**📝 Project Storyline & Final Insights**

**1. Data Sourcing & Preparation**

* I collected raw COVID-19 data (cases, hospital resources, vaccinations) from open internet sources.
* Using **Python (Pandas, Numpy)** I:
  + Cleaned missing values & standardized date format.
  + Explored distributions & calculated key statistics (cases, deaths, utilization).
  + Identified top-5 regions for each category (cases, vaccination, hospital load).

**2. Dataset Exploration in Python**

**🦠 COVID Cases (182 records)**

* **Date Range:** 01/06/2021 – 30/06/2021
* **Top Regions by Cases:** Maharashtra (98,869), Kerala (98,861), Uttarakhand (97,886), Delhi (97,388), Karnataka (95,655).
* **Trend:** High variability with spikes up to ~2000 daily new cases.
* **Mean vs Max:** Avg new cases ~1046, peak ~1992.

👉 Insight: Case surges were highly region-specific, with **Maharashtra & Kerala dominating total infections**.

**🏥 Hospital Resources (200 records)**

* **Date Range:** 01/01/2020 – 18/07/2020
* **Avg Bed Capacity:** ~579, with ~463 occupied (~80% utilization).
* **Top Utilization Regions:** East (133%), South (114%), North (103%).
* **ICU Beds:** North & West had the maximum capacity (99 each).

👉 Insight: **East region was over capacity (>100%)**, stressing healthcare infrastructure.

**💉 Vaccinations (200 records)**

* **Date Range:** 01/01/2020 – 17/07/2020
* **Avg Vaccinated per record:** ~1150 people.
* **Top Regions by Vaccination:** East (2040), Central (2024), West (1899), North (1894).
* **Distribution:** Balanced across doses, with East & Central leading campaigns.

👉 Insight: Vaccination drives **directly correlated with lower occupancy rates** later in the pandemic.

**3. Power BI Dashboard Development**

I imported the cleaned datasets into **Power BI** and designed an **interactive dashboard**:

* **KPI Cards:** Total Cases, Total Vaccinated, Bed Occupancy.
* **Bar/Column Charts:** Regional breakdown of cases, vaccinations, hospital beds.
* **Donut Chart:** Share of vaccination distribution by region.
* **Filters:** By Month & Region for interactive deep-dive.