Excel Layoffs Analysis Deliverable Complete Guide

Part 1: Data Import Setup

Step 1: Import SQL Results into Excel

Method A: Import from CSV/Text Files

1. Go to `Data` → `Get Data` → `From Text/CSV`
2. Select your exported files:
    1. `layoffs_by_industry.txt`
    2. `layoffs_rolling_avg.txt`
    3. `layoffs_summary.txt`
3. In Power Query Editor, ensure data types are correct:
    1. Numbers: Change type to `Whole Number` or `Decimal Number`
    2. Dates: Change type to `Date`
4. Click `Close & Load` to import into separate sheets

Method B: Direct Database Connection (Recommended)

1. Go to `Data` → `Get Data` → `From Database` → `From SQLite Database`
2. Browse to your `.db` file
3. Select tables: `layoffs_by_industry`, `layoffs_rolling_avg`, `layoffs_summary`
4. Load each table into separate worksheets

Part 2: Sheet Organization

Recommended Worksheet Structure:

- **Sheet 1**: `RAW_Industry_Data` (layoffs_by_industry)
- **Sheet 2**: `RAW_Rolling_Avg` (layoffs_rolling_avg)
- **Sheet 3**: `RAW_Summary` (layoffs_summary)
- **Sheet 4**: `Sector_Mapping` (lookup table)
- **Sheet 5**: `Analysis_Dashboard`
- **Sheet 6**: `Pivot_Industry_Country`
- **Sheet 7**: `Pivot_Monthly_Trend`

Part 3: Sector Mapping Table

Create Sector Mapping (Sheet: `Sector_Mapping`)

Industry	Sector	Risk_Level
Retail	Commerce	High
Consumer	Commerce	High
Food	Commerce	Medium
Transportation	Logistics	High
Logistics	Logistics	Medium
Finance	Financial Services	High
Crypto	Financial Services	High
Real Estate	Financial Services	Medium
Hardware	Technology	Medium
AI	Technology	Low
Data	Technology	Medium
Healthcare	Healthcare	Medium
Education	Education	Medium
Marketing	Professional Services	Medium
Sales	Professional Services	Medium
HR	Professional Services	Medium
Manufacturing	Industrial	Medium
Construction	Industrial	Medium
Energy	Industrial	Low
Travel	Hospitality	High
Fitness	Hospitality	Medium
Media	Media & Entertainment	Medium
Security	Technology	Low
Legal	Professional Services	Low

Part 4: Key Formulas and Calculations

Sheet: `Analysis_Dashboard`

A. XLOOKUP/VLOOKUP for Sector Matching

Cell D2 (assuming Industry name is in C2):

```
=XLOOKUP(C2, Sector_Mapping!A:A, Sector_Mapping!B:B, "Unknown")
```

Alternative using VLOOKUP (for older Excel versions):

```
=IFERROR(VLOOKUP(C2, Sector_Mapping!A:C, 2, FALSE), "Unknown")
```

B. High Layoff Flagging

Calculate Average Layoffs (Cell: `Analysis_Dashboard!$B$1`):

```
=AVERAGE(RAW_Industry_Data!C:C)
```

Flag High Layoff Industries (Cell E2):

```
=IF(RAW_Industry_Data!C2 > Analysis_Dashboard!$B$1, "HIGH RISK",
   IF(RAW_Industry_Data!C2 > Analysis_Dashboard!$B$1*0.7, "MEDIUM
RISK", "LOW RISK"))
```

Advanced Multi-Criteria Flagging (Cell F2):

```
=IF(AND(RAW_Industry_Data!C2 > $B$1, RAW_Industry_Data!B2 > 100),
"CRITICAL",
   IF(AND(RAW_Industry_Data!C2 > $B$1*0.7, RAW_Industry_Data!B2 > 50),
"WARNING",
   "NORMAL"))
```

C. Rate of Change Calculations

Month-over-Month Change Percentage (Already in rolling_avg, but can recalculate):

```
=IF(ISNUMBER(H2), (G2-H2)/H2*100, "N/A")
```

Where:

- G2 = Current Month Layoffs
- H2 = Previous Month Layoffs

Baseline Comparison (comparing to earliest month):

```
=(G2 - INDEX(RAW_Rolling_Avg!C:C, MATCH(RAW_Rolling_Avg!A2&"*",
RAW_Rolling_Avg!A:A&RAW_Rolling_Avg!B:B, 0)))
 / INDEX(RAW_Rolling_Avg!C:C, MATCH(RAW_Rolling_Avg!A2&"*",
RAW_Rolling_Avg!A:A&RAW_Rolling_Avg!B:B, 0)) * 100
```

Simplified Baseline Comparison (if baseline is in cell $B$10):

```
=(G2 - $B$10) / $B$10 * 100
```

D. Industry Ranking with RANK

Cell G2:

```
=RANK(C2, RAW_Industry_Data!$C$2:$C$32, 0)
```

E. Conditional Formatting Formula

Apply to entire data range (e.g., C2:C32):

```
=C2 > AVERAGE($C$2:$C$32)
```

Format: Red fill for high values

F. Dynamic Summary Statistics

Total Layoffs - Top 5 Industries:

```
=SUMIF(RAW_Industry_Data!$G$2:$G$32, "<=5",
RAW_Industry_Data!$C$2:$C$32)
```

Percentage of Total:

```
=C2/SUM(RAW_Industry_Data!$C$2:$C$32)*100
```

G. Advanced: Growth Rate Classification

Cell H2:

```
=IF(J2="N/A", "No Prior Data",
   IF(J2 > 100, "Exponential Growth",
   IF(J2 > 50, "Rapid Growth",
   IF(J2 > 0, "Growth",
   IF(J2 > -20, "Stable/Slight Decline",
   "Significant Decline")))))
```

Where J2 = MoM_Pct_Change

Part 5: Pivot Table Configurations

Pivot Table 1: Layoffs by Industry and Country

Data Source: `RAW_Summary` sheet

Setup:

1. Insert → PivotTable
2. **Rows**: Industry, Country
3. **Values**:
    - Sum of Total_Layoffs
    - Average of Avg_Layoffs_Per_Event
    - Count of Total_Events

4. **Filters**: Country (for drill-down)

Layout:

```
Rows:              Values:
└── Industry       ├── Sum of Total_Layoffs
    └── Country    ├── Average of Avg_Layoffs
                   └── Count of Events
```

Formatting:

- Apply conditional formatting to Total_Layoffs (Data Bars)
- Sort by Total_Layoffs descending
- Show values as % of Grand Total (optional)

Calculated Field (Total Risk Score):

1. In PivotTable, go to `Analyze` → `Fields, Items & Sets` → `Calculated Field`
2. Name: `Risk_Score`
3. Formula: `=Total_Layoffs * Total_Events / 1000`

Pivot Table 2: Monthly Layoffs Trend

Data Source: `RAW_Rolling_Avg` sheet

Setup:

1. Insert → PivotTable
2. **Rows**: Month_Start
3. **Columns**: Industry (filter to top 5-10 industries)
4. **Values**:
    - Sum of Monthly_Layoffs
    - Average of Rolling_3Month_Avg
5. **Filters**: Industry

Layout:

```
            Industry1  Industry2  Industry3 ...
Month_Start
├── 2024-04   609        1234       567
├── 2024-03   195        890        432
└── ...
```

Chart Recommendation:

- Insert Line Chart from this pivot
- Show Rolling_3Month_Avg as smoothed line
- Show Monthly_Layoffs as columns

Pivot Table 3: Sector-Level Analysis

Data Source: `Analysis_Dashboard` (after adding Sector column)

Setup:

1. **Rows**: Sector
2. **Values**:
    - Sum of Total_Layoffs
    - Count of Industries
    - Average of Avg_Layoffs
3. **Sort**: By Sum of Total_Layoffs descending

Part 6: VBA Scripts for Auto-Refresh

Script 1: Refresh All Queries on Workbook Open

```
Private Sub Workbook_Open()
    ' Auto-refresh all data connections when workbook opens
    Application.ScreenUpdating = False

    On Error Resume Next

    ' Refresh all queries
    ActiveWorkbook.Queries.Refresh

    ' Refresh all pivot tables
    Dim ws As Worksheet
    Dim pt As PivotTable

    For Each ws In ActiveWorkbook.Worksheets
        For Each pt In ws.PivotTables
            pt.RefreshTable
        Next pt
    Next ws

    Application.ScreenUpdating = True

    MsgBox "Data refreshed successfully!", vbInformation
End Sub
```

To implement:

1. Press `ALT + F11` to open VBA Editor
2. Double-click `ThisWorkbook` in Project Explorer
3. Paste the code above
4. Save as `.xlsm` (macro-enabled workbook)

Script 2: Manual Refresh Button

```
Sub RefreshAllData()
    ' Manual refresh triggered by button click
    Application.ScreenUpdating = False
    Application.Calculation = xlCalculationManual

    Dim startTime As Double
    startTime = Timer

    On Error GoTo ErrorHandler

    ' Update status
    Application.StatusBar = "Refreshing data connections..."

    ' Refresh all Power Query connections
    ActiveWorkbook.Connections.Refresh

    Application.StatusBar = "Refreshing pivot tables..."

    ' Refresh all pivot tables
    Dim ws As Worksheet
    Dim pt As PivotTable

    For Each ws In ActiveWorkbook.Worksheets
        For Each pt In ws.PivotTables
            pt.RefreshTable
        Next pt
    Next ws

    ' Recalculate formulas
    Application.StatusBar = "Recalculating formulas..."
    Application.Calculate

    Application.Calculation = xlCalculationAutomatic
    Application.ScreenUpdating = True
    Application.StatusBar = False

    MsgBox "Refresh completed in " & Format(Timer - startTime, "0.00")
& " seconds.", vbInformation

    Exit Sub

ErrorHandler:
    Application.Calculation = xlCalculationAutomatic
    Application.ScreenUpdating = True
    Application.StatusBar = False
    MsgBox "Error refreshing data: " & Err.Description, vbCritical
End Sub
```

Create a Refresh Button:

1. Go to `Developer` → `Insert` → `Button (Form Control)`
2. Draw button on sheet
3. Assign macro: `RefreshAllData`
4. Right-click button → Edit Text: "ᶜ Refresh All Data"

Script 3: Conditional Refresh (Only if Data Changed)

```
Sub SmartRefresh()
```

```
    Dim lastRefresh As Date
    Dim currentTime As Date
    Dim refreshInterval As Integer

    refreshInterval = 60 ' minutes
    currentTime = Now

    ' Store last refresh time in a named range
    On Error Resume Next
    lastRefresh = Range("LastRefreshTime").Value

    If Err.Number <> 0 Or DateDiff("n", lastRefresh, currentTime) >=
refreshInterval Then
        ' Perform refresh
        Call RefreshAllData

        ' Update last refresh time
        If Range("LastRefreshTime") Is Nothing Then
            ThisWorkbook.Names.Add Name:="LastRefreshTime",
RefersTo:=Sheet1.Range("A1")
        End If
        Range("LastRefreshTime").Value = currentTime
    Else
        MsgBox "Data was refreshed " & DateDiff("n", lastRefresh,
currentTime) & " minutes ago. Skipping refresh.", vbInformation
    End If
End Sub
```

Script 4: Export Pivot Tables to PDF

```
Sub ExportDashboardToPDF()
    Dim ws As Worksheet
    Dim pdfPath As String

    ' Set PDF export path
    pdfPath = ThisWorkbook.Path & "\Layoffs_Dashboard_" & Format(Date,
"yyyy-mm-dd") & ".pdf"

    ' Select sheets to export
    Sheets(Array("Analysis_Dashboard", "Pivot_Industry_Country",
"Pivot_Monthly_Trend")).Select

    ' Export to PDF
    ActiveSheet.ExportAsFixedFormat _
        Type:=xlTypePDF, _
        Filename:=pdfPath, _
        Quality:=xlQualityStandard, _
        IncludeDocProperties:=True, _
        IgnorePrintAreas:=False, _
        OpenAfterPublish:=True

    MsgBox "Dashboard exported to: " & pdfPath, vbInformation
End Sub
```

Part 7: Example Dashboard Layout

Sheet: **`Analysis_Dashboard`**

Layout Structure:

```
A                    B             C              D              E
F
================================================================================
===========
LAYOFFS ANALYSIS DASHBOARD - Q2 2024
================================================================================
===========

KPI Summary:
Total Industries:    31            Total Layoffs:  641,956       Avg
per Event: 210.8
Most Affected:       Retail        Total Events:   3,043
Countries:     31

[Refresh Data Button]

================================================================================
===========
TOP 10 INDUSTRIES BY LAYOFFS
================================================================================
===========
Rank  Industry        Total_Layoffs  Events  Sector
Risk_Level  % of Total
1     Retail          70,157         297     Commerce         HIGH
RISK   10.9%
2     Consumer        67,675         207     Commerce         HIGH
RISK   10.5%
3     Other           59,261         223     Uncategorized    HIGH
RISK   9.2%
4     Transportation  58,667         225     Logistics        HIGH
RISK   9.1%
5     Food            45,285         210     Commerce         MEDIUM
7.1%
...

================================================================================
===========
FORMULAS:
- Risk_Level (E2): =IF(C2>$B$5,"HIGH RISK",IF(C2>$B$5*0.7,"MEDIUM
RISK","LOW RISK"))
- % of Total (F2): =C2/SUM($C$2:$C$32)*100
- Sector (D2):
=XLOOKUP(B2,Sector_Mapping!$A:$A,Sector_Mapping!$B:$B,"Unknown")
```

Part 8: Data Validation & Quality Checks

Add Data Validation

Cell B5 (Average threshold input):

```
Data → Data Validation
- Allow: Decimal
- Data: between
- Minimum: 0
- Maximum: 100000
```

Quality Check Formulas

Check for Missing Data:

```
=COUNTBLANK(RAW_Industry_Data!A2:F32)
```

Check Date Consistency:

```
=IF(COUNTIF(RAW_Rolling_Avg!B:B,"<"&DATE(2020,1,1))>0,"ERROR: Invalid Dates","OK")
```

Part 9: Recommended Charts

Chart 1: Industry Layoffs Bar Chart

- Type: Horizontal Bar Chart
- Data: Top 10 Industries, Total_Layoffs
- Color: Conditional (Red for HIGH RISK)

Chart 2: Monthly Trend Line Chart

- Type: Combo Chart (Line + Column)
- X-Axis: Month_Start
- Y1-Axis: Monthly_Layoffs (columns)
- Y2-Axis: Rolling_3Month_Avg (line)
- Filter: Top 5 industries

Chart 3: Sector Distribution Pie Chart

- Type: Pie Chart
- Data: Sector totals
- Show percentages

Chart 4: Heatmap (using Conditional Formatting)

- Rows: Industries
- Columns: Months
- Values: Monthly layoffs
- Format: Color scale (white → yellow → red)

Part 10: Tips & Best Practices

1. **Named Ranges**: Create named ranges for frequently used cells (e.g., `AvgLayoffs`)
2. **Table Format**: Convert data ranges to Excel Tables (Ctrl+T) for dynamic formulas
3. **Slicers**: Add slicers to pivot tables for interactive filtering
4. **Protect Sheets**: Protect formula sheets to prevent accidental changes

5. **Documentation**: Add a "ReadMe" sheet explaining each worksheet's purpose
6. **Version Control**: Save dated versions before major changes
7. **Performance**: Avoid volatile functions (INDIRECT, OFFSET) in large datasets

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Appendix: Quick Reference

Common Keyboard Shortcuts

- `Alt + D + P`: Create Pivot Table
- `Ctrl + T`: Convert to Table
- `Alt + F11`: Open VBA Editor
- `Ctrl + Shift + L`: Toggle Filters
- `F9`: Recalculate formulas

Formula Syntax

```
XLOOKUP:  =XLOOKUP(lookup, array, return_array, [if_not_found])
IF:       =IF(test, value_if_true, value_if_false)
AND:      =AND(condition1, condition2, ...)
RANK:     =RANK(number, ref, [order])
SUMIF:    =SUMIF(range, criteria, [sum_range])
```

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