

Project 2: Analysis of Hotels & Rainy Months Across Indian States

Information at hand:

India's climates are categorized into four main groups:

1. Tropical Wet (Humid):

→ Predominant in Malabar, Western Ghats, Lakswadeep, and Andaman Nicobar islands.

→ Extensive rainfall occurs from May to November.

2. Tropical Dry:

→ Tropical semi-arid (steppe) climate in Karnataka, central Maharashtra, some parts of Tamil Nadu, and Andhra Pradesh.

→ Rainfall is unpredictable in this region.

→ Sub-tropical semi-arid (steppe) climate in the tropical desert regions from Punjab and Haryana to Kathiawar.

→ High temperatures up to 40°C are common during summers, with uncertain rainfall.

3. Subtropical Humid Climate:

→ Prevailing in northern and northeastern India.

→ Summers are hot, and rainfall mostly occurs during the summer.

4. Mountain Climate:

→ Temperature decreases by 0.6°C for every 100 m rise in elevation in the Himalayas.

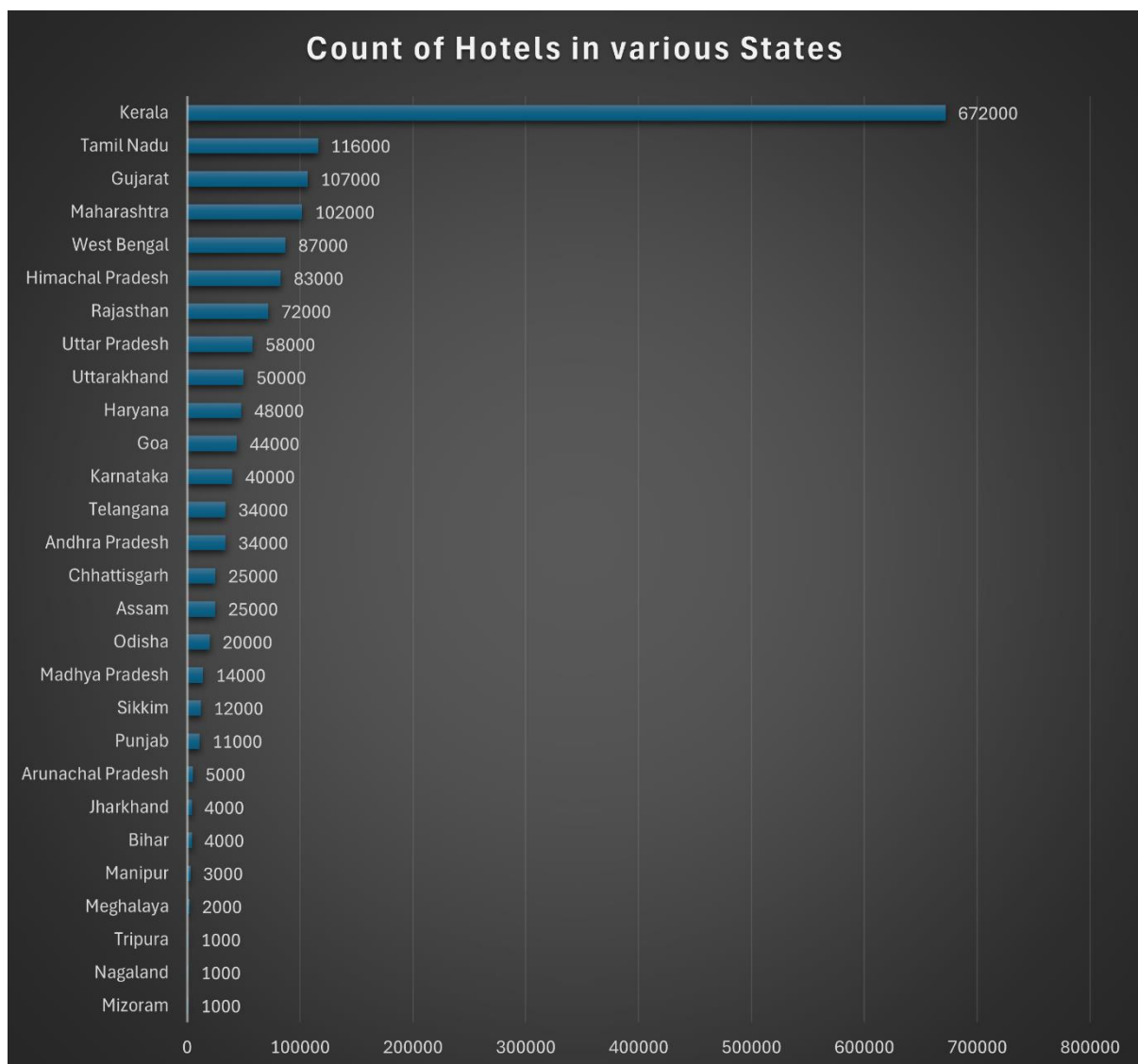
→ Less rainfall is experienced on the leeward side of the mountains compared to the exposed slopes.

Additionally, an Excel file containing the number of hotels in each state was provided.

Questions and Solutions:

Q1. Which state has the highest number of hotels? Depict this via a bar graph that compares all states.

A. The solution is simple: we select the data and create a bar chart, which comes out as follows:



→ Kerala, often referred to as the "God's Own Country," stands out with a notably high number of hotels compared to other states. This can be attributed to its popularity among tourists, both domestic and

international. Additionally, its location along the western coast ensures abundant rainfall from May through November, thanks to its Tropical Monsoon climate.

→ In contrast, the northeastern states have fewer hotels. This suggests lower population density and lesser tourist attractions compared to other states.

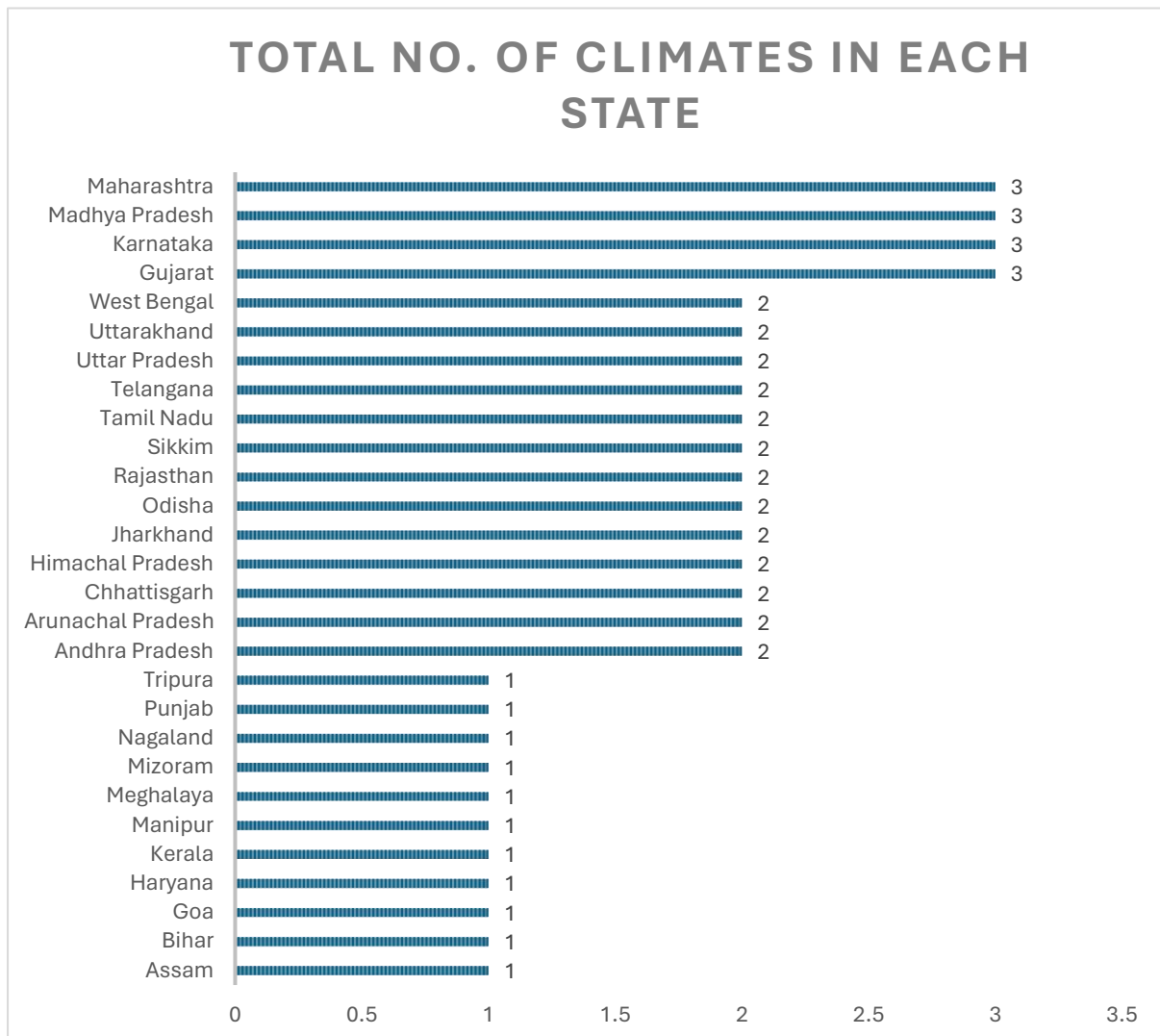
Q2. Which states have three types of climatic conditions? (convert the map, an unstructured data, to an Excel file in a structured format and mention the number of climates along with the state)

A. To generate the solution, a cross-tabulation was manually created to assign each climate to every state based on the provided climate map. Here are the first 5 records of the pivot table:

	A	B	C	D	E	F	G	H	I
1	Serial No.	States	Tropical Monsoon	Tropical Savannah, wet & d	Arid, Steppe, H	Humid Subtropic	Montane Climate	Hot Dese	Total No. of Climate
2	3	Assam	0	0	0	1	0	0	1
3	4	Bihar	0	0	0	1	0	0	1
4	6	Goa	1	0	0	0	0	0	1
5	8	Haryana	0	0	1	0	0	0	1

→ The full cross-tabulation can be found in the 'Solutions.csv' file for reference.

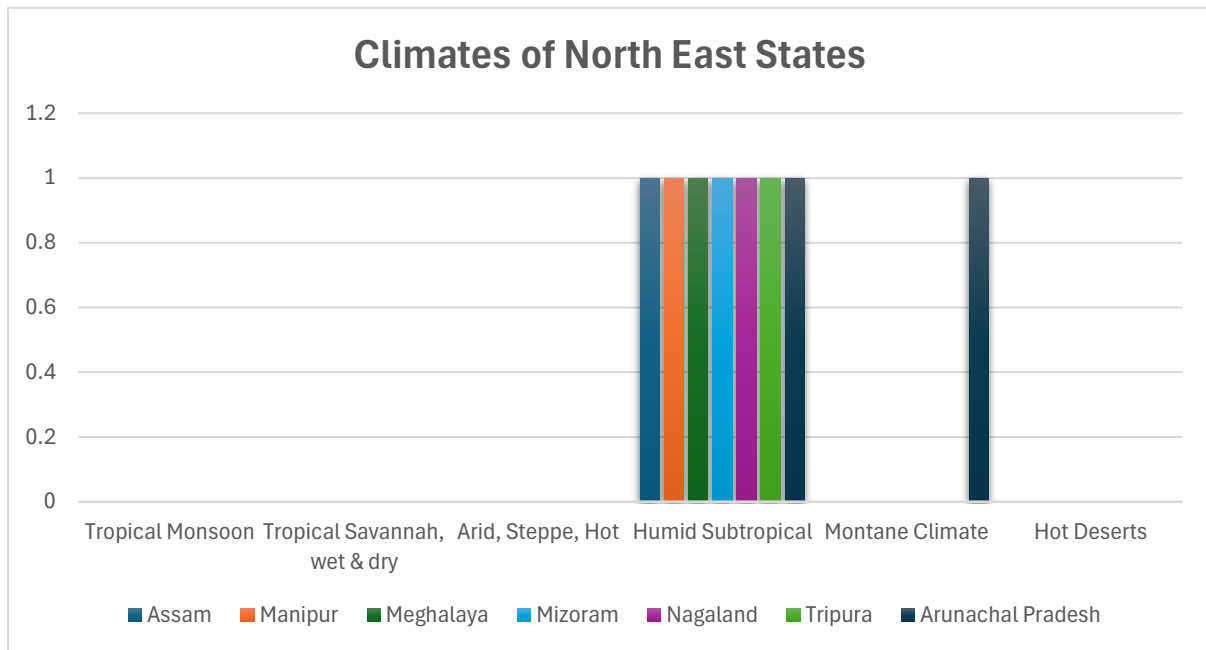
After creating the cross-tabulation, the total number of climates enjoyed by each state was calculated and visualized in a bar chart:



→ Maharashtra, Madhya Pradesh, Karnataka, and Gujarat experience three climates each. Maharashtra and Karnataka, being coastal states, have Tropical Monsoon, Tropical Savannah, and Arid Steppe climates, while Madhya Pradesh, located in the central part of India, has a combination of Humid Subtropic, Tropical Savannah, and Arid Steppe climates.

Q3. Among the northeastern states which are best to set up a hotel? Use Clustered Column Chart and give recommendations for hotel industry investors.

A. I have plotted a clustered column chart focusing only on the Northeast states from the cross-tabulation created earlier. Here's the chart:



→ All seven states exhibit the Humid Subtropical climate, with Arunachal Pradesh additionally experiencing the Montane climate due to its location in the northeast region. Considering the tourist perspective, during the summer months when temperatures soar, people often seek destinations with cooler climates. Among these seven states, Arunachal Pradesh stands out as an ideal location to establish a hotel, taking into account these factors.

Q4. Customise the pivot charts to add/change the fields in the fields list with other fields and by using chart styles to customise the charts. (choose the data and parameters according to your choice)

A. Doing for every question. I am playing with the pivot tables for every question and trying to plot charts.

Q5. Which is the best state for setting up a hotel? Why?

A. The ideal state for setting up a hotel varies depending on the target audience of hotel industry investors.

Serial No.	States	Tropical Monsoon	Tropical Savannah, wet & d	Arid, Steppe, H	Humid Subtropic	Montane Climate	Hot Desert	Total No. of Climate
3	Assam	0	0	0	1	0	0	1
4	Bihar	0	0	0	1	0	0	1
6	Goa	1	0	0	0	0	0	1
8	Haryana	0	0	1	0	0	0	1
12	Kerala	1	0	0	0	0	0	1
15	Manipur	0	0	0	1	0	0	1
16	Meghalaya	0	0	0	1	0	0	1
17	Mizoram	0	0	0	1	0	0	1
18	Nagaland	0	0	0	1	0	0	1
20	Punjab	0	0	1	0	0	0	1
25	Tripura	0	0	0	1	0	0	1
1	Andhra Pradesh	0	1	1	0	0	0	2
2	Arunachal Pradesh	0	0	0	1	1	0	2
5	Chhattisgarh	0	1	0	1	0	0	2
9	Himachal Pradesh	0	0	1	0	1	0	2
10	Jharkhand	0	1	0	1	0	0	2
19	Odisha	0	1	0	1	0	0	2
21	Rajasthan	0	0	1	0	0	1	2
22	Sikkim	0	0	0	1	1	0	2
23	Tamil Nadu	0	1	1	0	0	0	2
24	Telangana	0	1	1	0	0	0	2
26	Uttar Pradesh	0	0	1	1	0	0	2
27	Uttarakhand	0	0	0	1	1	0	2
28	West Bengal	0	1	0	1	0	0	2
7	Gujarat	0	1	1	0	0	1	3
11	Karnataka	1	1	1	0	0	0	3
13	Madhya Pradesh	0	1	1	1	0	0	3
14	Maharashtra	1	1	1	0	0	0	3

→ Many tourists, as well as local Indians, prefer cooler destinations with lower temperatures and less humidity for their vacations. Regions with a "Montane Climate," such as Arunachal Pradesh, Himachal Pradesh, Sikkim, and Uttarakhand, cater to these preferences (highlighted in excel table above). Among these states, Himachal Pradesh stands out with the highest number of hotels (83,000), while Arunachal Pradesh has the fewest (5,000). Investors can opt for Himachal Pradesh to tackle the intense competition through innovative offerings or choose Arunachal Pradesh and focus on effective marketing strategies to attract customers.

→ Additionally, some customers seek coastal destinations with pleasant climates, a characteristic of regions like the Western Ghats, offering a Tropical Monsoon climate. States like Goa, Kerala, Karnataka, and Maharashtra fit this description. Investors can further analyze these states

based on factors such as tourist inflow, business opportunities during monsoon seasons, and make informed decisions regarding hotel investments.

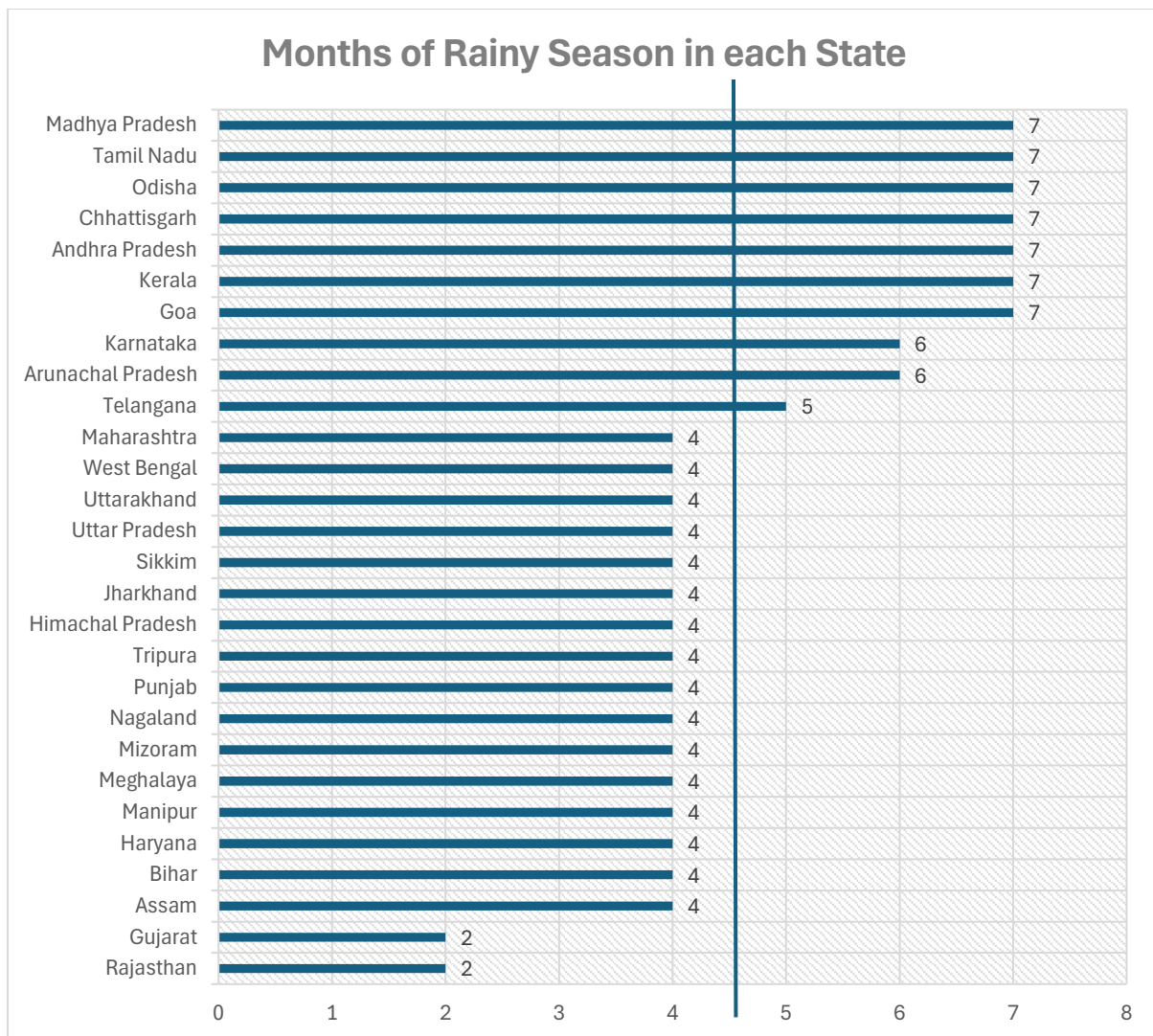
→ In summary, selecting the perfect state for hotel investment depends on the investor's objectives and desired outcomes. Each state offers unique opportunities and challenges, and investors should consider various factors like the ones listed above before making a decision.

Q6. What is the average number of days the rainy season lasts in Indian states?

A. Based on the available information, I've constructed a new pivot/cross-tabulation to identify the rainy months for each state. For instance, states in the northeast experience rain predominantly during May-June and September-November. Here are a few records from the table:

State	January	February	March	April	May	June	July	August	September	October	November	December	Total Months of Rain
21 Rajasthan							1	1					2
7 Gujarat							1	1					2
3 Assam					1	1			1	1			4
4 Bihar					1	1			1	1			4
8 Haryana						1	1	1	1				4

→ Subsequently, I calculated the total number of rainy months for each state. It's important to note that the rainy season doesn't necessarily span the entire 30 or 31 days of a month; rather, it indicates the months when rainfall is likely based on the provided information. The resulting horizontal bar chart is as follows:



→ Tamil Nadu and Madhya Pradesh have a higher number of rainy months, while Gujarat and Rajasthan have the fewest. However, it's crucial to understand that the number of rainy months doesn't imply continuous rainfall throughout the specified period. It merely reflects the tropical savannah climate experienced by each state.

→ Furthermore, the average number of rainy months across the country is approximately 4.71, represented by the vertical line in the chart. This translates to around 142 days of rainfall per year in India.