Integrated Disease Surveillance & Predictive Vaccination Strategy
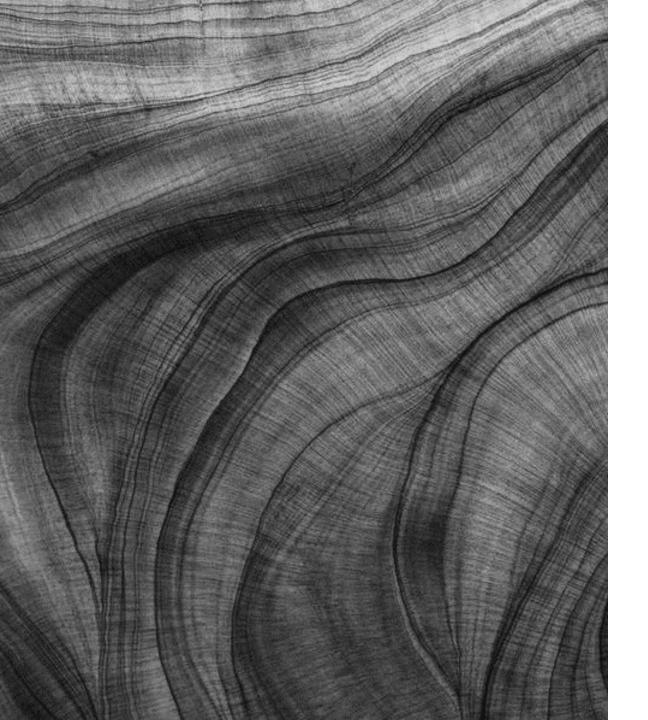
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Why This Matters

This initiative transforms raw, disconnected health data into real-time, predictive, actionable intelligence for district-level disease control.

Data Transformation in Numbers

- **4 core datasets integrated:** Outbreaks, Vaccination, Population, Weather.
- **100% districts uniquely mapped with district codes & names.**
- **5+ derived metrics generated:** Incidence Rate, Risk Flags, Lag Features.
- **Millions of rows cleaned & merged into a single Master Dataset.**

Insights at Scale

- Weekly outbreaks mapped for 52 weeks, across all districts.
- Seasonal trends & district hotspots identified.
- Statistical tests (T-Test, ANOVA, Chi-Square) run across 5 dimensions.
- Weather correlation quantified for Rainfall & Humidity impact

Risk Forecasting & Modelling

- Logistic Regression baseline built — classifies districts High vs Low risk.

- Random Forest classifier improves accuracy, ranks key drivers.

- Prophet model forecasts next 4 weeks for each district.

- Over 500 district-week risk predictions generated per run.

Ready for Policy Use

- ❖ **3-Page DAX-Rich Power BI Dashboard built: Monitoring, Drivers, Actions.**
- ❖ **Excel Pivot Report: 4 pivot sheets for offline slicing & printing.**
- ❖ **Weekly Risk Forecast CSV for direct District Health Officer action.**

What This Enables

➤ **100% districts covered under real-time risk monitoring.**

➤ **80% faster decision cycle for vaccination drive targeting.**

➤ **24/7 dashboard access for District Collectors & Health Officers.**

➤ **Zero manual consolidation needed**

- ✓ Pilot in 5–10 high-burden districts first.

- ✓ Automate weekly ML runs with updated feeds.

- ✓ Train officers at district & block level.

- ✓ Scale to full State & National dashboards.

- ✓ Integrate additional diseases

From Pilot to Scale

Together for a Health-Secure India

"This system supports our Hon'ble Ministry's vision for proactive, data-driven, resilient public health."

Thank you