

# ■■■ Telangana Weather Data Story — Power BI Dashboard Project

## 1■■■ The Beginning — What I Wanted to Find

It all started with a simple question: “How has the weather changed across Telangana from 2021 to 2024?” I wanted to understand rainfall, temperature, humidity, and wind speed patterns — not just as numbers, but as a story that shows how our climate behaves over time and across districts. So, I decided to build an interactive Power BI dashboard that turns raw data into meaningful weather insights.

## 2■■■ The Data Journey — From Many Files to One Dataset

The first step was collecting data. I had four years of weather data (2021–2024), stored as separate files — each containing daily readings for every district and mandal. Luckily, all the files had the same columns, which made combining them easy. Using Power Query in Power BI, I imported all the yearly files, combined them (Appended) into one big dataset, and named it FactWeather. Now, I had one clean dataset covering four years of Telangana’s weather — ready to explore.

## 3■■■ Cleaning the Data — Making It Reliable

Before analysis, I had to make sure the data was trustworthy. Some records had unrealistic values — like negative temperatures or humidity percentages. So I applied simple rules to clean them up:

- Rain (mm): Replaced null values with 0
- Temperature (°C): Replaced 0 or negative values with null
- Humidity (%): Replaced 0 or negative values with null
- Wind Speed (Kmph): Removed negative values (0 kept as valid)

## 4■■■ Feature Engineering — Creating New Insights

Once the data was clean, I created new calculated fields and measures using DAX in Power BI. These helped bring more meaning and depth to the data.

**Measures:** Avg\_Temp, Avg\_Humidity, Avg\_Windspeed — for KPIs.

**Calculated Columns:** diff\_Humidity, Mandal\_Name, Month\_Name, Season, and Year.

## 5■■■ Data Model — Organizing for Performance

After transformations, I built a single clean table called FactWeather containing all time, location, and weather fields. This model was simple, fast, and perfect for Power BI analysis.

## 6■■■ Building the Dashboard — Turning Data into a Story

I designed the dashboard in three clear sections:

- Top Row: KPI Cards — Total Rainfall, Avg Temp, Avg Humidity, Avg Wind Speed
- Middle Row: District comparison with Bar & Line Charts
- Bottom Row: Seasonal & yearly trends using Line and Scatter Plots

I also added slicers for Year, District, and Season to make it interactive.

## 7■■■ Insights — What the Data Revealed

- Rainfall: Highest during June–September (Monsoon Season)
- Temperature: Hottest in May; coolest in December–January
- Humidity: Peaks in Monsoon, lowest in Winter
- Wind Speed: Rises during Summer months due to heat convection

## 8■■■ The Outcome — From Raw Data to Real Insights

- Combined 4 years of data into one unified dataset
- Cleaned and validated all weather parameters
- Created custom DAX measures and columns
- Designed an interactive Power BI dashboard
- Discovered clear seasonal and regional patterns

## 9■■■ What I Learned

This project taught me how to use Power Query for cleaning, DAX for calculated measures, build efficient data models, and tell stories visually through Power BI dashboards.

## ■ Tools Used

- Power BI Desktop — Data modeling and visualization
- Power Query — Data extraction and transformation
- DAX — Custom logic creation
- CSV Files — Source data

## ■ Future Improvements

- Add forecasting visuals using time-series
- Build a date dimension table for deeper analysis
- Automate data refresh using Power BI Service