

RAINFALL ANALYSIS

Project Description:

This project involved analyzing district-wise rainfall data across Indian states using Power BI. The goal was to derive meaningful insights from seasonal and monthly rainfall patterns and present them through an interactive dashboard.

Key tasks included:

- **Data transformation:** Cleaned and unpivoted rainfall data (Jan–Dec) for month-wise and seasonal analysis.
- **KPI Cards:** Created cards to show average annual rainfall, total districts, highest monthly rainfall, and district with highest annual rainfall.
- **Visualizations:**
 - **Bar chart:** Compared average annual rainfall across states.
 - **Stacked column chart:** Displayed month-wise rainfall distribution by state.
 - **Map visual:** Showed district-wise annual rainfall geographically with tooltips.
 - **Donut chart:** Highlighted seasonal contribution (pre-, monsoon, post-monsoon).
- **Slicer Filters:** Enabled user-driven filtering by State, Region Category (Low/Moderate/Heavy), Month, and Season.
- **Insights derived:**
 - Identified wettest and driest regions
 - Observed rainfall peaks during July–August
 - Compared pre- and post-monsoon trends

Analysis Taks:

1) Which state receives the highest average annual rainfall?

-> *Meghalaya* receives the highest average annual rainfall, as shown in the bar chart with the tallest bar.

2) Which district reports the highest rainfall in July?

-> From the stacked column chart and tooltip on July, *PANNA (Madhya Pradesh)* shows the highest rainfall in July.

3) What is the trend of monsoon (Jun–Sep) rainfall across states?

-> Monsoon rainfall peaks in July and August across most states, contributing over 75% of annual rainfall in many regions.

4) How do pre-monsoon (Mar–May) and post-monsoon (Oct–Dec) patterns differ?

->Pre-monsoon rainfall is minimal and scattered, while post-monsoon shows slightly higher rainfall in southern and coastal states.

5) Identify 5 driest districts and analyze their monthly distribution?

->The 5 driest districts (e.g., Leh, Kutch, Jaisalmer, Ladakh, Bikaner) show low values across all months with almost flat or negligible rainfall even during monsoon.

Key Observations:

- Meghalaya receives the highest average annual rainfall among all states.
- Panna, Madhya Pradesh reports the highest July rainfall across districts.
- Monsoon (Jun–Sep) contributes over 75% of total rainfall, peaking in July–August.
- Pre-monsoon (Mar–May) rainfall is minimal, while post-monsoon (Oct–Dec) shows slightly higher contribution in southern/coastal regions.
- The five driest districts (e.g., Leh, Kutch, Jaisalmer) receive extremely low rainfall, even during peak monsoon months.