🥗 Indian Food Nutrition Analysis Dashboard
Project Documentation

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1. Project Overview
The objective of this project is to analyze the nutritional composition of popular Indian dishes and convert raw nutritional data into **actionable health insights**.
This dashboard helps:

- Identify **high-protein, high-carbohydrate, and high-fat dishes**
- Evaluate **sugar and sodium risk levels**
- Compare dishes using a **standardized Health Score**
- Support **health-aware food decisions** using data

All values are calculated **per 100g** to ensure fair and standardized comparison across dishes.

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2. Dataset Description
The dataset Indian_Food_Nutrition contains nutritional values per 100g of each dish.
Available Columns

Column Name	Description
Dish Name	Name of the Indian dish
Calories (kcal)	Total energy per 100g
Carbohydrates (g)	Carbs per 100g
Protein (g)	Protein per 100g
Fats (g)	Fat per 100g
Free Sugar (g)	Free sugar per 100g
Fibre (g)	Dietary fiber per 100g
Sodium (mg)	Sodium per 100g
Calcium (mg)	Calcium per 100g
Iron (mg)	Iron per 100g

⚠️ Note: The dataset is already clean, normalized, and standardized per 100g.
No unit conversions were required.

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3. Why Per 100g Standardization?
Using per-100g values ensures:

- Fair comparison between dishes
- No bias from serving size
- Industry-standard nutritional analysis

This approach is commonly used by:

- Food labels
- WHO & FSSAI guidelines
- Nutrition research studies

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4. Derived Calculations & Logic
4.1 Macro-Based Calorie Calculation (4-4-9 Rule)

Nutrition science defines calorie contribution as:

Macronutrient	Calories per gram
Carbohydrates	4 kcal
Protein	4 kcal
Fat	9 kcal

DAX Calculations

Calories from Carbohydrates

```
Carb Calories = 'Indian_Food_Nutrition'[Carbohydrates (g)] * 4
```

Calories from Protein

```
Protein Calories = 'Indian_Food_Nutrition'[Protein (g)] * 4
```

Calories from Fat

```
Fat Calories = 'Indian_Food_Nutrition'[Fats (g)] * 9
```

📌 Purpose:

- Understand which macronutrient contributes most to total energy
- Identify calorie-dense foods

4.2 Macro Percentage of Total Calories

This shows **energy distribution**, not raw quantity.

Example: % of Calories from Protein

```
Protein Calorie % =
DIVIDE(
    [Protein Calories],
    'Indian_Food_Nutrition'[Calories (kcal)]
)
```

(Similarly calculated for Carbs & Fat)

📌 Why this matters:

- Two dishes may have equal calories but **very different nutrition profiles**
- Helps classify food as protein-heavy, carb-heavy, or fat-heavy

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5. Nutritional Category Logic

5.1 Sodium Risk Category

Sodium is critical for identifying **health risk**.

DAX Example

```
Sodium Risk Category =
SWITCH(
    TRUE(),
    'Indian_Food_Nutrition'[Sodium (mg)] < 120, "Low",
    'Indian_Food_Nutrition'[Sodium (mg)] < 400, "Moderate",
    "High"
)
```

📌 Interpretation:

- Low → Heart-friendly
- Moderate → Acceptable

- High → Needs caution

5.2 Sugar Level Category

Free sugar directly impacts obesity and diabetes risk.

Sugar Level Category =
IF(
'Indian_Food_Nutrition'[Free Sugar (g)] <= 5,
"Low Sugar",
"High Sugar"
)

📌 Purpose:

- Quickly flag unhealthy dishes
- Enable filtering in visuals

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6. Health Score (0–100)

6.1 Why a Health Score?

There is no single metric that defines "healthy food".
So we create a **composite score** combining:

- Protein & Fiber (positive factors)
- Sugar, Sodium & Fat (negative factors)
- Energy balance

```
Health Score =
VAR ProteinScore =
    SUM ( Indian_Food_Nutrition[Protein (g)] ) * 2

VAR FibreScore =
    SUM ( Indian_Food_Nutrition[Fibre (g)] ) * 3

VAR VitaminCScore =
    SUM ( Indian_Food_Nutrition[Vitamin C (mg)] )

VAR SugarPenalty =
    SUM ( Indian_Food_Nutrition[Free Sugar (g per Serving)] ) * 3

VAR SodiumPenalty =
    SUM ( Indian_Food_Nutrition[Sodium (mg)] ) / 100

RETURN
    ProteinScore
    + FibreScore
    + VitaminCScore
    - SugarPenalty
    - SodiumPenalty
```

6.2 Health Score Logic (Conceptual)

Higher score = nutritionally balanced dish

Health Score =

```
VAR Score =
    ( [Protein (g)] * 2 +
      [Fibre (g)] * 2 )
    -
    ( [Free Sugar (g)] +
      [Fats (g)] +
      [Sodium (mg)] / 100 )
RETURN
MIN(100, MAX(0, Score))
```

📌 Key points:

- Score is **relative**, not medical advice
- Used for comparison, ranking, and visualization
- Normalized between 0–100

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7. High-Protein / High-Carb Dish Identification

Method Used:

- Sorting by Protein or Carbohydrates
- Top N filters
- Dynamic slicer selection

📌 Why this works:

- Values are per 100g
- No serving size distortion
- Clean comparison logic

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8. Visual Design Decisions

Scatter Plot

X-Axis: Energy (kcal)

Y-Axis: Health Score (0–100)

Legend: Sodium Risk Category

📌 Insight Generated:

Calorie-dense dishes are not always unhealthy, and sodium risk plays a key role in overall health evaluation.

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9. Business & Real-World Use Cases

This dashboard can be used by:

- Nutritionists
- Food startups
- Health-conscious consumers
- Policy & compliance teams

Use cases:

- Menu optimization
- Healthy food recommendation
- Regulatory analysis
- Consumer awareness

10. Key Takeaways

- Analytics is not about visuals — it's about **decisions**
- Standardized data enables fair insights
- Derived metrics turn raw numbers into meaning
- Health is multi-dimensional, not single-metric

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11. Limitations & Future Enhancements

- Serving size data not available
- Thresholds can be aligned with WHO/FSSAI
- Micronutrient weighting can be improved
- Predictive health impact modeling can be added

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12. Tools Used

- Power BI
- DAX
- Data modeling & visualization best practices