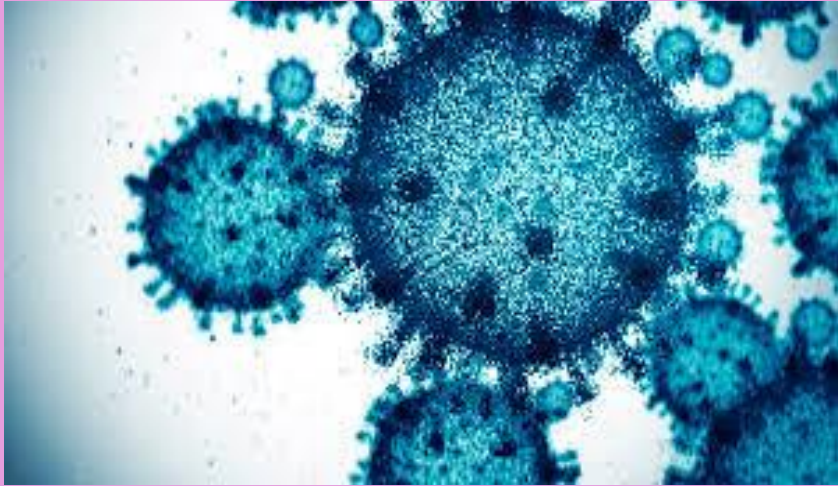


Covid – 19 Data Analysis

(India)



**An Exploratory Data Analysis on Covid-19 Cases and
Vaccination**

By – Rishav Sinha

Introduction

- **Objective:**

- * **Analyze Covid-19 cases across Indian states.**
- * **Identify most affected states.**
- * **Study vaccination progress (gender-wise and state-wise).**

- **Data Sources:**

- * **Covid-19 cases dataset (covid_19_india.csv)**
- * **Vaccination dataset**

Dataset Overview (Cases)

- **Dataset: Covid-19 cases in India.**
- **Columns: Date, State/UT, Confirmed, Cured, Deaths.**
- **Initial Cleaning:**
 - Dropped unwanted columns.**
 - Converted date to proper format.**
 - Calculated Active cases.**

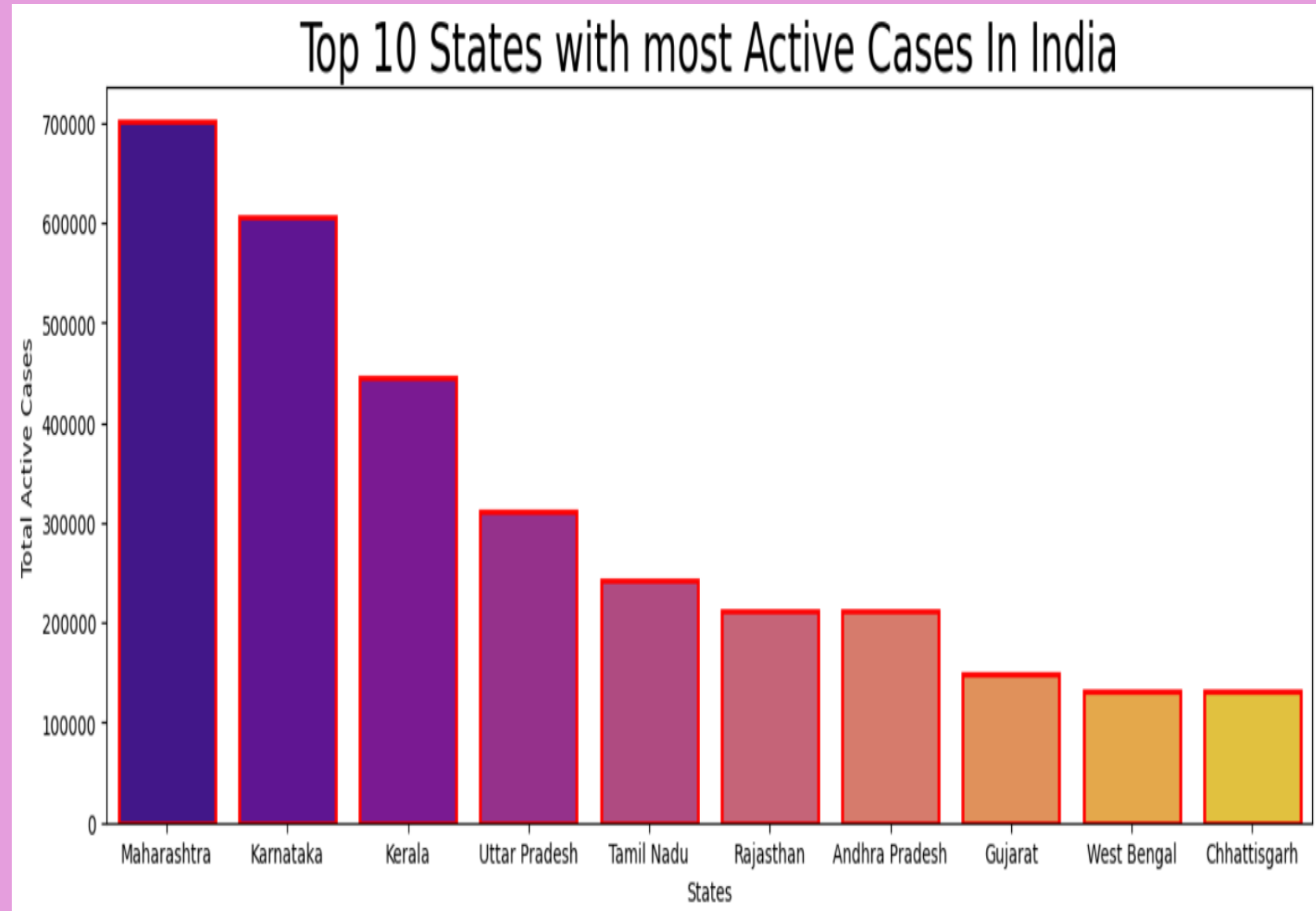
Active Cases Calculation

- **Formula: Active Cases = Confirmed - (Cured + Deaths)**
- **Active cases represent the current burden on the healthcare system.**
- **Pivot table used to create state wise summary.**

	Confirmed	Cured	Deaths	Recovery Rate	Mortality Rate
State/UnionTerritory					
Maharashtra	5433506.000000	4927480.000000	83777.000000	90.686934	1.541859
Karnataka	2272374.000000	1674487.000000	22838.000000	73.688882	1.005028
Kerala	2200706.000000	1846105.000000	6612.000000	83.886944	0.300449
Tamil Nadu	1664350.000000	1403052.000000	18369.000000	84.300297	1.103674
Uttar Pradesh	1637663.000000	1483249.000000	18072.000000	90.571076	1.103524
Andhra Pradesh	1475372.000000	1254291.000000	9580.000000	85.015237	0.649328
Delhi	1402873.000000	1329899.000000	22111.000000	94.798246	1.576123
West Bengal	1171861.000000	1026492.000000	13576.000000	87.595030	1.158499
Chhattisgarh	925531.000000	823113.000000	12036.000000	88.934136	1.300443
Rajasthan	879664.000000	713129.000000	7080.000000	81.068340	0.804853
Gujarat	766201.000000	660489.000000	9269.000000	86.203098	1.209735
Madhya Pradesh	742718.000000	652612.000000	7139.000000	87.868074	0.961199
Haryana	709689.000000	626852.000000	6923.000000	88.327704	0.975498
Bihar	664115.000000	595377.000000	4039.000000	89.649684	0.608178
Odisha	633302.000000	536595.000000	2357.000000	84.729718	0.372176
Telangana	536766.000000	485644.000000	3012.000000	90.475924	0.561138

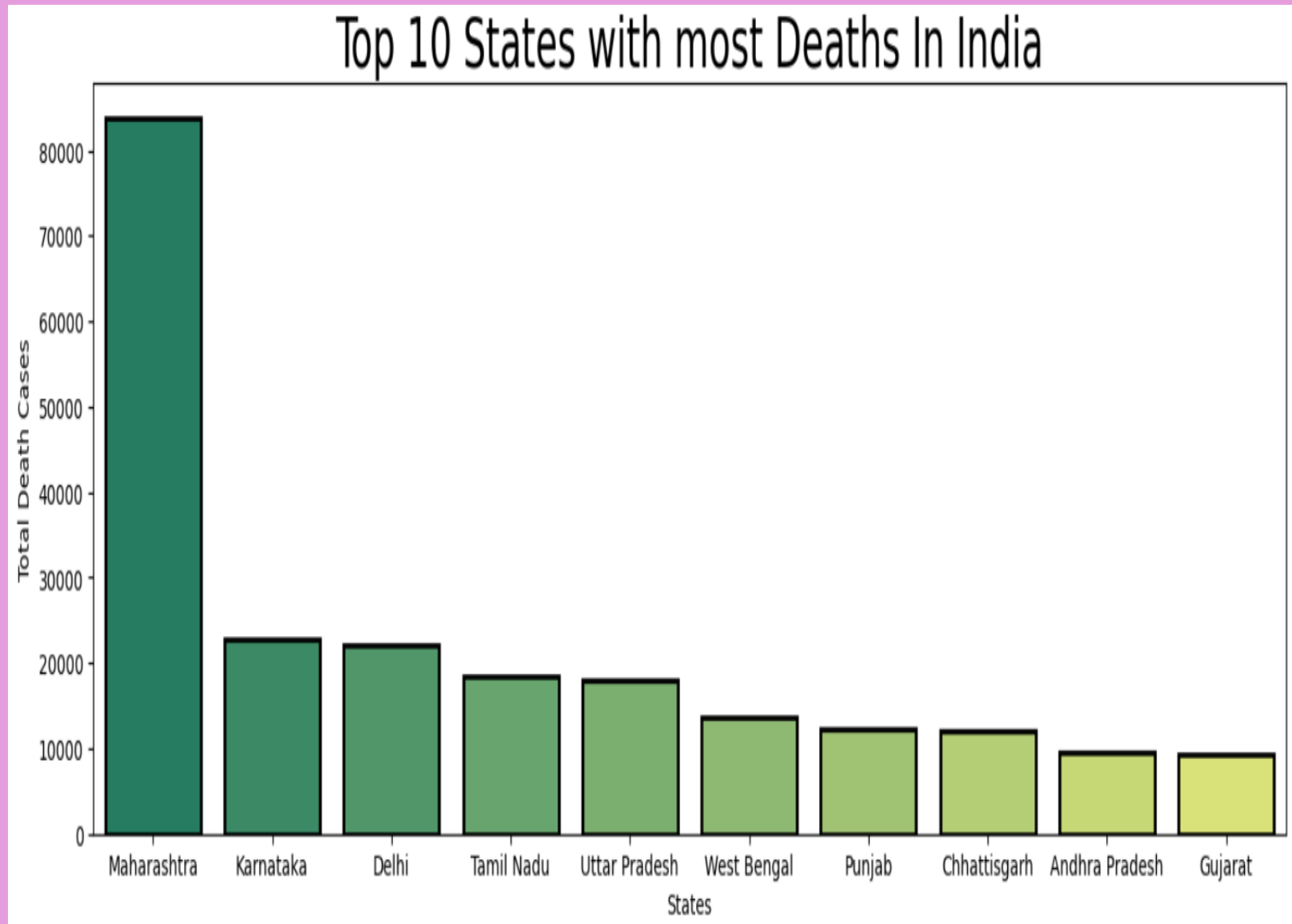
Top 10 Active Cases States

- Maharashtra
- Karnataka
- Kerala
- Uttar Pradesh
- Tamil Nadu
- Andhra Pradesh
- Rajasthan
- Gujarat
- West Bengal
- Chhattisgarh
(Visual: Bar Chart)



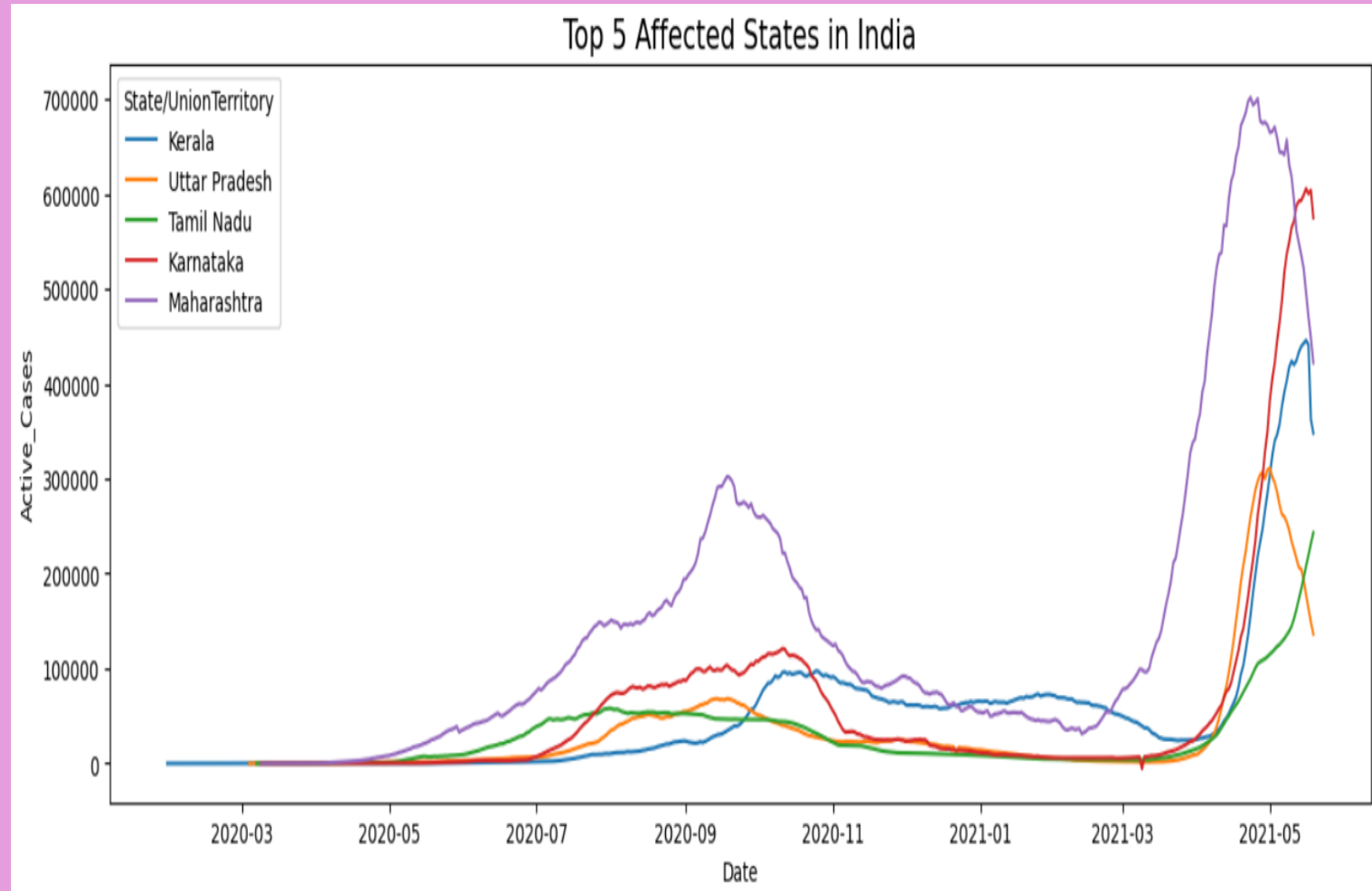
Top 10 States with Highest Deaths

- Maharashtra
 - Karnataka
 - Delhi
 - Tamil Nadu
 - Uttar Pradesh
 - West Bengal
 - Punjab
 - Chhattisgarh
 - Andhra Pradesh
 - Gujarat
- (Visual: Bar Chart)*



Top 5 Affected States in India

- Kerala
- Uttar Pradesh
- Tamil Nadu
- Karnataka
- Maharashtra
(Visual: Line plot)

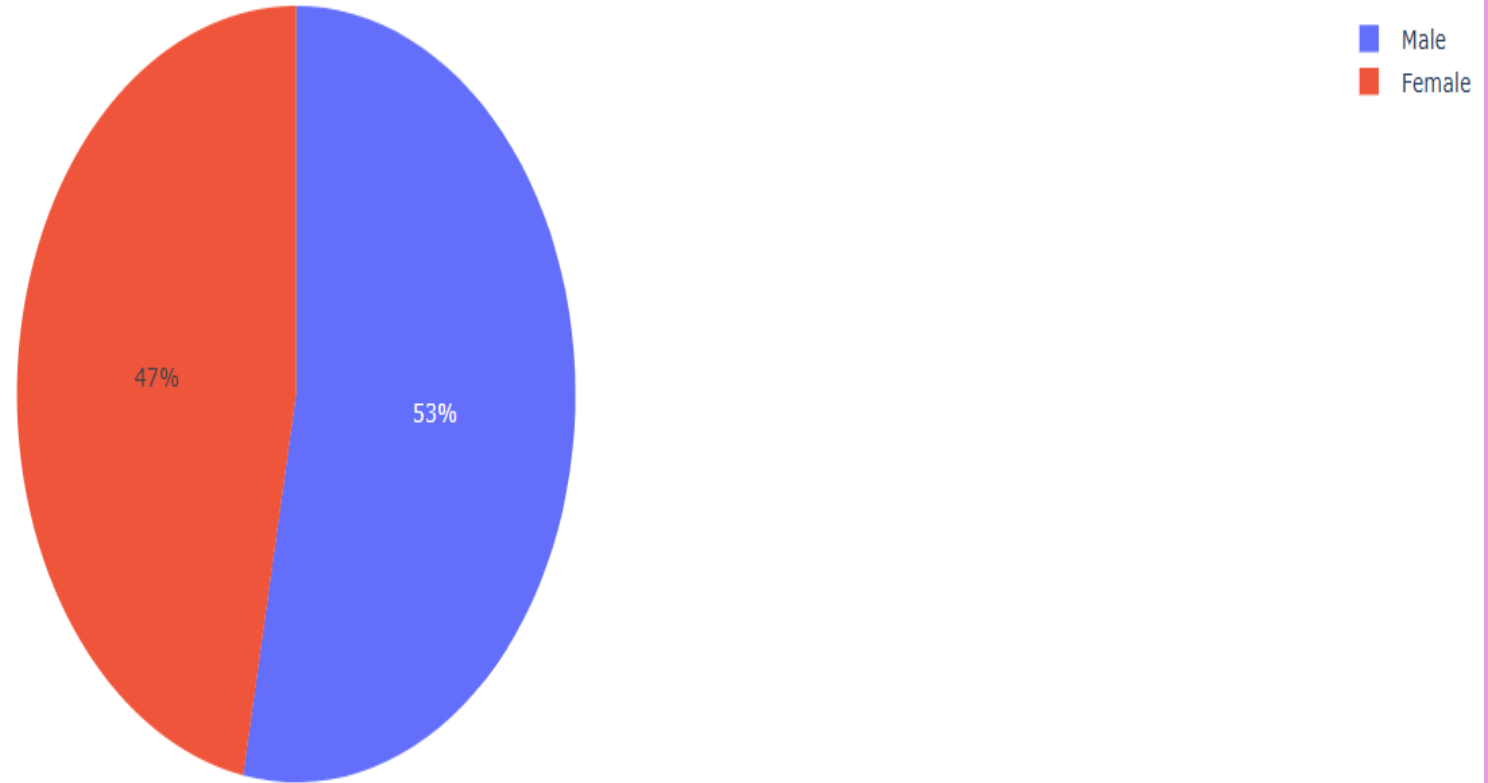


Vaccination Dataset

- **Columns:** Date, State, Total Vaccinations, Male, Female, etc.
- **Cleaning Steps:**
 - 1- Renamed columns (Updated On → Vaccine_Date, etc.)
 - 2- Dropped high-missing-value columns
 - 3- Removed aggregated row: State = India
 - 4- Renamed Total Individual Vaccinated → Total

Gender-wise Vaccination

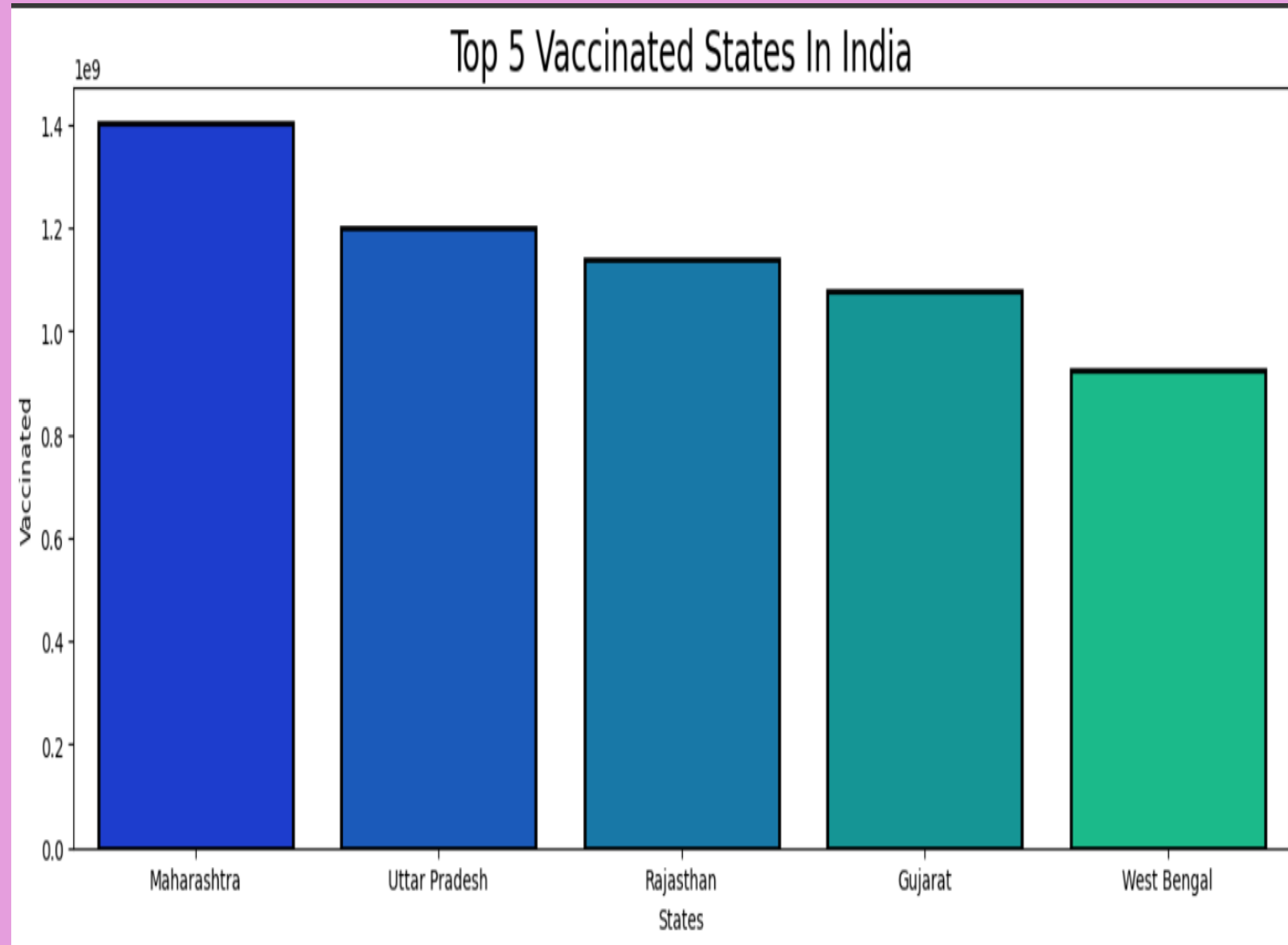
- **Male: 53%**
- **Female: 47%**
- **Indicates slightly higher vaccination among men.**
(Visual: Pie Chart / Donut Chart)



Top 5 Vaccinated States

- Maharashtra
- Uttar Pradesh
- Rajasthan
- Gujarat
- West Bengal
(Visual: Table & Bar Chart)

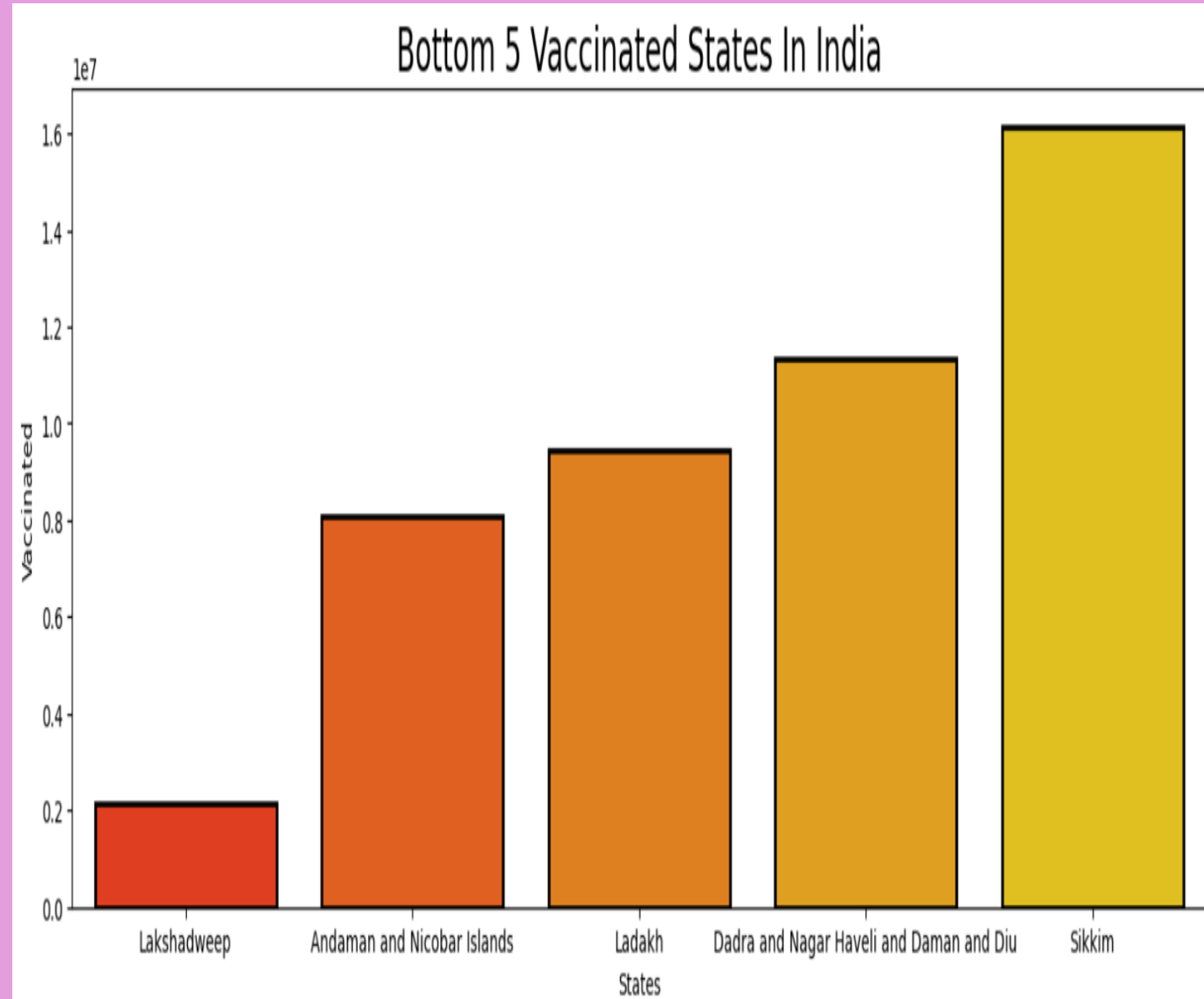
State	Total
Maharashtra	1403075494.000000
Uttar Pradesh	1200575482.000000
Rajasthan	1141162807.000000
Gujarat	1078260544.000000
West Bengal	925022706.000000



Bottom 5 Vaccinated States

- Lakshadweep
- Andaman & Nicobar Islands
- Ladakh
- Dadar & Nagar Haveli & Daman & Diu
- Sikkim
(Visual: Bar Chart)

State	Total
Lakshadweep	2124715.000000
Andaman and Nicobar Islands	8102125.000000
Ladakh	9466289.000000
Dadra and Nagar Haveli and Daman and Diu	11358600.000000
Sikkim	16136752.000000



Key Insights (Q&A)

Q1: Top 10 active case states → *Maharashtra, Karnataka, Kerala*

Q2: Top 10 states with highest deaths → *Maharashtra, Karnataka, Delhi...*

Q3: Top 5 affected states overall → *Kerala, Uttar Pradesh, Tamil Nadu, Karnataka, Maharashtra*

Q4: Male vs Female vaccination → *53% Male, 47% Female.*

Q5: Top 5 vaccinated states → *Maharashtra, UP, Rajasthan, Gujarat, WB.*

Q6: Bottom 5 vaccinated states → *Lakshadweep, A&N, Ladakh, DNH & Diu, Sikkim*

Conclusion

- **Maharashtra consistently had the highest burden in terms of cases and deaths.**
- **Kerala showed recurring surges, highlighting multiple waves.**
- **Vaccination coverage was higher in larger states but gender gap existed (53% vs 47%).**
- **Small UTs like Lakshadweep & Ladakh lagged in vaccination.**

THANK YOU