

Technical Documentation: Power BI Capstone Project

➤ Project Scope

A performance dashboard analyzing U.S. hospitals on various healthcare quality metrics - including Mortality, Safety, Readmissions, Patient Experience (Pt Exp) and Timely and Effective Care (TE). Includes dynamic simulations using What-If parameters.

1. Entity Relationship Diagram (ERD)

Use Model View in Power BI to generate the ERD. It should include:

Dim_State (StatePK, Hospital State)

Dim_Hospital Type (TypePK, HospitalType)

Dim_Ownership Type (Ownership TypePK, Hospital Ownership Type)

Dim_County/Parish (County/ParishPK, Hospital County/Parish)

All relationships are 1 → (one-to-many)* from dimension to fact via the natural text keys.

2. DAX Formulas Used

A. Key Measures

Hospital Count = COUNTROWS('Hospital_General_Information')

High Performing Hospitals =
CALCULATE([Hospital Count],
 'Hospital_General_Information'[Overall Rating] >= [Rating Threshold Value])

Birth-Friendly % =
DIVIDE(
 COUNTROWS(FILTER('Hospital_General_Information',
 'Hospital_General_Information'[Birth-Friendly] = "Yes")),
 [Hospital Count]
)

B. What-If based Measures

Adjusted Mortality Worse =
SUM('Hospital_General_Information'[Count of Mort Measures Worse]) * (1 - [Measure Improvement Value])

Adjusted Mortality No Different =
SUM('Hospital_General_Information'[Count of Mort Measures No Different]) +
(SUM('Hospital_General_Information'[Count of Mort Measures Worse]) * [Measure Improvement Value])

3. Power Query Transformations

- Removed unnecessary columns (e.g. Phone and Footnote)
- Replaced invalid entries ("Not Available", "-"), with null
- Changed data types for numeric columns
- Added custom columns for:
 - * Grouping ownership (Government, Private, Non-profit)
 - * Domain-level flags or counts if needed
- Filtered out irrelevant or incomplete records
- Renamed columns for consistency with DAX

4. How to add New Performance Domains

To extend the dashboard with a new domain (e.g., Infection Control):

- Add Columns in Data Source: Include `Count of Infection Measures`, `Better / Worse / No Different`
- Update Power BI Model: Import new data via Power Query, ensure correct types
- Create DAX Measures: Adjusted Infection Better, Worse, No Different, and corresponding % versions
- Update Visuals: Add to bar chart and UNION() logic if needed
- Update Drill-Through Page: Add domain breakdown for detailed views

Tools and Features Used

- Power BI Desktop
- Slicers & What-If Parameters
- Table, Matrix, KPI, and Bar Chart visuals
- Drill-through navigation
- Choropleth map for geographic view
- Performance Simulation using dynamic DAX

For questions or walkthroughs, please contact the project team.

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