**COVID-19 Dashboard Data Story**

**Context & Objective**  
The COVID-19 dashboard provides a comprehensive analytical view of the pandemic's global and U.S.-specific impact, enabling health authorities, policymakers, and analysts to monitor trends, evaluate risk, and plan interventions effectively. The data includes country-level and county-level metrics such as total cases, deaths, healthcare infrastructure availability, and population vulnerability based on health factors.

**Data Overview**

The dashboard is built using two structured tables:

* **COVID Table**: Contains data on countries, WHO regions, country codes, date(2020-2025), new cases, new deaths, cumulative cases, cumulative deaths.
* **Health Table**: Captures US specific details such as county names, states, FIPS, confirmed cases, deaths, population, sum of member count all, sum of member count at risk, % member at risk, health factor ranks, staffed beds, covid deaths/1000, beds/1000, cases/1000, and all the respective quartiles columns

While the dataset is dummy in nature, the schema mirrors real-world sports analytics models and enables realistic performance and participation insights.

**Transformations & Modelling:**

* All text-based columns standardized, and years formatted.
* Converted columns to relevant data type, handled nulls, calculated key metrics

The dashboard is structured in two key views:

1. **Global COVID-19 Impact Dashboard** (Page 1)

**Purpose:**  
To provide a snapshot of the worldwide COVID-19 situation, highlighting infection trends, top-affected countries, and mortality statistics over time. The dataset obtained from WHO spans across 2020-2025 highlighting total cases, total deaths, new cases and new deaths country wise.

**Key Features and Insights:**

* **Interactive Filters:** Slicers for Year, Date, and Country allow users to dynamically explore changes in infection and death rates across different timelines and geographies.
* **Time Series Trend:**
  + The line chart visualizes the trajectory of **total reported cases vs. deaths**, enabling health departments to assess how the pandemic evolved month-on-month.
  + A visible increase in total cases but decline in total deaths toward May 2025 may indicate pandemic control due to vaccination or public health measures.
* **Top 10 Countries by Total Cases:**
  + Brazil and Thailand rank among the highest reported case counts currently in 2025, suggesting the need for targeted mitigation strategies and vaccination drives. Overall US had the greatest number of cases across the considered time frame.
* **Map of Case Distribution:**
  + A geospatial heatmap highlights how widespread the infection is across continents, helping global agencies (e.g., WHO, CDC) to allocate resources based on region-specific outbreaks.
* **Summary KPIs:**
  + **Total COVID-19 Cases:** 468.46K
  + **Total Deaths:** 13.04K
  + **Mortality Rate:** 1.07% (a useful benchmark for global pandemic severity)

**Use Cases:**

* **Global Health Organizations:** To track and compare country-level responses.
* **Journalists & Policy Analysts:** For real-time visual storytelling and public updates.
* **Research & Academia:** To model disease spread and evaluate mortality trends.

1. **Community Risk & Health Disparities Map – US** (Page 2)

**Purpose:**  
This dashboard visualizes regional disparities in US in COVID-19 impact and healthcare infrastructure. Based on dummy data, but scalable to real-time applications with real-world health metrics. It addresses question like how can health authorities or insurers proactively identify vulnerable counties at risk of severe COVID-19 outcomes, considering both healthcare infrastructure and population risk?

**Key Features and Insights:**

* **Community Risk Map:**
  + U.S. counties are classified into **four risk levels** (Low, Medium, High, Very High) based on a composite index of COVID deaths per 1000, bed availability, and health vulnerabilities.
  + The map highlights high-risk clusters in Southern and Eastern U.S., directing attention to underserved or overburdened regions.
* **Scatter Plot (% at risk vs. Beds/1000):**
  + A negative correlation is visible—counties with **fewer beds per 1000** tend to have a **higher proportion of at-risk population**, underlining potential healthcare pressure points.
* **Health Factor Distribution vs. Risk:**
  + Counties in the “**Poor**” and “**Better**” quartiles (based on CDC-defined health factors) show higher proportions of high-risk classifications.
  + This insight helps in targeting health campaigns and mobile hospital deployment in structurally weaker regions.
* **KPI Cards (Right Panel):**
  + **1170 counties**, **251M total population**, **1M confirmed cases**, and **71K total deaths** captured.
  + **COVID Fatality Ratio:** 6.25%, signalling areas with insufficient early diagnosis or poor health infrastructure.
  + **Bed-to-Population Ratio:** Only 2.32—highlighting insufficient medical infrastructure in many counties.
  + **Counties with sufficient beds:** Just **425**, reinforcing the urgent need for mobile clinics or emergency funding.

**Use Cases:**

* This dashboard enables public health planners to quickly locate underserved or high-risk regions. We used key health indicators (like hospital bed availability, population risk, and mortality) to classify and map risk at a granular level. While this is built on dummy data, we can scale this to real EHR or claims data and even integrate real-time feeds.
* **U.S. Federal/State Health Departments:** For targeted deployment of vaccines, beds, and ventilators.
* **Emergency Planners & NGOs:** To focus disaster relief on “very high risk” counties.
* **Public Health Researchers:** To investigate correlations between underlying health conditions and COVID risk.
* **Hospitals/Clinics:** To plan for surge capacity in regions flagged red.

**Tools & Techniques Used**

* **Power BI:** For interactive dashboarding, slicers, geospatial visualizations.
* **Custom Visuals:** Scatter plots, KPI cards, choropleth maps.
* **Power Query:** For transforming and cleaning multi-source data.
* **DAX Measures:**
  + Calculated Mortality Rates, Bed/Population Ratios
  + Quartile classifications
  + Dynamic KPIs based on slicer selection

**Conclusion & Relevance**

While this dataset uses COVID-19 data as a proxy, the framework applies to any public health emergency — be it a future pandemic, climate-induced disease spread, or localized outbreaks like dengue, flu, or monkeypox. Its layered design helps both macro (global) and micro (county-level U.S.) decision-making by combining epidemiological data with infrastructure gaps and risk profiling. This is designed for decision-makers — to know *where* to send resources, *what* communities to prioritize, and *how* to interpret health inequity in spatial terms.

This solution can be extended to:

* Other diseases or pandemic scenarios
* Planning vaccination campaigns or emergency relief
* Academic or institutional research on social determinants of health