### **Phase 1: Basic Setup & Relationships (Beginner)**

**Exercise 1: Data Import & Model Setup**

* Import all 6 CSV files into Power BI
* Examine each table structure
* Identify fact vs dimension tables
* Create relationships between fact table and dimensions

**Exercise 2: Basic Relationships**

* Create relationships: Fact\_HealthMetrics to each dimension
* Set up proper cardinality (many-to-one)
* Verify relationship directions
* Hide foreign key columns in fact table

### **Phase 2: Basic Visualizations (Beginner-Intermediate)**

**Exercise 3: Time-Based Analysis**

* Create line charts showing COVID cases over time
* Build monthly/quarterly trend analysis
* Add slicers for year and quarter
* Use date hierarchy (Year > Quarter > Month)

**Exercise 4: Geographic Visualizations**

* Create map visualizations by country/state
* Build bar charts for top 10 affected regions
* Add geographic slicers
* Create tooltips with population data

### **Phase 3: DAX Fundamentals (Intermediate)**

**Exercise 5: Basic Measures**

dax

Total Cases = SUM(Fact\_HealthMetrics[NewCases])

Total Deaths = SUM(Fact\_HealthMetrics[NewDeaths])

Mortality Rate = DIVIDE([Total Deaths], [Total Cases], 0)

**Exercise 6: Time Intelligence**

dax

Cases Previous Month = CALCULATE([Total Cases], PREVIOUSMONTH(Dim\_Date[FullDate]))

Cases Growth = [Total Cases] - [Cases Previous Month]

YTD Cases = TOTALYTD([Total Cases], Dim\_Date[FullDate])

### **Phase 4: Advanced Analytics (Intermediate-Advanced)**

**Exercise 7: Conditional Measures**

dax

High Risk Cases = CALCULATE([Total Cases], Dim\_Demographics[RiskCategory] = "High Risk")

Hospital Utilization = AVERAGE(Fact\_HealthMetrics[HospitalCapacityUsed])

Critical Facilities = CALCULATE(COUNTROWS(Dim\_HealthFacility), Dim\_HealthFacility[QualityRating] >= 4)

**Exercise 8: Complex Calculations**

dax

Moving Average = AVERAGEX(

DATESINPERIOD(Dim\_Date[FullDate], MAX(Dim\_Date[FullDate]), -7, DAY),

[Total Cases]

)

### **Phase 5: Dashboard Creation (Advanced)**

**Exercise 9: Executive Dashboard**

* Create KPI cards for key metrics
* Build drill-through pages
* Add bookmarks for different views
* Implement dynamic titles

**Exercise 10: Interactive Analysis**

* Create parameter tables for what-if analysis
* Add cross-filtering behaviors
* Build custom tooltips
* Implement row-level security