Excel

Fundamentals

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Excel

An Introduction to a Tool That Needs No Introduction

- Spreadsheet software from Microsoft
- Designed for technical and business users
- Used for
  - Data Storage
  - Data Preparation
  - Data Analysis
  - Data Visualization

Table Design

Design of Table

The tale of rows and fields

- Data is structured into rows and columns
- *Usually,*
  - **Row** is a record or observation
  - **Column** is an attribute or detail of the record

Sale Key	City Key	Customer Key	Bill To Cus	Stock Iten	Invoice Date K	Delivery Date	Salespersc	WWI Invo	Descriptio	Package	Quantity	Unit Price	Tax Rate	Total Excl	Tax Amou	Profit	Total Inclu	Total Dry I	Total Chill	Lineage Ke
49265	41568	0	0	204	10/22/2013	10/23/2013	83	15189	DBA joke r	Each	6	13	15	78	11.7	51	89.7	6	0	11
49372	48937	0	0	173	10/22/2013	10/23/2013	83	15218	Developer	Each	6	13	15	78	11.7	51	89.7	6	0	11
50379	91464	0	0	174	10/28/2013	10/29/2013	70	15525	Developer	Each	6	13	15	78	11.7	51	89.7	6	0	11
57026	72808	19	1	149	12/5/2013	12/6/2013	86	17555	Ride on to	Each	3	230	15	690	103.5	255	793.5	3	0	11
57027	72808	19	1	43	12/5/2013	12/6/2013	86	17555	Shipping c	Each	100	1.05	15	105	15.75	50	120.75	100	0	11
56817	89450	20	1	82	12/4/2013	12/5/2013	19	17488	Furry anim	Pair	24	5	15	120	18	84	138	24	0	11

Data Preparation

Data Preparation

From Chaos to Clarity

- Real world data can be messy and incomplete
- *Multiple sources, human entry, system exports*
- **Golden rule**: Clean data first, analyze second
- Common problems to check for:
  - Inconsistent formatting and Mixed case text (‘Kathmandu’ vs ‘kathmandu’)
  - Extra spaces and characters
  - Duplicate records

Data Preparation

Basic Functions

Text Functions:

- LEFT(text, [num_chars]) - Extract characters from the left
  - Example: LEFT("KTM-2021-001", 3) → “KTM”

Data Preparation

Basic Functions

Text Functions:

- RIGHT(text, [num_chars]) - Extract characters from the right
  - Example: RIGHT("Mobile: 9841234567", 10) →

    “9841234567”

Data Preparation

Basic Functions

Text Functions:

- LEN(text) - Count characters in text
  - Example: LEN("9875436899") → 10

Data Preparation

Basic Functions

Text Functions:

- TRIM(text) - Remove extra spaces
  - Example: TRIM(" Laptop ") → “Laptop”

Data Preparation

Basic Functions

Date Functions:

- YEAR(serial_number) - Extract year from date
  - Example: YEAR("2021-01-15") → 2021

Data Preparation

Basic Functions

Numerical Functions:

- ABS(number) - Get absolute value
  - Example: ABS(-500) → 500

Data Analysis

Data Analysis

From Numbers to Insights

- Clean data becomes business intelligence
  - ***What we're looking for:*** Patterns, trends, comparisons, outliers
- Key questions to answer:
  - *Which products sell best?*
  - *Who are our top performers?*
  - *How do regions compare?*
  - *What are our revenue trends?*

Data Analysis

Basic Functions

- Core Statistical Functions:
  - SUM(range)
  - AVERAGE(range)
  - COUNT(range)
  - MAX(range)

Data Analysis

Basic Functions

SUM(range) - Add up values in a range

- Example: SUM(E2:E50) → Total revenue across all sales

Data Analysis

Basic Functions

- **AVERAGE(range)** - Calculate mean value
  - Example: AVERAGE(E2:E50) → Average transaction value

Data Analysis

Basic Functions

- **COUNT(range)** - Count cells with numbers
  - Example: COUNT(E2:E50) → Number of sales transactions

Data Analysis

Basic Functions

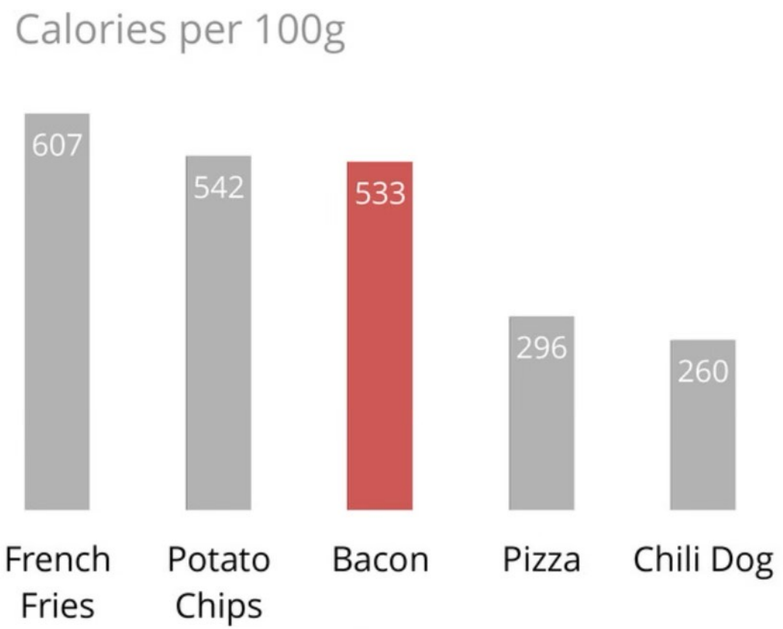
- **MAX(range)** - Find highest value
  - Example: MAX(E2:E50) → Biggest single sale amount

Data Visualization

Data Visualization

From Insights to Impact

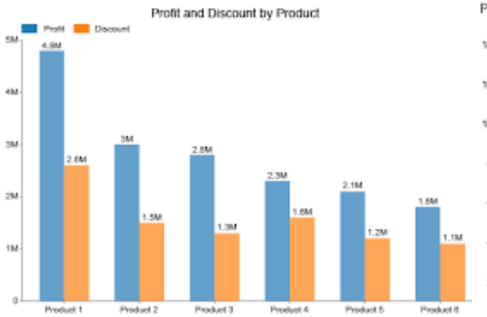
- Transform analysis into compelling stories
- Humans process visuals faster than text and retain them longer
- **Golden rule:** Every chart must tell a clear story
- Some examples could be:
  - *Revenue trends over time (Line charts)*
  - *Product performance comparison (Column charts)*
  - *Regional sales breakdown (Pie charts)*
  - *Top performers ranking (Bar charts)*

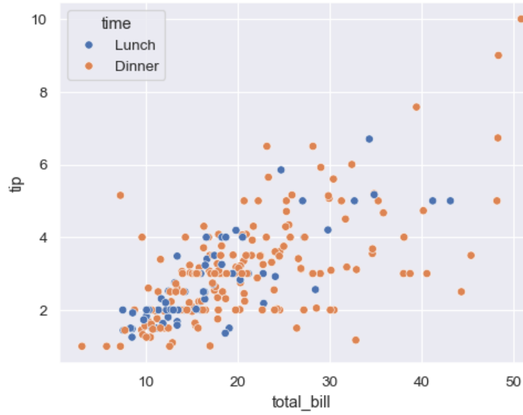


Data Visualization

Basic Charts

- **Column/Bar Charts** - Compare categories
- **Line Charts** - Show trends over time
- **Pie Charts** - Show parts of a whole
- **Scatter Plots** - Show relationships between two variables

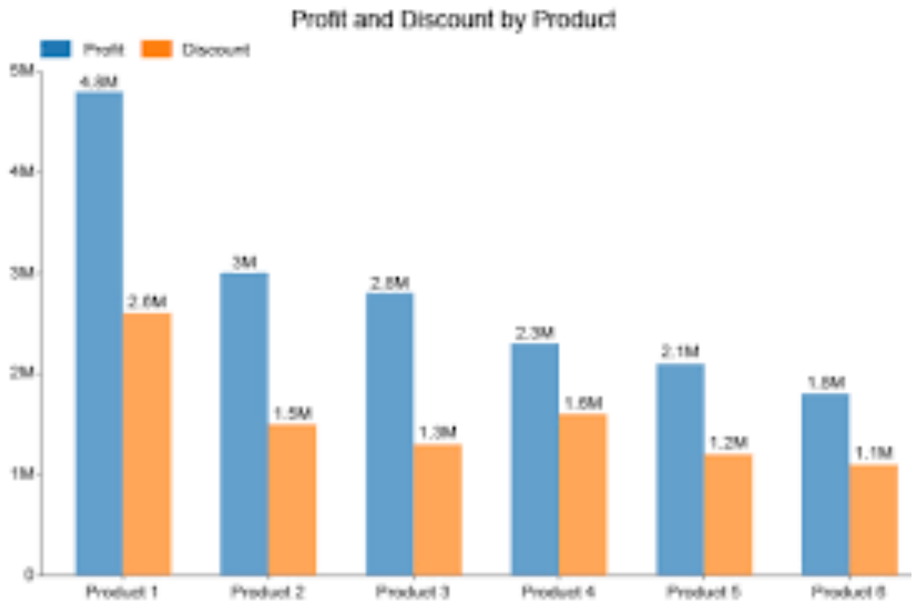




Data Visualization

Basic Charts

- **Column/Bar Charts** - Compare categories
  - Best for: Product sales, salesperson performance, regional comparisons
  - When to use: “Which is bigger/better/more?”



Data Visualization

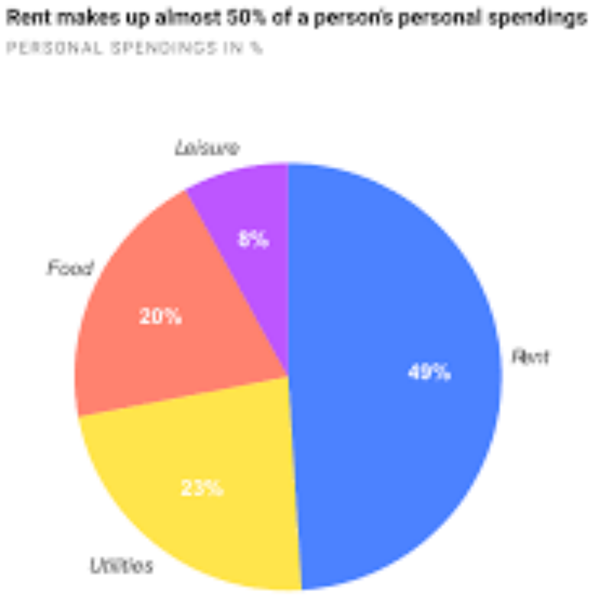
Basic Charts

- **Line Charts** - Show trends over time
  - Best for: Revenue growth, monthly patterns, yearly comparisons
  - When to use: “How has this changed over time?”

Data Visualization

Basic Charts

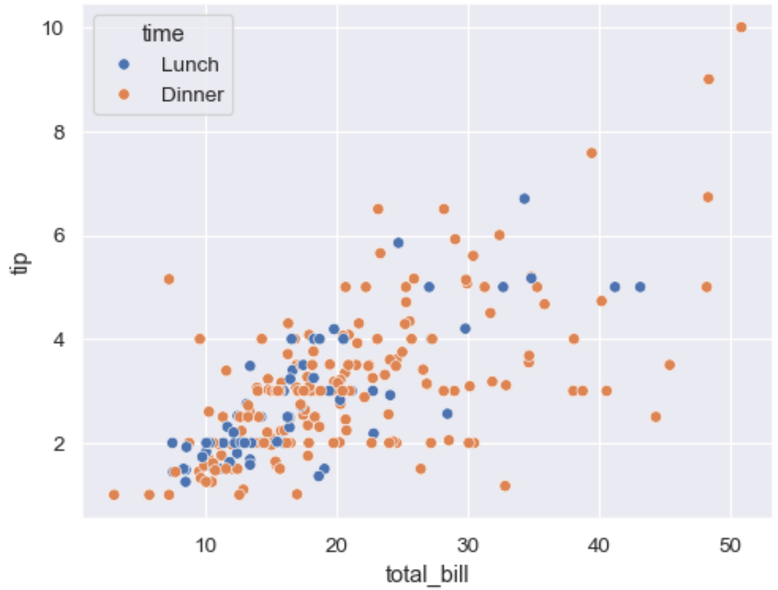
- **Pie Charts** - Show parts of a whole
  - Best for: Market share, customer type breakdown, regional distribution
  - When to use: “What percentage of the total?”



Data Visualization

Basic Charts

- **Scatter Plots** - Show relationships between two variables
  - Best for: Price vs quantity, revenue vs time, performance correlations
  - When to use: “Is there a connection between X and Y?”



Q&A