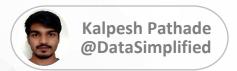


# Data Science Unlocked

From Zero to Data Hero

# Excel for Data Analysis Cheat Sheet



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# 1. Data Cleaning

- Key Tools:
  - Remove Duplicates: Clean duplicate records ( Data → Remove Duplicates ).
  - **Text to Columns**: Split data based on delimiters (e.g., commas, spaces).
  - Find & Replace: Ctrl + H to clean unwanted characters or errors.
  - **TRIM**:=TRIM(cell) removes unnecessary spaces.
  - **CLEAN**: Removes non-printable characters.
  - Error Handling: =IFERROR(value, "alternative") for clean error handling.
  - Advanced Filters: Filter data by criteria ( Data → Advanced Filter ).

# 2. Data Transformation

- Text Functions:
  - Extract Data:
    - LEFT(text, num chars)
    - RIGHT(text, num chars)
    - MID(text, start, num chars)
  - Text Formatting:

- UPPER(text)
- LOWER(text)
- PROPER(text)

#### Date Functions:

- ∘ <sub>=NOW()</sub> \* Current date and time.
- =EDATE(start date, months) \* Add/subtract months.
- =WORKDAY(start date, days) \* Exclude weekends.

### Transform Data with Power Query:

- Connect Data Sources: Import data from external files (CSV, databases, etc.).
- **Combine Queries**: Merge or append datasets.
- **Unpivot Columns**: Reshape data into a columnar structure for analysis.

# 3. Data Analysis Functions

#### • Statistical Functions:

- Central Tendency: =AVERAGE(range), =MEDIAN(range), =MODE(range).
- Variance: =VAR.S (range) (sample), =VAR.P (range) (population).
- Standard Deviation: =STDEV.S(range), =STDEV.P(range).

#### Logical Functions:

- =IF(condition, value if true, value if false)
- =AND(condition1, condition2)
- =OR(condition1, condition2)
- Nested : Combine multiple conditions.

#### Lookup & Reference:

- Vertical/Horizontal Lookup: =VLOOKUP, =HLOOKUP.
- Advanced Lookup: =INDEX + MATCH , =XLOOKUP.

## 4. Data Visualization

### Charts and Graphs:

- Recommended Charts: Insert → Recommended Charts.
- Popular Types:
  - Bar/Column Chart \* Compare data categories.
  - Line Chart \* Trends over time.
  - Scatter Plot \* Relationship analysis.
  - Pie Chart \* Distribution analysis.

### Conditional Formatting:

- Data Bars, Color Scales, and Icon Sets for insights at a glance.
- Example Rule: Highlight sales  $\wedge$  10,000 ( New Rule \* Greater Than).
- **Sparklines:** Add mini-charts in cells ( Insert → Sparklines ).

# 5. Advanced Analysis Tools

#### PivotTables:

- Summarize and analyze large datasets.
- Add Slicers for easy filtering.
- Use Calculated Fields for advanced metrics.

#### What-If Analysis:

- o Goal Seek: Find input values to achieve a specific outcome.
- Scenario Manager: Analyze different scenarios (e.g., Best/Worst Case).
- Data Tables: Test multiple variables simultaneously.

#### Solver:

Optimize results based on constraints (e.g., minimize cost).

#### Power Pivot:

- Create complex data models and relationships between tables.
- DAX formulas for advanced calculations (e.g., SUMX , CALCULATE ).

# 6. Keyboard Shortcuts

Action	Shortcut
Select Entire Column	Ctrl + Space
Select Entire Row	Shift + Space
Create Table	Ctrl + T
AutoSum	Alt + =
Insert New Sheet	Shift + F11
Open Filter Dropdown	Alt + Down Arrow
Freeze Panes	Alt + W + F + F

# 7. Pro Tips for Efficient Analysis

- 1. **Use Named Ranges**: Easier to reference ranges (Formulas \* Define Name).
- Data Validation: Create dropdowns for cleaner data entry ( Data → Data Validation ).
- 3. **Combine Functions**: Use nested formulas like [=IF(AND(A1>10, B1<5), "Yes", "No")].
- 4. **Backup Data**: Always work on a copy to avoid overwriting raw data.
- 5. **Organize Sheets**: Color tabs, add comments, and use a clean layout.

# **Summary: Excel for Data Analysis**

- 1. **Data Cleaning**: Remove duplicates, trim spaces, and handle errors.
- 2. **Data Transformation**: Use text, date, and lookup functions. Power Query is a game-changer.
- 3. **Descriptive Analysis**: Averages, medians, and variance functions are your goto.

- 4. **Visualization**: Master charts, conditional formatting, and sparklines.
- 5. **Advanced Tools**: PivotTables, Solver, and What-If Analysis for deeper insights.
- 6. **Shortcuts**: Memorize common shortcuts to save time.
- 7. **Pro Tools**: Leverage Power Query and Power Pivot for advanced data handling.