



# Analysis of Trends and Seasonality in the Tourism Industry: the Case of a Cold Desert Destination-Kinnaur, Himachal Pradesh

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## Abstract

Tourism has become an important factor in the recent growing economy to trade with international dimensions. Mountain destinations offers *inter alia*, a wide range of possibilities such as unique cultural attractions, hiking, skiing, rafting, kayaking, rock climbing, mountain biking, bungee jumping, and paragliding. that attracts mass tourism with temporal imbalance in number of tourist arrivals. Kinnaur, is also referred to as the 'Land of god' and is 235 Km from Shimla in India. The area is known for its serenity and beauty and opulent green and rocky mountain-scape. It has the Satluj, Baspa and Spiti rivers meandering through it. The main purpose of study is to provide a pattern of tourist statistics and determine the peak season of tourist attractions in Kinnaur. The study is based on secondary data. To achieve the objectives an annual growth rate (AGR) and compound annual growth rate (CAGR) were calculated. The most frequently used simple average method was considered to quantify seasonality phenomenon. The results reflect the moderate increase in tourist arrivals and two peak seasons in Kinnaur, Himachal Pradesh, namely: 'May-June' and 'September-October'.

**Keywords:** Trend, Annual Growth Rate, Compound Annual Growth Rate, Seasonal Index

## Introduction

The urge to move from one place to another has been an imperative human activity since the beginning of human history. The word 'tourism' is related to 'tour' that means a tool for describing a circle or turners wheel which is derived from Latin word '*tornos*' (Gupta, 2015). Presently, all over the world, it is an important factor in trade with international dimensions and as a core component of national economics, as a means for earning foreign exchange and also as an employment provider (Kumar et al., 2015) in both formal and informal sectors (Khalil, 2007). In 2016, Asia and the Pacific region recorded 308 million international tourist arrivals (ITAs) with an



increase of 9 percent and South Asia noted an 8 percent increase in ITAs, driven by India (+10 percent), the sub region's top destination.

According to the UNWTO tourism towards 2030, the number of ITAs worldwide is expected to increase by an average of 3.3 percent a year over the period of 2010 to 2030. In the context of India, the tourism industry is growing to have vast potential for generating employment and producing large amount of foreign exchange. The travel and tourism sector rank 7<sup>th</sup> in the world to its total contribution in the country's GDP (WTTC, 2017). Additionally, India ranked 2<sup>nd</sup> in terms of total employment generation with 40.3 million jobs in 2016. The tourism sector accounts 9.3 percent of the country's total jobs. In the era of modern tourism, mountain destinations offer a widespread range of possibilities such as unique cultural attractions, hiking, skiing, rafting, kayaking, rock climbing, mountain biking, bungee jumping, paragliding etc. Moreover, roads opened for foreign tourists and development in transportation and communication at high altitude have attracted mass tourism in recent years. Tourism can be a vehicle for inter alia sustainable poverty reduction in the Himalayas owing to its positive impacts on employment generation, infrastructure development, and revenue generation. due to development of tourism activities. It is an imperative for booming trade and labeled as a useful measure for employment generation, poverty alleviation and sustainable human development in cold desert areas where other economic activities are non-existent. Therefore, it is necessary to observe the pattern of tourism activities throughout the long period that provides factors of improvement or decline in particular years.

This would be helpful for future effective management and the facilitation of tourism especially in the ecologically fragile agro-poor area of the mountains (Pickering and Hill, 2007). Besides, a temporal imbalance in the phenomenon of tourism has been viewed as a problem. Seasonality in tourism is a universal factor that might not vary within a year but also within a month, a week, or even a single day (Holloway, 1994). Moreover, in the concept of sustainable tourism, seasonality is an integral part of published guidelines for planning and managing (Eagles et al., 2002). Generally, it means special annual dependence and additionally 'it is the systematic, although not necessarily regular, intra-year movement caused by the changes of the weather, the calendar, and the timing of decisions, directly or indirectly through the production and consumption decisions made by the agents of the economy, influenced by endowments, the expectations and preferences of the agents, and the production techniques available in the economy' (Hylleberg, 1992).

This study provides a pattern of tourist statistics for long term and in the high demand season of tourist attractions. The statistics are required for planning as well as marketing and effective promotion of tourism. They provide a clear image of tourists' opinion towards a destination that will be useful for tourism organizations and local authorities in efforts to manage tourism.

## **Objectives**

The key objectives of the present study are:-

- To analyze the trends of tourist arrivals in Kinnaur from 1991-2016.
- To examine the differences between domestic and foreign tourist arrivals.
- To provide a general overview of seasonality in tourism.

## Study area

The selected study area is one of the most attractive tourist destinations on account of its beautiful and picturesque location, embraced by a Buddhist cultural landscape in the high altitude of the Himalayan region (Fig.1). The district is located at 31.6° N latitude and 78.4° E longitude in the Trans-Himalayan region nearby the Indo-China border of Himachal Pradesh, India. In demographic context, the district has a density of 13 persons per square kilometre with a population of 84121 persons. Rio Purgyl is the highest peak and attains a height of 6791 metres and the elevation varies from 1973 metres to 6791 metres above MSL (Mean Sea Level). Climate plays a vital role in the field of tourism sector and due to its geographical situation the area has a long winter from October to May, and a short summer from June to September.

The community has a variety of potential attractions such as Buddhist culture, traditional handcraft, dining and local fairs and festivals. In addition, the well-known Hindu religious destination Kinner-Kailash, 'dedicated to God Shiva' (6473m) is also located nearby in Reckong-Peo, the district headquarters. The extremely hilly terrain, makes tourism development in this area highly restrictive due to its geographical adjacency to the Indo-Tibetan border, which is a highly problematic aspect when perceived from a political-geography point of view.

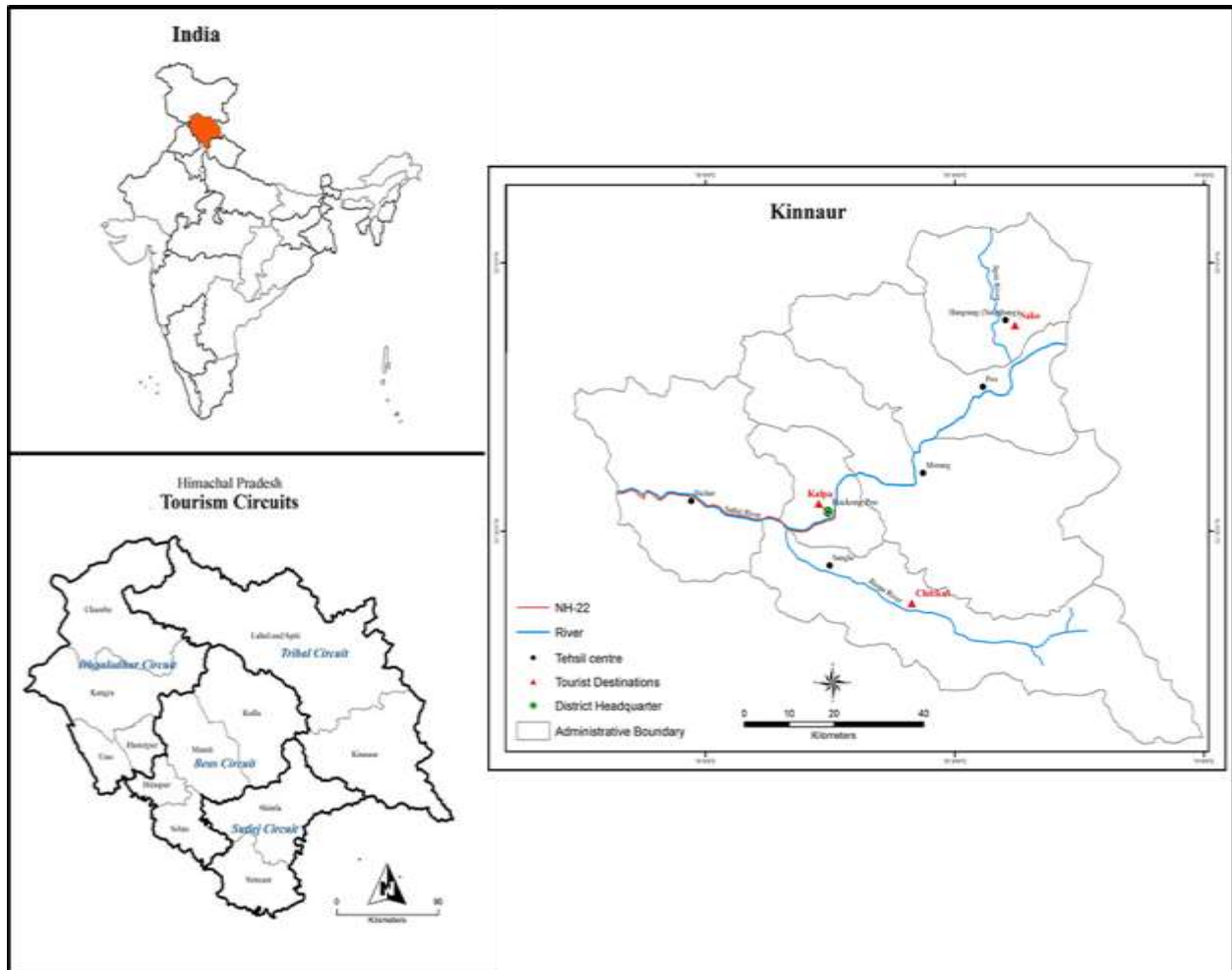


Figure 1: Location map of study area Source: Tourism Circuits



## Research methodology

Research is a systematic process dealing with identifying a problem, collecting of facts or data, analyzing the data and reaching a certain conclusion. The variety of research methods is stated below:

### Data collection

The study is primarily based on secondary data published by various government or non-government agencies and organizations. The data has been collected both from the official websites of World Travel and Tourism Council (WTTC), United Nation World Tourism Organization (UNWTO) and Ministry of Tourism (MOI), India which is available online, and directly collected from head office of the Department of tourism and civil aviation, Himachal Pradesh (Shimla) and District Disaster Management Authority (DDMA). Apart from these, the study also used the data and information provided by various newspapers, magazine and books, economic and political weekly, reports, articles, literatures and internet sources.

### Data analysis

The study derived the various statistical techniques for the trend analysis and seasonality analysis of tourist arrivals. To examine the annual percent change in tourist arrivals an annual growth rate (AGR) was calculated. In addition, the compound annual growth rate (CAGR) was analyzed that provide a constant rate over the time period (Kaur & Sharma, 1997). The formulas used are as follows:-

- **Annual Growth Rate (AGR)** =  $\frac{\text{Present year} - \text{Base year}}{\text{Base year}} \times 100$
- **Compound Annual Growth Rate (CAGR)** =  $\left[ \left( \frac{\text{Last year}}{\text{First year}} \right)^{\frac{1}{\text{Number of periods}}} \right] - 1$

Cartographical tools were used to characterize periodic changes in an annual context and to identify states which have attracted the majority of tourists in India. Especially, a trend is a common feature in a time series data as well as linear regression (Angappapillai & Shanmugasundram, 2013; Kurukulasooriya & Lelwala, 2014). The present study has also used time series data of tourist arrivals for the period between 1991 and 2016 to fit it into a model and forecast the trend of tourists in Kinnaur. Regression studies the nature of relationships between the dependent and an independent variable and quantifies the effect that independent variables have on the dependent. The square of R value ranging from 0 to 1 which is adjusted for degree of freedom indicates the explanatory power (goodness of fit) of the model. The equation of linear trend analysis of regression is:-

$$Y = mx + c$$

Where:

m = rate of change

c = represents the y intercept of the line

### Seasonality

In time-series data, there is presence of variations that occur at specific regular intervals less than a year, such as weekly, monthly or quarterly. They may be caused by various man-made or natural factors such as weather, vacation and holidays. Therefore, a seasonal index associated with each month of the year was determined in order to identify the influence of the seasonal component. In order to quantify the seasonality phenomenon, the most frequently used simple



average method was considered. In that, average of each month over a period of time i.e. 1991-2016 was obtained as an arithmetic mean of the level registered in the same month over the period. The general average was calculated as the monthly average of whole period.

The Seasonal index is based on the formula suggested by Constantin & Daniela (2011) and expressed as hereunder:-

- **Seasonal Index (SI)** = Monthly average for month / average of monthly average × 100

## Results & discussion

### Trends in the number of tourist arrivals

Kinnaur has emerged as a highly desirable tourist destination in Himachal Pradesh despite its physiographic peculiarities and ensuing climatic conditions. An ecosystem of cold desert as well as cultural uniqueness of tribal community make it unlike any other in the world. Table 1 reveals the tourist arrivals both domestic and foreign with their AGR from 1991-2015. Initially,

Years	Number of tourist					
	Domestic	Percent change	Foreign	Percent change	Total	Percent change
1991	0	--	0	--	0	--
1992	139	--	5	--	144	--
1993	559	302.16	185	3600.00	744	416.67
1994	1245	122.72	1029	456.22	2274	205.65
1995	1280	2.81	638	-38.00	1918	-15.66
1996	2060	60.94	1746	173.67	3806	98.44
1997	3137	52.28	2373	35.91	5510	44.77
1998	3874	23.49	2758	16.22	6632	20.36
1999	3198	-17.45	983	-64.36	4181	-36.96
2000	3763	17.67	648	-34.08	4411	5.50
2001	7370	95.85	1830	182.41	9200	108.57
2002	9629	30.65	3439	87.92	13068	42.04
2003	12109	25.76	3751	9.07	15860	21.37
2004	14219	17.43	4609	22.87	18828	18.71
2005	10098	-28.98	2059	-55.33	12157	-35.43
2006	23128	129.04	12212	493.10	35340	190.70
2007	55158	138.49	24258	98.64	79416	124.72
2008	147754	167.87	20773	-14.37	168527	112.21
2009	271287	83.61	13811	-33.51	285098	69.17
2010	384936	41.89	18742	35.70	403678	41.59
2011	467186	21.37	17860	-4.71	485046	20.16
2012	445334	-4.68	14860	-16.80	460194	-5.12
2013	123178	-72.34	3282	-77.91	126460	-72.52
2014	26497	-78.49	2084	-36.50	28581	-77.40



2015	117216	342.37	2695	29.32	119911	319.55
2016	97864	-16.51	2863	6.23	100727	-16.00
<b>CAGR</b>		<b>31.42</b>		<b>30.29</b>		<b>31.38</b>

Source: Department of tourism and civil aviation, Himachal Pradesh (Shimla)

**Table 1: Tourist arrivals in Kinnaur, 1991-2016**

The Government of Himachal Pradesh faced various restrictions on foreign tourist arrivals, especially in tribal areas due to its proximity to the international boundary with Tibet. Thus, the amount of visitors and the growth of travel and tourism industry were almost non-existent in Kinnaur before 1991. Afterwards, the Government of Himachal Pradesh announced its first tourism policy in which tribal areas, including Kinnaur and Lahaul and Spiti have been opened for tourism purposes. The 'National Action Plan' also assisted tourism development all over India and thus also in the study area.

As a result of administration efforts, in 1994, the number of tourist arrivals attained four digit figures at the high altitude destination of Kinnaur. However, its distinctive geo-tectonic, geological, geomorphologic and climatic conditions make it vulnerable/susceptible to various kinds of natural hazards or disasters. A natural hazard had occurred on 4-5 September, 1995 recognized as a 'flash flood' and this caused a steep fall in the interest of tourists to the destination. The NH-22 was blocked nearby Tapri village due to changes in the course of Sutlej River. Also, 32 people lost their lives and the Himachal Road Transport Corporation (HRTC), Himachal Pradesh PWD rest house were damaged from the flooding.

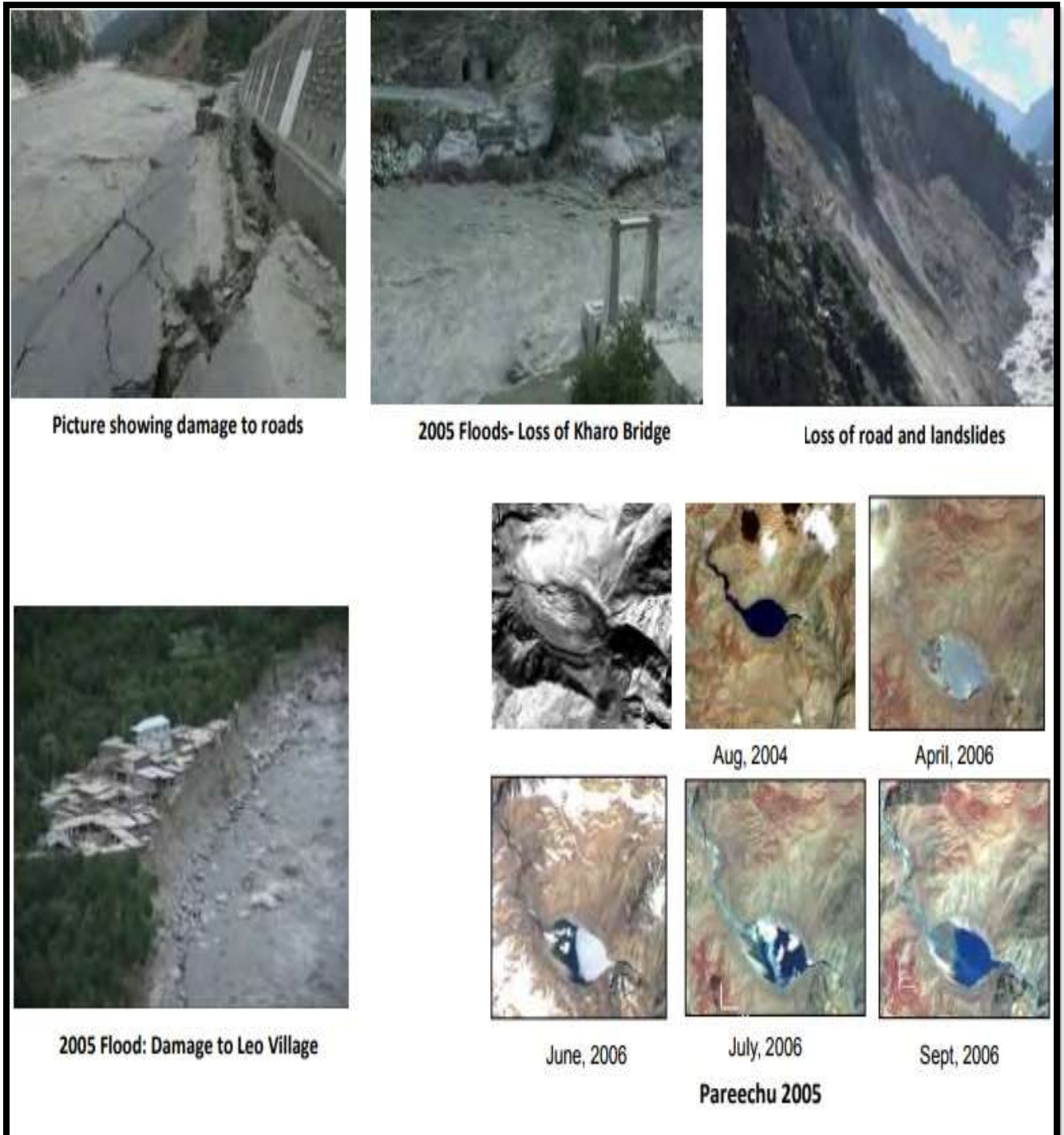
Furthermore, a number of natural hazards i.e. cloud bursts, flash floods etc. happened in August, 1997, July-August, 2000 and June, 2005 and these all created hurdles for tourism development in Kinnaur. The AGR of foreign tourist (-34.08 percent) in year 2000 indicated negative growth due to the damage of National Highway - 22 for almost 200 Km length between Shimla and Kinnaur, and floods washed away 20 bridges and badly damaged 12 bridges. The water level of Sutlej River rose more than 20m. The floods made water rise well above the normal level which is supposed to occur once in 61000 years. Similarly, in 2005, the number of visitors declined due to deadlocks on the NH-22 between Wangtoo and Sumdo which was eroded by the breaching and rising lake Pareechu, which is formed in Tibet catchments (Fig. 2) (DDMP Kinnaur, 2012). Moreover, an earthquake occurred in Kashmir valley and this too diminished the number of tourists to the entire Himalayas area, due to fear and psychoses.

There also needs to be a balance established between local government meeting more immediate community needs including domestic water supply, irrigation, and road access and taking more acceptable risks than has been the case in the recent past. Where care is lacking the chance for disaster is far greater. Himachal Pradesh government entities are urged to develop pro-active and specific hazard mitigation plans to lessen the chances for disaster, and should thus deliver a robust and constant administrative arrangement for disaster mitigation initiatives, preparedness and ultimately relief when disasters occur. This would encourage more tourism.

Travel and tourism rose in Kinnaur since the onset of terrorist activities and frequent natural hazards encountered in Kashmir and it has emerged as a substitute destination that resembles its prior beauty, especially after 2005. In addition to that, the announcement of a new tourism policy in 2005 by the state government has accelerated the tourism development of Kinnaur. Especially, for the tribal regions, the Government of Himachal Pradesh had introduced "Home



Stay Scheme” and “Helli Taxi” to promote tourism in rural areas that are to be further explored by adventurous tourists.



Source: District disaster management authority-2012 (DDMA), Kinnaur.  
Figure 2: Damaged caused by flash flood and over flow of Pareechu Lake, 2005



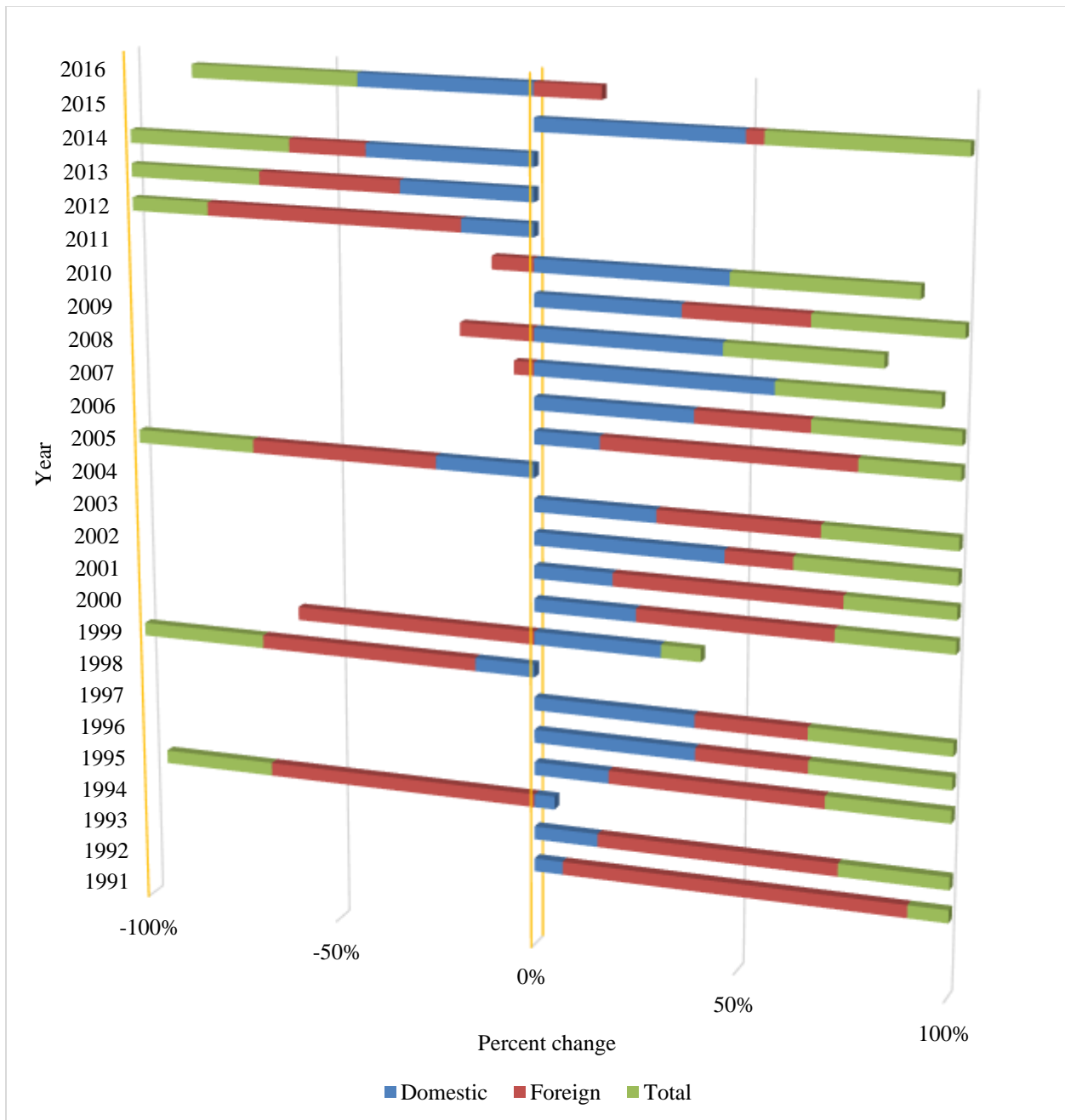
Figure 3 represents the percent change among tourist arrivals both domestic and foreign in Kinnaur during the period of 1991-2015. Besides, as discussed earlier, the level of awareness is higher in foreign tourists than in the domestic market and they clearly give extra thought to safety. Consequently, while the growth of domestic tourists was 167.87 percent in the aftermath of terrorist attack at Taj hotel in Mumbai in 2008, foreign tourists have shown decline in number with an AGR of -14.37 percent.

Likewise in 2009, global economic recession, increased the cost of travelling as reflected in increased airfare and an outbreak of the H1N1 influenza weakened the growth of foreign tourists (-33.51 percent) in India as well as in Kinnaur. Besides this, in 2010, heavy rain occurred and caused landslides at several locations that made the highway non-navigable in Kinnaur. Consequently, due to a rockfall, 51 tourists including 5 French, 11 German, 8 Israeli and 27 Bengalis tourists were stranded in the Sangla valley owing to obstruction at Karcham-Sangla road (Hill Post, September 22, 2010).

Such mishaps stirred up the declined in inflows of foreign tourists (-4.71 percent) in 2011. By the same token, the period of 2012-14 characterized the 'Dim Phase' to tourism development in Kinnaur because other natural hazards occurred at adjacent locations such as flash-flooding in Himalaya on August, 2012 especially in the Palchan region of Himachal Pradesh; the north India flood mainly occurred in Uttarakhand on June, 2013, and resulted in what is popularly known as Kedarnath temple tragedy. Expectedly, a significant drop in tourist's arrival was observed from 2011 to 2014 with numbers falling from 485046 to 28581 respectively. In 2015, the remarkable growth of 319.55 percent in total tourist arrivals indicated that the destination has not lost the visitor's interest, even after this cataclysmic 'Dim Phase'.

Nevertheless, the extremely fragile climate and geomorphology of the destination encounters a number of natural hazards at regular intervals. Extensive damage caused by flash floods occurred near Badseri village in Sangla valley, on July, 2016 (The Tribune of July 16, 2016) Likewise, flash floods and landslides damaged the main supply line of 20 villages for 50 days under Pooh sub-division.





**Figure 3:** Percent change of tourist's arrivals in Kinnaur, 1991-2016

In order to analyze the overall trend of tourist arrivals, data was analyzed for the period from 1991 to 2016. The annual total number of tourist arrivals was put into Linear Regression analysis. It is evident from Figure 4 that the overall trend reflects a moderate increase in the tourist arrivals throughout the period with an average of 91989 arrivals per year with  $R^2$  value of 0.3511. Ever since the opening-up of tribal/border areas of Himachal Pradesh to foreigners, the number has increased. This area being enormously rich in culture, architecture and ecology, has made it a very popular destination for tourists to relax and unwind. However, a noteworthy growth of tourists was registered after 2005. The CAGR of foreign tourists was 30.29 percent that shows the curiosity of foreigners to explore this cold desert destination of Himalaya.

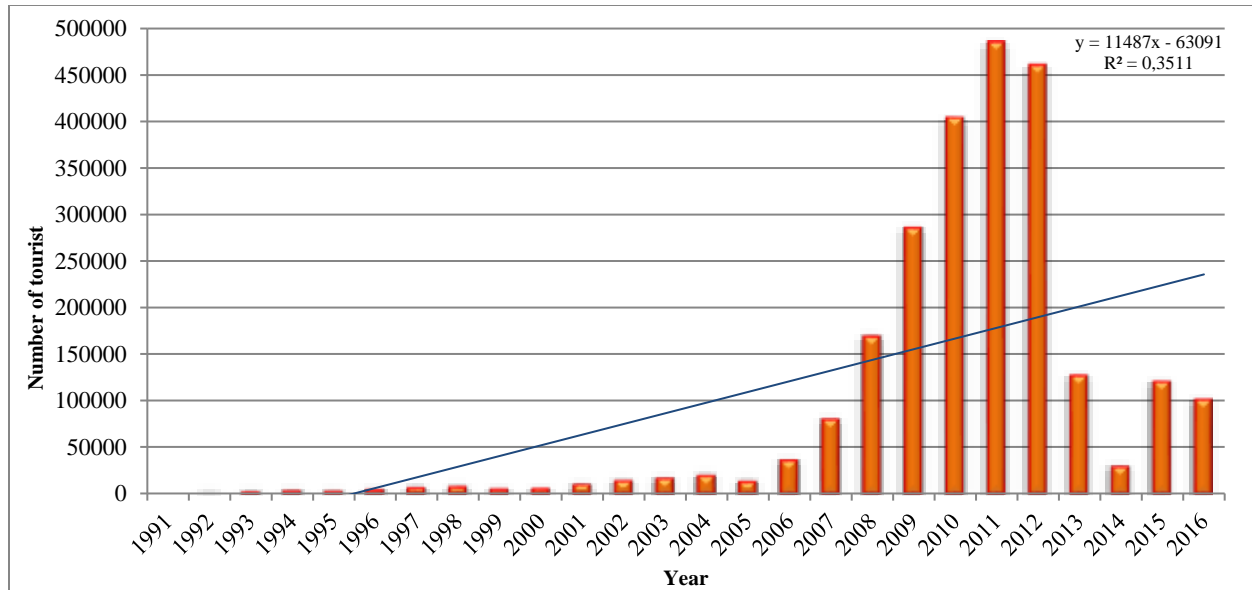


Figure 4: Trend of tourist arrivals in Kinnaur, 1991-2016

### Seasonality in tourism at Kinnaur

Globally, enterprises and regions of tourism are impacted by seasonality, either severely or mildly (Lee et al., 2008). Furthermore, the spatial and temporal variations have been observed in tourism demand at many destinations during the entire year (Jurdana & Zmijanovic, 2014). The monthly data regarding tourist arrivals (domestic and foreign) of Kinnaur in the periods of 1991-2016 is represented in Tables 2 and 3. As discussed above, tragedies either man-made or natural in orientation, have impacted the monthly as well as annual arrivals drastically. In the case of domestic travel, the decline could be clearly noticed in the years from 2005 to 2013 due to the occurrence of natural hazards. Moreover, seasonal transformation has been observed between 2015 and 2016.

Tourists who visited Kinnaur avoided the rainy season, and as a results of that, the number of tourists were highest in October (40520) and September (28570) in the year 2015 and 2016 respectively. In foreign arrivals, similar patterns have been perceived for the years 2005, 2009 and 2013. Interestingly, the figure of foreign tourist arrivals never recorded zero as was the case in the domestic tourist arrivals (Table 2). This might be because foreign tourists are counted at the Poo check-post as they need entry permits to visit Kinnaur given its location near the sensitive international border. There is no such condition placed on domestic tourists and perhaps in the aftermath of the Kedarnath tragedy, the sudden downturn in their arrivals would have been the reason for their non-counting in successive months. Though, it seems unrealistic, the casual attitude of the local authority in the maintenance of domestic tourist arrivals records may be an important reason. The average method of 12 months was used to examine the trends in the seasonal variations of tourist arrivals between 1991 and 2016. Table 4 shows the seasonal indices of domestic, foreign and total tourist arrivals that range from 0 percent to 252 percent. The array of seasonal indices characterized the extreme fluctuations in seasonal arrivals of tourists to Kinnaur. The highest number of total tourist arrivals was recorded in the month of May with a seasonal index of 206 followed by June. In May-June, Kinnaur has pleasant weather which attracts a lot of tourists, and the summer season peaks in plain areas and is a push factor.



Years	Months												Total
	January	February	March	April	May	June	July	August	September	October	November	December	
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	98	0	0	41	0	0	0	139
1993	0	0	0	0	0	0	100	124	135	165	35	0	559
1994	0	0	0	0	0	0	322	337	586	0	0	0	1245
1995	0	0	0	0	25	65	127	217	381	465	0	0	1280
1996	0	0	0	0	52	256	224	642	518	368	0	0	2060
1997	0	0	0	0	134	356	472	824	629	485	102	135	3137
1998	0	0	0	0	211	423	528	976	725	536	201	274	3874
1999	42	43	78	119	71	218	119	992	912	604	0	0	3198
2000	44	51	111	344	141	419	311	821	811	710	0	0	3763
2001	49	68	514	401	661	2516	252	955	1153	801	0	0	7370
2002	0	0	926	487	1322	3019	280	1159	1514	922	0	0	9629
2003	0	0	1152	1474	1562	3449	337	1314	1759	1062	0	0	12109
2004	0	0	1242	1622	1756	4104	644	1554	2012	1285	0	0	14219
2005	0	0	1385	2046	2007	3204	214	421	172	257	244	148	10098
2006	0	0	1693	2336	2449	4015	2256	3425	3699	1328	1282	645	23128
2007	0	0	2245	3479	5061	16436	8218	7437	5574	2275	3183	1250	55158
2008	0	0	10524	30257	36892	35264	9553	8247	6237	4534	5247	999	147754
2009	0	0	18536	45154	49122	52254	12364	12436	24571	31234	23987	1629	271287
2010	0	0	22661	60412	62572	70984	13221	14622	29273	38732	37502	34957	384936
2011	0	0	25850	69610	73966	82035	28657	31247	42697	46583	30348	36193	467186
2012	0	125	20850	23717	79328	76328	31247	32452	47927	42369	48624	42367	445334
2013	0	0	22631	38561	61986	0	0	0	0	0	0	0	123178
2014	40	20	25	101	655	1240	6300	4230	10211	2200	1150	325	26497
2015	100	0	500	1100	850	2538	7916	15638	25367	40520	13407	9280	117216
2016	15	51	899	1252	9162	12998	16970	25000	28570	2140	501	306	97864

Source: Department of tourism and civil aviation, Himachal Pradesh (Shimla)

**Table 2:** Month-wise variation of domestic tourist's arrivals in Kinnaur, 1991-2016



Years	Months												Total
	January	February	March	April	May	June	July	August	September	October	November	December	
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	1	0	0	4	0	0	0	5
1993	0	0	0	0	0	0	56	60	34	25	10	0	185
1994	0	0	0	0	120	240	136	172	176	185	0	0	1029
1995	0	4	14	20	47	73	137	197	61	80	5	0	638
1996	0	0	0	26	34	248	348	890	85	90	17	8	1746
1997	0	0	0	2	44	251	579	994	286	174	28	15	2373
1998	0	0	0	9	96	305	661	1128	307	192	38	22	2758
1999	1	0	0	1	25	311	518	18	35	61	13	0	983
2000	0	0	42	22	94	131	186	138	16	9	10	0	648
2001	0	0	0	30	143	283	155	331	193	482	211	2	1830
2002	0	2	40	201	432	544	381	792	630	211	182	24	3439
2003	7	0	12	39	529	648	447	923	770	189	161	26	3751
2004	4	8	16	148	634	829	567	1163	869	216	124	31	4609
2005	0	0	19	189	776	842	9	22	114	75	7	6	2059
2006	18	24	35	251	1642	2745	1648	1311	1960	1492	840	246	12212
2007	14	22	143	1326	2042	5214	6357	3321	2312	1909	1241	357	24258
2008	8	14	97	597	1152	1642	7937	4214	3541	1250	211	110	20773
2009	6	0	98	585	1741	1892	2842	2490	2840	677	347	293	13811
2010	0	0	127	620	2539	3793	3212	3516	3243	750	620	322	18742
2011	6	2	150	705	2975	3425	3047	3425	2456	821	604	244	17860
2012	0	6	10	25	2643	2891	2257	1352	3104	987	929	656	14860
2013	0	0	16	37	2549	94	73	254	180	58	16	5	3282
2014	9	2	7	55	179	645	555	320	247	45	7	13	2084
2015	3	0	16	56	520	739	725	301	255	47	26	7	2695
2016	2	2	21	90	370	750	630	510	330	116	33	9	2863

Source: Department of tourism and civil aviation, Himachal Pradesh (Shimla)

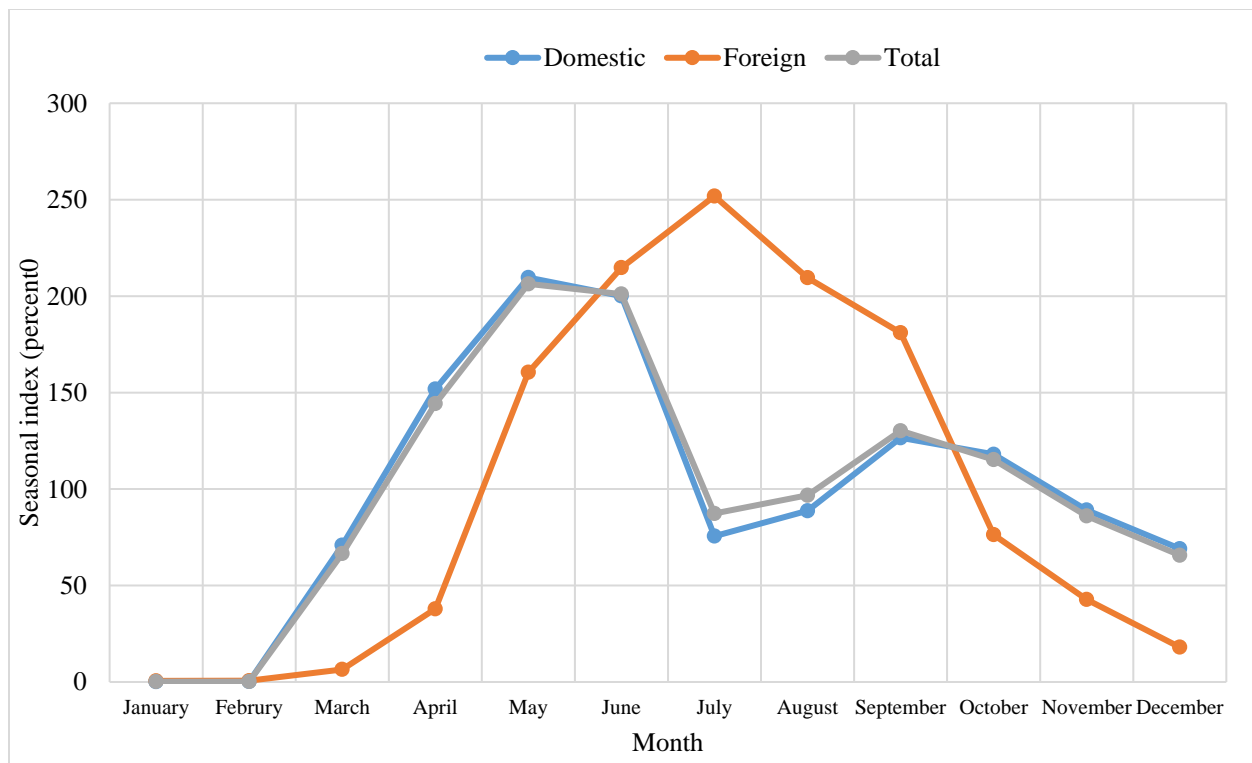
**Table 3: Month-wise variation of foreign tourist's arrivals in Kinnaur, 1991-2016**



Months	Seasonal Indices of tourist arrivals		
	Domestic	Foreign	Total
January	0	1	0
February	0	1	0
March	71	6	67
April	152	38	144
May	210	161	206
June	200	215	201
July	76	252	87
August	89	210	97
September	127	181	130
October	118	76	115
November	89	43	86
December	69	18	66

Source: Computed by author

**Table 4:** Seasonal indices of tourist arrivals in Kinnaur, 1991-2016



**Figure 5:** Seasonal indices of tourist arrivals in Kinnaur, 1991-2016

Many institutions, government or private offer summer vacations. The educational sector, works as trigger to boost travel in these months. Therefore, the highest seasonal index has been observed in May with a value of 210 percent in domestic arrivals tracked by June with a value of



200. Besides, in foreign arrivals, the index value of 252 percent has been noted in the month of July. In the era of sustainability, the seasonal pattern of arrivals at any destination has been essential to consider. Seasonality shows a general peak season of arrivals and temporal imbalance in numbers. The seasonal pattern of tourist arrivals throughout the study period has detected two peak seasons in Kinnaur that are 'May-June' and 'September-October' in total tourist arrivals. In between, a drop can be noticed in the months of July-August and that is in the rainy season. In May-June, the destination has been visited by tourists from all over India while in September-October it has become a second home of Bengali's which is why it is considered to be a mini peak season in Kinnaur. That is also the time of apple cultivation at high altitudes and many orchards are managed and owned by Bengalis in Kinnaur on a lease basis. Besides, climate has significant impacts on tourism in the seasonality of arrivals. Due to cold desert climatic conditions such as extremely low temperatures and heavy snowfalls, the months of winter (December, January, February and March) are marked as lean months of tourist arrivals in Kinnaur. On the other side of the coin, the peak season of foreign arrivals has been observed in July. The seasonal index shows that foreigners prefer to visit Kinnaur from May to September that is opposite to local arrivals preference, whose peak season is from April to June (Fig. 5). In India, school exams are normally completed by the end of March, while in college and university close by the end of May and thereafter starts the two months summer vacation period which is fully used for recreation and holidaying.

## Conclusion

The physiographic distinctiveness and subsequent harsh climatic conditions make Kinnaur unlike any other area in the world. It has emerged as a popular tourist destination with a unique cold desert ecosystem as well as a rich culture of tribal communities. Initially, the Government of Himachal Pradesh had tracked various restrictions on foreign tourist arrivals close to the international boundaries of China and Tibet. However, in 2005 the government decided to extend its 'Border Area Development Programme' and provided special incentives to meet the needs of the local people living in remote, inaccessible areas located near the international borders. Consequently, tourism was rapidly boosted in Kinnaur and this increasing trend has been growing since then.

There are some natural constraints which work as barriers in the tourism development for Kinnaur. Its distinctive geo-tectonic, geological, geomorphologic and climatic conditions make it vulnerable/susceptible to various kinds of natural hazards or disasters. Yet, the high CAGR of foreign tourists has shown the curiosity of foreigners to explore this cold desert destination of the beautiful Himalayas. Seasonality also impacts all tourism enterprises or regions and seasonal transformation has been noticed in recent years among domestic arrivals due to the rainy season that caused many natural tragedies in Kinnaur. In addition, the hydropower projects on Sutlej, Baspa and Spiti River destroyed and destabilized the natural structure of the mountains. This was due to extensive blasting and tunneling. As a result of that, a number of landslides occurred and blocked the life-line of Kinnaur which is NH-22. Kinnaur has great potential for tourism with its many derivatives such as eco-tourism, rural tourism, green tourism, adventure tourism, high altitude trekking, cultural tourism, tribal festivals and ethnics, medical tourism and many more if the infrastructure is well maintained and sustained throughout the entire year. The results provide important quantitative and qualitative information of tourism development with seasonality which could be useful for all stakeholders, planners, local authority, and academic audience.



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