foreign Tourism.

Even though there are many factors which had a negative influence on domestic tourism still this sector has a very fast growth in India from the above table it is found that Meghalaya has the highest growth percentage of 84% in the year 2020 the state received 24,734 Domestic tourists but was increased to 1,54,409 in 2021 the reason for this growth is after lockdown many people are eager to visit different places which lead to growth in domestic tourism, and also the government of Indian has continuously promoting the tourism destination in North India, which is also the reason for the growth of domestic tourism in Meghalaya, this places is one the beautiful places which has lakes, waterfalls, natural, caves, hill stations. The top tourist destinations in Meghalaya are Shillong the capital of Meghalaya which receives 50% of Domestic tourists to Wards Lake, Elephant Falls, Shillong Park, Don Bosco Museum and other popular places are Nohkalikai Falls, Mawsmai Cave, Double-Decker Living Root Bridge, Dainthlen Falls, Mawjynbuin Cave, Umngot River, Laitlum Canyons, Umiam Lake, Krang Suri Falls, Nartiang Monoliths, Nongkhnum Island, Balpakram National park, Siju Cave. (Peinlang, 2019) The study shows the Meghalaya received 1,61,701 tourists in the year 1999 was increased to 7,26,453 in the year 2014 this place has Adventure tourism, Cultural tourism, Agri tourism, and Educational tourism.



These observations are supported by studies focused on disaster vulnerability and management across Indian states and union territories, including their impact on coastal tourism and resilience planning (Magotra, 2021; NIDM Annual Report, 2021–22).

The second highest growth percentage was in Jammu & Kashmir this state received 25,19,524 tourist in the year 2020 and it was increased to 1,13,14,920 tourist in 2021, the reason for growth is this is one of the places with as wonderful natural beauty in it after the Covid-19 lock down there where some restriction for the foreign travellers to visit India, this is also an reason for domestic tourism development, the Jamu and

Kashmir is the vast places which reduce the crowd which lead to safety after Covid-19, the important reason behind the development was the government improved the securities measures after the Article 370 during 2019 which improved the safety and security of the tourism destination, government also taken steps to develop the tourism in jamu & Kashmir by having campaigns conducting events, promoting in digital media marketing, gives the boost to the domestic tourism, the Infrastructure development such has development of air road & air ports, infrastructure development in railway which lead easy access to the tourism destination, the popular tourism destination in Jamu & Kashmir (Lone & E.Ravi, 2023) which attract more tourist are Dal lake averagely receive 40% tourist, Nigeen Lake receive 15% of tourist, Mughal Gardens receive 40% of tourist, Shankaracharya Temple receive 20% of visitors, Hazratbal Shrine received 30% visitor to the state there more than 30 tourism destination are there in Jammu & Kashmir following are some of the tourism destination Skiing and winter Sports, Golf Course, Lidder River, Betaab Valley, Aru Valley, Thajiwas Glacier, Vaishno Devi Temple, Amar Mahal Palace, Pangong Lake, Magnetic Hill, Hemis Monastery, Yusmarg, Kupwara, Dachigam National Park, Bhaderwan valley etc.

Lakshadweep recorded the third highest growth rate in domestic tourist arrivals, showing a remarkable 74% increase compared to the previous year. In 2020, the union territory received only 3,462 tourists, which rose significantly to 13,500 in 2021. This growth can be attributed to several key factors: special promotional travel packages were offered, room rates were discounted, and both water and air connectivity were enhanced to make travel more convenient. Additionally, many parts of Lakshadweep remain unexplored, adding to its appeal. The territory’s focus on eco-tourism also attracted visitors seeking sustainable and serene travel experiences. The sparse population made it a preferred choice for travelers post-Covid, as people opted for less crowded destinations. Some of the most visited tourist spots include Agatti Island, Bangaram Island, Kavaratti Island, Kadmat Island, Minicoy Island, Kalpeni Island, and Thinnakara Island. These factors collectively contributed to the significant rise in tourism (Lakshadweep Tourism Development Authority, 2022; Kokkranikal et al. 2003).

Bihar is the state which received 56,38,024 domestic tourist in the year 2020 which was reduced in the year 2021 has 25,01,193 the Table 1 show the growth percentage as -185% it is too low compare to the previous year the major reason for downfall in domestic tourism was Second Covid-19 wave which lead to made many restriction on the people who visit Bihar, like people has to get permission to enter the state the person who are get inside the states must produce proper medical report before entering the state, Bihar is will know for religious and spiritual tourism during 2021 this places locked and no visitors are allow to vest the major religion places which lead to reduce the domestic tourism in Bihar the popular religion and spiritual places are Bodh Gaya is the place where Buddha got enlightenment, Mahabodhi Temple, Bodhi Tree, Nalanda, Nalanda Archaeological Museum, Rajgir, Vishwa Shanti stupa, Griddhakuta, Saptaparni Cave, Jain Temple, Ashoka Pillar, Relic Stupa, Takht Sri Harmandir sahib, Vishnupad temple, Phalgu River, Mangla Gauri Temple, Sitamarhi, Vikramshila etc. As noted by Patro et al. (2024), Bihar's tourism sector—especially its spiritual and heritage tourism—faced major disruptions during the pandemic, and understanding these patterns is crucial for future tourism planning, sustainability, and economic revival in emerging states like Bihar.

The second most dropped state is Chandigarh which received 4,17,953 Domestic tourists in the year 2020 and dropped to 2,28,809 Table 1 Shows the growth percentage as -84% the major downfall happened because of lockdown and government restrictions, most of the tourism destinations are affected mostly by second Covid-19 waves the destination is Sukhna lake, Rock Garden, Rose Garden, Elate Mall, Chandigarh Capitol Complex, Pinjore Gardens are the famous tourism destination which are badly affected by Covid-19 Pandemic. The paper highlights the city's rich tourism potential—especially in eco, cultural, and heritage tourism—while also pointing out key challenges like poor infrastructure, lack of policy, and weak planning. These issues, combined with the COVID-19 pandemic, severely impacted popular sites like Sukhna Lake and Rock Garden, leading to a major drop in tourist arrivals Sarkar, S. (2025). Telangana is the state which is in third place which dropped domestic tourism up to -25% compared to the previous year. In 2020 the state received 3,99,97,001 domestic tourists which dropped to 3,20,00,620 tourists in the year 2021 the reason for the drop may be many people avoided crowded places the long-distance travel during 2021 which caused the state downfall in domestic tourism in the year 2021. Sarkar (2024) finds that Telangana's domestic tourism plummeted from approximately 3.99 crore in 2020 to 3.20 crore in 2021, marking a 25 % decline largely due to COVID 19 restrictions and public reluctance to travel. While the state boasts rich attractions like Charminar, Ramappa Temple, eco-tourism and tribal circuits, infrastructure gaps and pandemic era movement restrictions hindered recovery.

When we see the foreign travellers all states are very badly affected compared to the previous year all the states' growth percentages went negative Bihar received 1,046 foreign tourists to Bihar in the year 2021 but in 2020 the state received 3,08,080 Foreign travellers, This 3 lack foreign visitors visit Bodh Gaya, Nalanda, Rajgir, Vaishali, Patna, Kesaria stupa this place where locked due to second covid-19 wave in 2020 which lead to reducing the foreign travellers followed by the foreign tourist visit Chhattisgarh in 2021 was only 8 but in 2020 the state received 2,322 the reason was Covid-19 which affected the International tourism badly. If we see the Figure 1 all the states are noted in light blue which denotes there are fewer foreign travellers visiting the states of India during 2021 following are the states which as less impact on foreign tourist arrival Andhra Pradesh received more the 27,000 foreign tourists, Karnataka received more the 72,000 foreign tourists in 2021, Haryana received 4,000 foreign tourist in 2021 Jharkhand is the only state which has the positive value compared to 2020 in this year the state received 490 foreign tourists but it was increased to 1,637 foreign tourists in the year 2021 the Important reason for the growth is relaxing the restriction and open it for tourist which leads to improving the number of foreign tourists also the promotions steps taken by the government like promoting through digital media provide safe and hygiene tourism destination help to improve the tourism destination image in International market. "According to Singh & Shukla (2023), India saw a substantial decline in foreign tourist arrivals during the pandemic period particularly from 2019 through 2021with the most severe drops in 2020 and 2021 following strict international travel restrictions and heritage site closures.

H1: There is a signification between Natural disaster and Tourism (**2020AND**- 2020 Affected By Natural Disaster, **2020NDND**- 2020 Number of Death by Natural Disaster, **2021AND**- 2021 Affected By Natural Disaster, **2021NDND**- 2021 Number of Death by Natural Disaster, **2020DT**- 2020 Domestic Travel, **2020FTVI**- 2020 Foreign Travellers Visited India, **2021DT**- 2021 Domestic Travel, **2021FTVI**- 2021 Foreign Travellers Visited India)

Table 3 : Natural disaster and Tourism-Correlations

Karl Pearson's Correlation Coefficient		2020 AND	2020 NDND	2021 AND	2021 NDND	2020 DT	2020 FTVI	2021 DT	2021 FTVI
2020 AND	Pearson's Correlation	1	.832**	.980**	.795**	.677**	.569**	.666**	.149
	Remark	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
	Sig (2-tailed)		.000	.000	.000	.000	.000	.000	.394
	N	35	35	35	35	35	35	35	35
2020 NDND	Pearson's Correlation	.832**	1	.800**	.927**	.554**	.592**	.566**	.250
	Remark	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
	Sig (2-tailed)	.000		.000	.000	.001	.000	.000	.147
	N	35	35	35	35	35	35	35	35
2021 AND	Pearson's Correlation	.980**	.800**	1	.781**	.671**	.611**	.669**	.171
	Remark	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
	Sig (2-tailed)	.000	.000		.000	.000	.000	.000	.326
	N	35	35	35	35	35	35	35	35

Karl Pearson's Correlation Coefficient		2020 AND	2020 NDND	2021 AND	2021 NDND	2020 DT	2020 FTVI	2021 DT	2021 FTVI
2021 NDND	Pearson's Correlation	.795**	.927**	.781**	1	.574**	.627**	.610**	.303
	Remark	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
	Sig (2-tailed)	.000	.000	.000		.000	.000	.000	.077
	N	35	35	35	35	35	35	35	35
2020 DT	Pearson's Correlation	.677**	.554**	.671**	.574**	1	.700**	.969**	.295
	Remark	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
	Sig (2-tailed)	.000	.001	.000	.000		.000	.000	.086
	N	35	35	35	35	35	35	35	35
2020 FTVI	Pearson's Correlation	.569**	.592**	.611**	.627**	.700**	1	.665**	.536**
	Remark	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
	Sig (2-tailed)	.000	.000	.000	.000	.000		.000	.001
	N	35	35	35	35	35	35	35	35
2021 DT	Pearson's Correlation	.666**	.566**	.669**	.610**	.969**	.665**	1	.337*
	Remark	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
	Sig (2-tailed)	.000	.000	.000	.000	.000	.000		.048
	N	35	35	35	35	35	35	35	35

Karl Pearson's Correlation Coefficient		2020 AND	2020 NDND	2021 AND	2021 NDND	2020 DT	2020 FTVI	2021 DT	2021 FTVI
2021 FTVI	Pearson's Correlation	.149	.250	.171	.303	.295	.536**	.337*	1
	Remark	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
	Sig (2-tailed)	.394	.147	.326	.077	.086	.001	.048	
	N	35	35	35	35	35	35	35	35

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Source: National Disaster Management report 2020 to 2021, Indian Tourism Statistics 2022

The above table shows the relationship between disaster Death & Effects by domestic Foreign tourists when two data were put in for Karl Pearson's Correlation Coefficient test it was found that they all have a positive relationship with each other the above table does not show any negative relationship among the variables it leads to accepted all four Alternative hypotheses of the study.

But there is a little gap between the variables which are discussed below several people affected by natural disasters (AND) During 2020 with Total Number of Domestic Tourist visiting India Shows a Correlation Value of 0.677, the year 2020 shows there was a positive relationship but the affected peoples are 11,15,235 and Domestic tourist arrivals are 60 million there was a positive growth between this two variables the reason behind this issue was the domestic travellers will know about the climatic conditions of the regions they may avoid the disaster happening month and visited in the different month which leads to increase the domestic tourism, another reason may the travels are interested to see the place which is affected by a natural disaster, many people may go to the tourism places see their relatives who lived in the disaster zone, well prepared plan by the government to overcome the disaster event, the advertisement campaigns, events, and Continuous promotion in digital marketing advertisements this is also another positive reason for the development of Domestic tourism after being affected by a natural disaster.

The positive correlation value of 0.677 between the number of individuals affected by disasters and the development of domestic tourism in 2020 can be leads to several factors. Natural disasters, particularly cyclones, typically occur during specific months and primarily impact coastal areas. Consequently, regions such as Chennai, Mahabalipuram, Nilgiris, and Thanjavur experienced a decline in tourist inflow due to Cyclone Nivar in November 2020. In Tamil Nadu, which welcomed a remarkable 14,06,51,241 domestic tourists in 2020, the average monthly tourist arrivals across major destinations-Chennai, Madurai, Rameswaram, Kanyakumari, Nilgiris, Mahabalipuram, and Thanjavur amounted to approximately 11,72,093 visitors. However, these factors vary significantly due to seasonal influences. For instance, from April to June, the Nilgiris typically attracts more than 18,75,350 tourists per month during its peak season. The impact of Cyclone Nivar in November led to an estimated reduction of 17,58,139 tourists across affected areas. Specifically, Chennai's tourist arrivals dropped by approximately 5,86,046 visitors, and in the Nilgiris, tourism was halved due to the cyclone's effects. Conversely, during this time, other tourist destinations such as Madurai, Rameswaram, Thanjavur, Kodaikanal, and Kanyakumari continued to attract a higher number of visitors, as they were not significantly impacted by the cyclone. This phenomenon illustrates the positive correlation: as tourism in affected coastal areas declines, other destinations benefit from the reallocation of tourist traffic, ultimately contributing to overall tourism development in the state. Therefore, understanding these dynamics can help stakeholders in the tourism industry plan and adapt to changing conditions, ensuring sustainable growth even in the face of natural disasters.

The Foreign tourist decline in India is explained using multi regression values in following table:

Table 4 : Natural Disaster Affected, Death and Domestic, Foreign Tourism Multi Regression Analysis

S:No	States	β_0	β_1	β_2	Equation	
					Domestic (DO)	Foreign (FO)
1.	Andhra Pradesh	-27539262	670	37,4150	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	
		126008.3751	-0.836663337	-0.001498501		$FO = \beta_0+\beta_1 AF + \beta_2 DE$
2.	Assam	10,97,188.63	6	1,897	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		239817.7918	-3.481997333	-0.011112757	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
3.	Bihar	23905452	-185	-6273.66	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		157691.3425	-0.055368461	-0.000162848	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
4.	Gujarat	14,863,375.81	220	101214	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		114907.3884	-0.115736081	-0.0002516	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
5.	Karnataka	58983777	228	64672	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		128794.2731	-0.183114673	-0.000646287	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
6.	Kerela	-6161350	204	63716	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		202014.7688	-0.044600168	-0.000142721	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
7.	Maharashtra	23012503	158	36122	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		725718.0124	-0.025539439	-0.000111445	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
8.	Odisha	85,83,945	-24	-10,354	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		4,91,561.3	-4.53572	-0.01071	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
9.	Tamil Nadu	2,54,52,4258	-550	-3,89,454	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		6,47,766.2175	-0.039292	-5.552	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
10.	Uttar Pradesh	-2,91,87,735	655	2,48,275	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		4,72,259.0387	-0.042543385	-0.000112267	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
11.	West Bengal	2,37,10,200	-137	90,315	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		2,56,334.9229	-0.077020564	0.000116698	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
12.	Arunachal Pradesh	-297397	13	1580	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		145037.656	-6.116816431	-0.048780488	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
13.	Chandigarh	855086	-25	-10508	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		20194.84698	-1.108319787	-0.002659967	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$

S:No	States	β_0	β_1	β_2	Equation	
					Domestic (DO)	Foreign (FO)
14.	Chhattisgarh	-2120802	88	32287	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		324417.1175	-9.507346586	-0.025929127	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
15.	Dadra & Nagar Have	-93480	27	7142	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		104906.2148	-24.64788732	-0.091549296	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
16.	Daman & Diu	-84327	33	8299	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		26194.24393	-3.915426782	-0.015661707	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
17.	Goa	-	-	-	-	-
		163535.2762	-0.053452497	0	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
18.	Haryana	2355790	-11	-3571	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		18470.25112	-0.620347395	-0.001938586	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
19.	Himachal Pradesh	11607138	-448	98462	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		19607.9092	0.455761005	-0.00066255	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
20.	Jamm & Kash-mir	-22693945	977	351816	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		40298.62476	-2.454322334	-0.006817562	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
21.	Jharkhand	-395254	77	32358	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		-198044.0087	9.154315606	0.02179599	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
22.	Lakshadweep	-20861	2	669	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		147214.2152	-15.89242054	-0.036674817	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
23.	Manipur	50630	0	-12	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		95832.20434	-4.817342433	-0.01003613	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
24.	Meghalaya	-404559	14	5187	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		82611.69079	-5	-0.013157895	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
25.	Mizoram	-113989	8	2254	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		2484150.71	-225.8064516	-0.806451613	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$
26.	Nagaland	-15590666	2	1298900	$DO = \beta_0+\beta_1 AF + \beta_2 DE$	-
		290577.0052	-36.26943005	-5.18135	-	$FO = \beta_0+\beta_1 AF + \beta_2 DE$

S:No	States	β_0	β_1	β_2	Equation	
					Domestic (DO)	Foreign (FO)
27.	Odisha	15089558	-80	-58670	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		116417.8153	-1.385914073	-0.001889883	-	$FO = \beta_0+\beta_1AF+\beta_2DE$
28.	Puducherry	784628	15	6914	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		47426.54431	-0.098083022	-0.000217962	-	$FO = \beta_0+\beta_1AF+\beta_2DE$
29.	Punjab	-14682996	765	331608	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		339107.185	-0.255006964	-0.000588478	-	$FO = \beta_0+\beta_1AF+\beta_2DE$
30.	Rajasthan	-6220999	116	196328	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		253602.4451	-0.143325293	-8.50235	-	$FO = \beta_0+\beta_1AF+\beta_2DE$
31.	Sikkim	-238691	28	7810	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		25274.25454	-0.830663344	-0.002966655	-	$FO = \beta_0+\beta_1AF+\beta_2DE$
32.	Telangana	2324952175	-799638100	-799638100	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		26305.50713	-2.45236	-2.45236	-	$FO = \beta_0+\beta_1AF+\beta_2DE$
33.	Tripura	-33438	4	2000	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		23282.90865	-0.376506024	-0.000784388	-	$FO = \beta_0+\beta_1AF+\beta_2DE$
34.	Uttarakhand	-33611622	710	310730	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		40271.50756	-0.533422745	-0.001219252	-	$FO = \beta_0+\beta_1AF+\beta_2DE$
35.	Madhya Pradesh	11618187	127	40689	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		85001.24	-0.274829091	-0.000858841	-	$FO = \beta_0+\beta_1AF+\beta_2DE$
36.	**INDIA**	**325091384**	**111**	**53089**	$DO = \beta_0+\beta_1AF+\beta_2DE$	-
		3874055.629	**-0.106361396**	**-0.000221833**	-	$FO = \beta_0+\beta_1AF+\beta_2DE$

DO is Domestic tourist, **AF** is Affected by Natural Disaster, **DE** is No of Death by Natural Disaster, **FO** is Foreign Tourist

Source: National Disaster Management report 2020 to 2021, Indian Tourism Statistics 2022

Calculation: https://1drv.ms/x/c/d8d90f2b26b583fc/EUSZCKi0PedMvdOOcemWJYAB0nXfmbT8vUkrf36XmDe4UA?e=2BjL

This Table 4 helps us understand the relationship between the inflow of domestic and foreign tourists and the impact of natural disasters, particularly the number of people affected and those who died. The table clearly illustrates the effects of the coefficients.

- β_1 represents how the inflow of both domestic and foreign tourists increases or decreases based on the number of people affected by natural disasters.

- β_2 reflects how the number of tourists, both domestic and foreign, changes in response to the number of deaths caused by natural disasters.

These coefficients indicate whether tourism rises or falls about the scale of the disaster's impact. As we discussed earlier, domestic tourism in India shows a positive correlation with natural disasters which indicates people are not afraid of natural disasters so they are not cancelling their plans the people choose other tourism destinations which are unaffected by natural disasters. There is flexibility in choosing the destination to reduce the Impact of catastrophe, there are 3,500 tourist destinations spread across India which gives vast options for the people to select the destination, this leads to sustainability of tourism industries in India as the people are easily changing the plans to other tourism destination ensuring the continued inflow of tourism in a destination which minimizing the Impact of natural disaster.

When there is no natural disaster or zero disaster the inflow of domestic tourism in India is expected to reach 325.03 million, every 1 unit increase in death due to a natural disaster will lead to an increase the domestic tourism by 111 units, also every 1 unite increase in disaster affected will lead to increase 53,089 unites in domestic tourism in India, the reason for rise may be happened because of a shift in tourism destination within India due to natural disaster when we see the overall growth this may be the reason behind, apart from the impact the sector contributing to the overall development of tourism.

The disaster management systems in Indian states have implemented proactive strategies to minimize risks and ensure quick recovery from natural calamities, making tourism destinations safer. For instance, Odisha's effective evacuation plans during Cyclone Fani in 2019 helped over 1.1 million people evacuate, showcasing strong preparedness. Gujarat's State Disaster Management Authority has become a model for earthquake response, developing training and infrastructure improvements after the 2001 earthquake. Kerala has emphasized community engagement and rapid recovery processes post-2018 floods, while Tamil Nadu's preparedness for cyclones includes pre-emptive evacuations and public awareness campaigns. Key factors in reducing disaster risks include effective early warning systems, community involvement, regular training, infrastructure enhancements, and inter-agency collaboration, which collectively contribute to the resilience and sustainability of India's tourism sector. (P J, V.G., Chatterjee, & Singh, 2024) The study put forward the development of Domestic tourism after the Covid-19 Impact they explain the interest of the people and vast population led to the development of Domestic tourism in India, the short tripe is increased vastly the people use the weekend for the tour and in the month of May-June all the domestic tourism destination where received many tourists has it is the summary holiday. (Nair & Ramachandran, 2016) The study stated that growing competition in Domestic tourism made the tourism destination have an innovative idea as the Internet has been a source of advisement following the Internet is an important factor which has the positive and Negative Image of the destinations the study gives the positive relationship with Climate Marketing & destination with development of domestic tourism with Y = 1.9998E-016 + 0.108 X1 + 0.611 X3.

When we see foreign tourism the β_2 value is going negative which shows that every unit increase in death and affected by natural disasters will reduce the foreign tourist arrival to India. As we see in Table 4 value for India shows the β_1 Value is -0.106 and β_2 Value -0.00022 which shows maximum of the states are affected by natural disasters and had a great Impact on the tourism sector. This Mizoram is a state which is affected mostly by natural disasters and has the β_1 Value of -225.8064516 which shows that every one-unit increase in death will reduce the Foreign tourism arrival by 225 units for example for one unit death 1000 Foreign tourism arrivals will reduce in Mizoram (Mishra1, Puhan, & Mishra, 2021) they stated that the Mizoram received 4000mm rainfall between 2011 to 2012 it is told there was a heavy rainfall during the year this types of heavy rainfall lead to many landslides in Mizoram. Nagaland the state of India which second most affected by the β_1 Value at -36.26943005 which shows that every one-unit increase in death will reduce 36% of Foreign tourism arrivals for Nagaland (Nagaland, 2019) the report stated that various earthquakes and landslides happened in Nagaland it show during the month of April to June many landslides are reported but this states is vulnerable for earthquake which has the recorded report that every month in year the earthquake happened. The third most affected union territory is Dadra & Nagar with the β_1 Value of -24.64788732 which determined that every one-unit increase in death will reduce 24% in Foreign tourism arrivals to Dadra & Nagar.

The minimum impacted three states due to natural disaster are explained. The first least affected state was Maharashtra with the β_1 Value of -0.025539439 which shows that every unit increases in death will reduce the Foreign tourism arrivals by 2.5% to Maharashtra (Joseph, Srivastava, Kunte, Singh, & Vaidya, 2004) the study gives us the steps taken by the states to prevent the business from natural disaster the following are some of the steps the state organise six International workshops and Seminars, public awareness Campaigns in Law College, Tata Institute, Mumbai Commerce Centre, etc. formed search and rescue task force, Response Strategy, Emergency operation centres, tie up with International Cooperative. Followed by Tamil Nadu is second less affected by natural disasters with the β_1 Value of -0.039292 which shows that every one-unit increase in death will lead to reduce 3.9% of Foreign tourism arrivals to Tamil Nadu (National Disaster Management Authority., n.d) the following are the steps taken by the Tamil Nadu government to reduce the disaster Impact Disaster Management Policy, Disaster Management Plan, Strengthening of emergency Operations Centres in the States & Districts, Strengthening of emergency Responses at Hospitals, State Disaster Response force, State level Resource Database, Capacity Building programmes etc. The third less affected state was Uttar Pradesh with the β_1 Value of -0.042543385 Which determined that every unit increases in death will reduce 4.2% Foreign tourism arrivals to Uttar Pradesh (Mishra & Uniyal , 2010) the following are the steps taken by Uttar Pradesh Forecasting warning and alert system, Access to Information, strategy for Prevention, awareness programs, Building guidelines, Disaster risk Assessment map, earthquake resistant construction, Government buildings, Upgrading of Seismic resistance plans for basic risk etc.

Rajasthan is the state which has the maximum number of affected people with the β_2 Value of -8.50235 Established for every one unit increase in affected people will reduce 8.5% Foreign tourism arrivals to Rajasthan (Kumar, Prakash, & Mishra, 2015) the study stated Jaipur fire Accident in 2009, Fie accident in 2012, Flash flood in 1968, Desert flood in 2006, earthquake with high magnitude are the major natural disaster the poor technology lead to more impact in the state. Followed by the second most affected state is Tamil Nadu with the β_2 Value of -5.552 Which determined that every unit increases in affected people in Tamil Nadu will reduce Foreign tourism arrivals by 5% to the State (Gokhale, 2005) the study stated that following villages are affected by natural disaster Akkalpettai, Keechankuppam Poompuhar, Sonankuppam, Tiruvankudu, roypuram, Singarathope, Vailankanni srinivaspuram they clim the addition disaster Shelters for fishermen the third most affected state was Nagaland with the β_2 Value of -5.18135 which show for every one unit increase in affected people in Nagaland will reduce 5% of Foreign tourism arrivals for the state.

The less affected three states are exampled. This is the state which has no Impact because of Natural disasters the β_2 Value of 0 shows that forever one unit increases there is no Increase or decrease in foreign tourism arrivals it may be the constant value of β_0 Value of 163535.2762, Followed by West Bengal is the state in second place which has the positive β_2 Value of 0.000116698 which show for every one unit increase in affected peoples will increase 0.1% foreign tourism arrivals, Which the β_2 Value of 0.02179599 in Jharkhand show for every one unit increases in affected people in the state will increase 1% growth in Foreign tourism in the state of Jharkhand.

5. Suggestion

The following states and Union Territory need to enhance their disaster management efforts: Bihar, which experienced a decline in growth rates of -125% and -293%, and Chandigarh, which saw decreases of -83% and -1.24%. Telangana also recorded a drop in domestic tourism, with growth rates falling by -25% and -6.89%. To attract a larger number of tourists, promotional strategies must be strengthened. India has faced a significant decline in foreign tourist inflow, which needs to be addressed as a serious issue. The tourism sector should aim to provide optimal services to boost international travel. Additionally, some states, like Tamil Nadu, witnessed a drop in domestic tourism in 2021, which could negatively impact the nation's revenue.

6. Conclusion

The study highlights a negative relationship between natural disasters and the inflow of foreign tourists. However, by enhancing safety and security measures, the influx of international visitors can be improved. The research indicates that after the COVID-19 lockdown, there has been a strong desire among people to travel to various destinations, which has contributed significantly to the growth of domestic tourism in India. The improved commutation systems and transportation infrastructure have also played a key role in this development.

India, being prone to natural disasters such as cyclones, floods, and earthquakes, requires an effective disaster management system to mitigate the impact of these events, especially in tourism-rich regions. Implementing efficient disaster preparedness plans can help create safer environments for tourists, which in turn, would encourage both domestic and international travel to a wider variety of destinations across the country.

From 2020 to 2021, most states and Union Territories in India saw a rise in domestic tourism, driven by the increasing interest in local travel after international travel restrictions were imposed during the pandemic. The ease of movement within the country, combined with an increased awareness of the diverse travel experiences India offers, boosted domestic tourism in regions like Kerala, Himachal Pradesh, and Uttarakhand.

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