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# **Data Analysis and Visualization**

**Master of Science in Community  
Health and Prevention Research**

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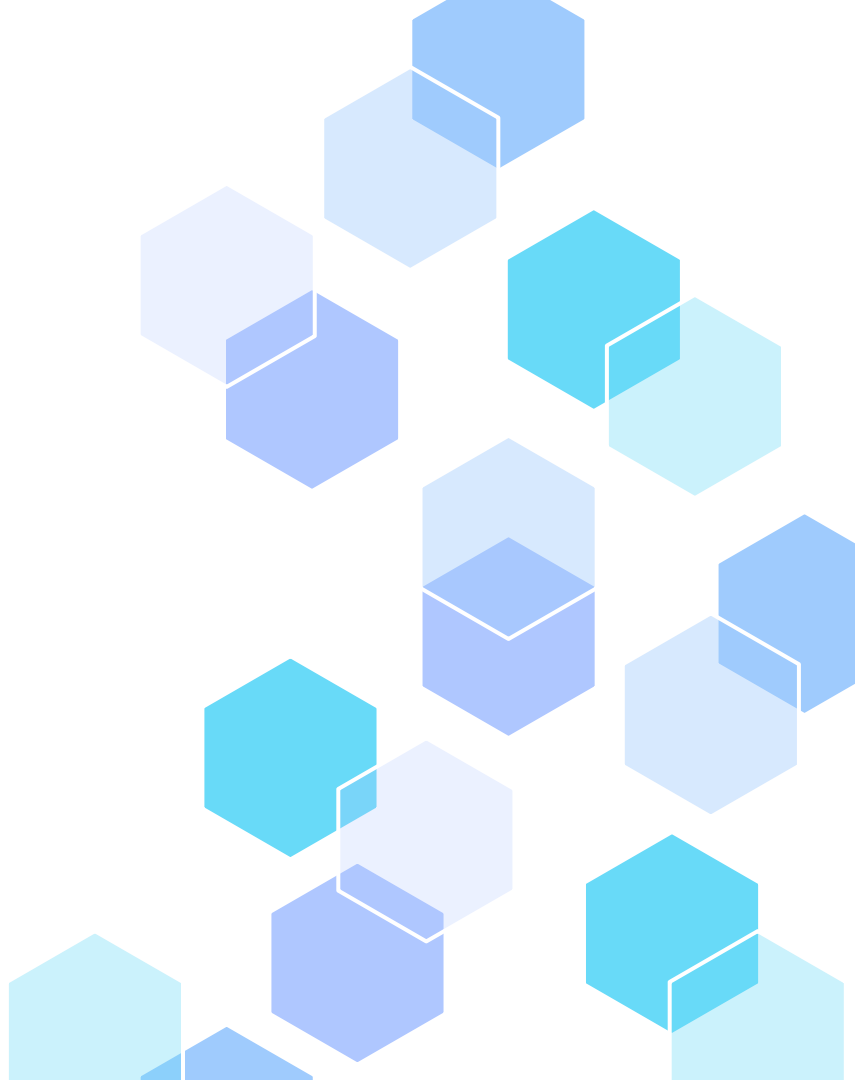


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# 01

# Introduction

What is Data ?



# What is Data

- Data represents raw facts, figures, or observations collected from various sources.
- It can be numeric, text, images, or multimedia, serving as the foundation for analysis and decision-making.



UNSTRUCTURED DATA

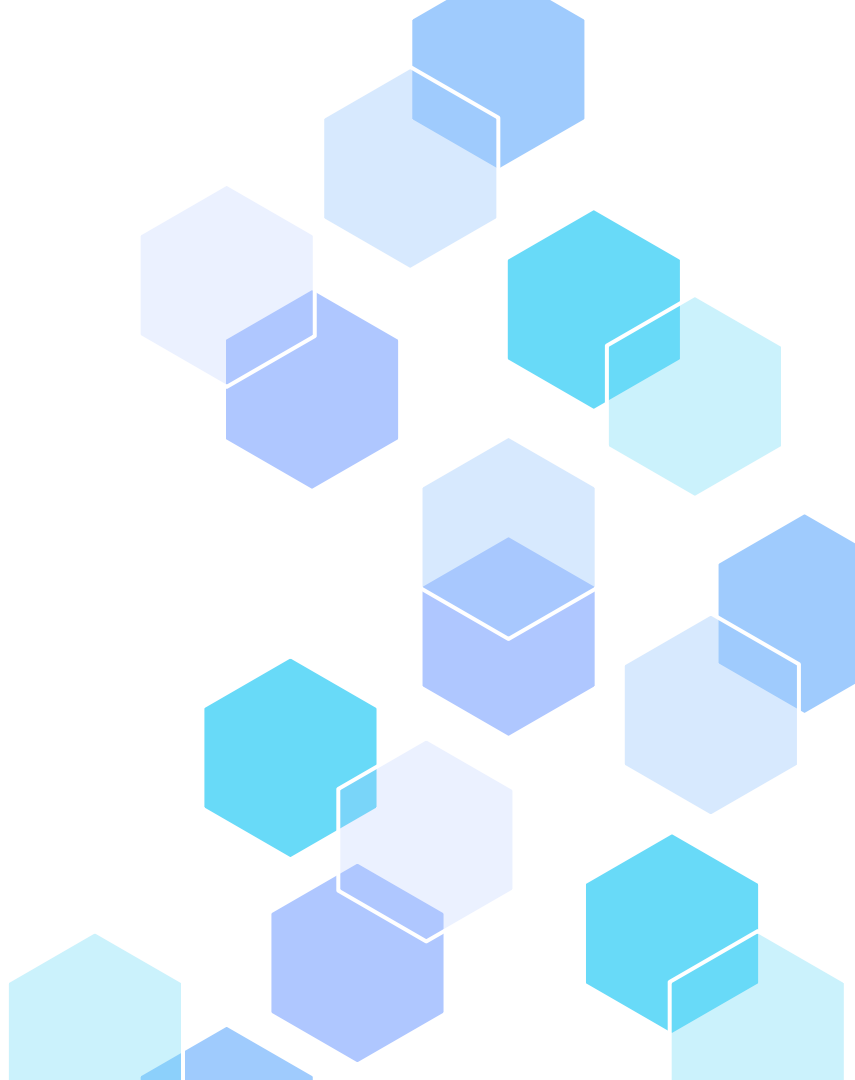


STRUCTURED DATA

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# 02 Data Categories

What is Structured & Unstructured Data ?

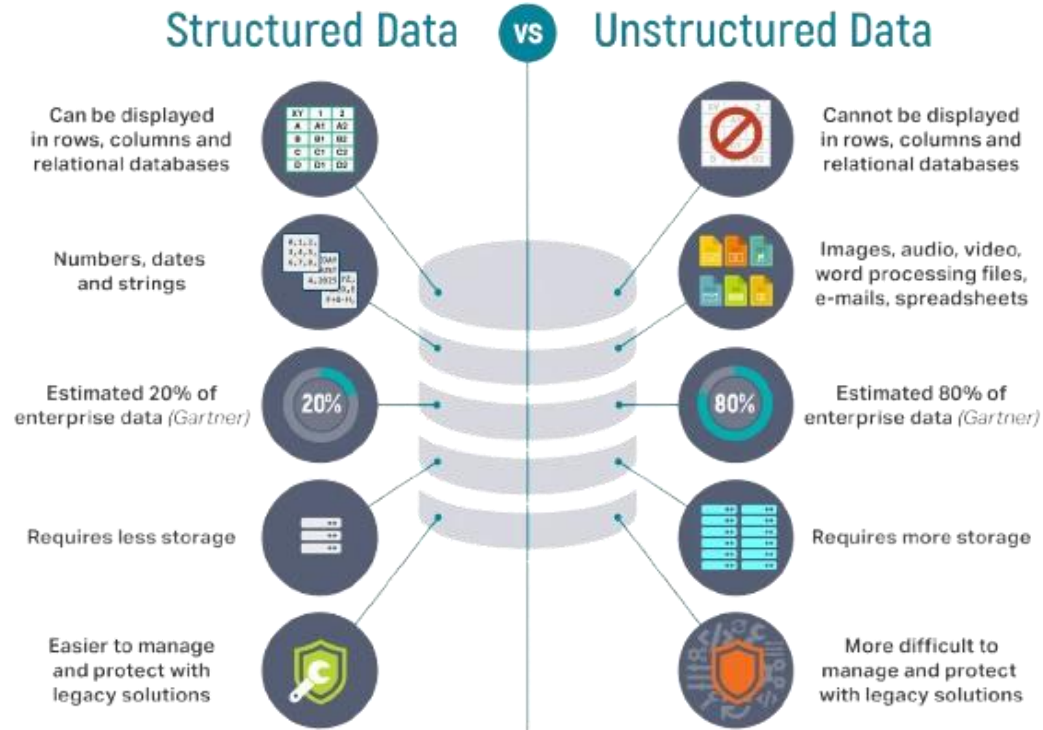


# Data Categories

- **Structured Data:** Organized in rows and columns (e.g., databases, CSV files, spreadsheets) that allow easy querying and analysis.
- **Unstructured Data:** Lacks a pre-defined format (e.g., text documents, images, audio, and video), often requiring advanced processing to extract meaning.



# Structured Data & Unstructured Data

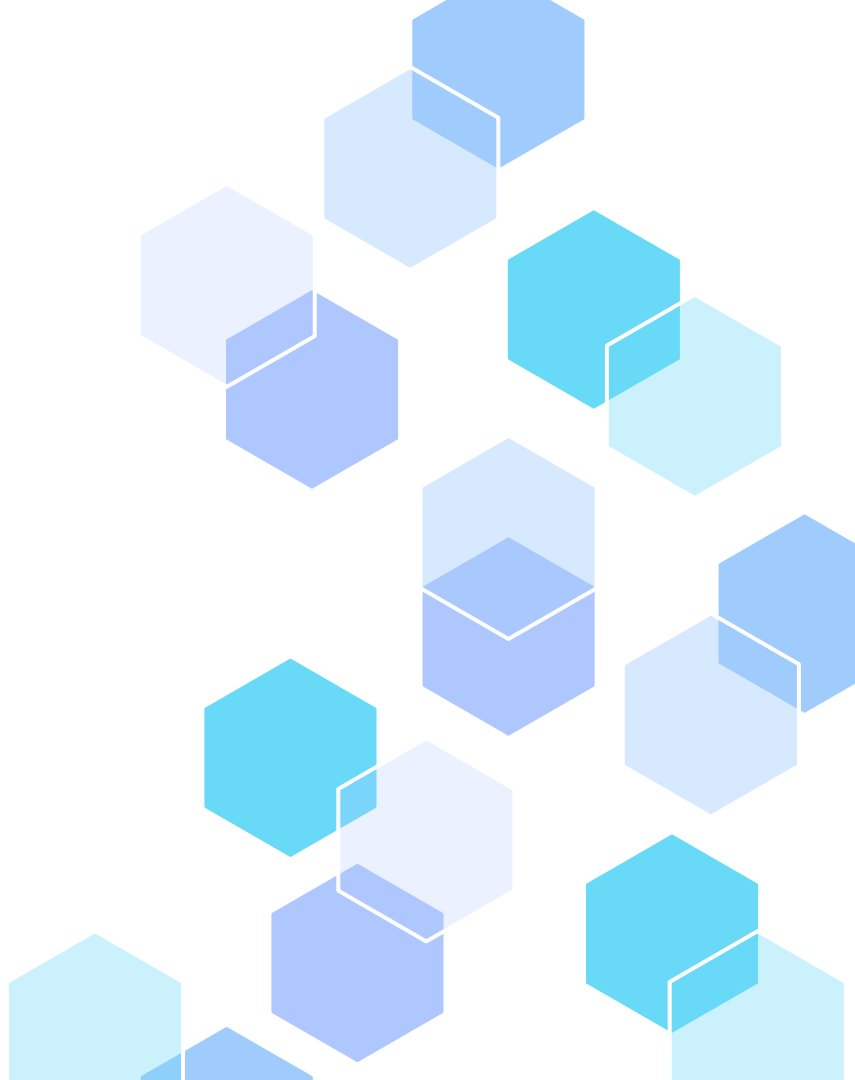


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# 03

# Data Usage

What is Data Usage ?



# Data Usage

- **Applications:** Used for decision-making, predictive analytics, AI model training, customer insights, and market analysis.
- **Impact:** Drives innovation across industries by transforming raw data into actionable insights that support business strategies.



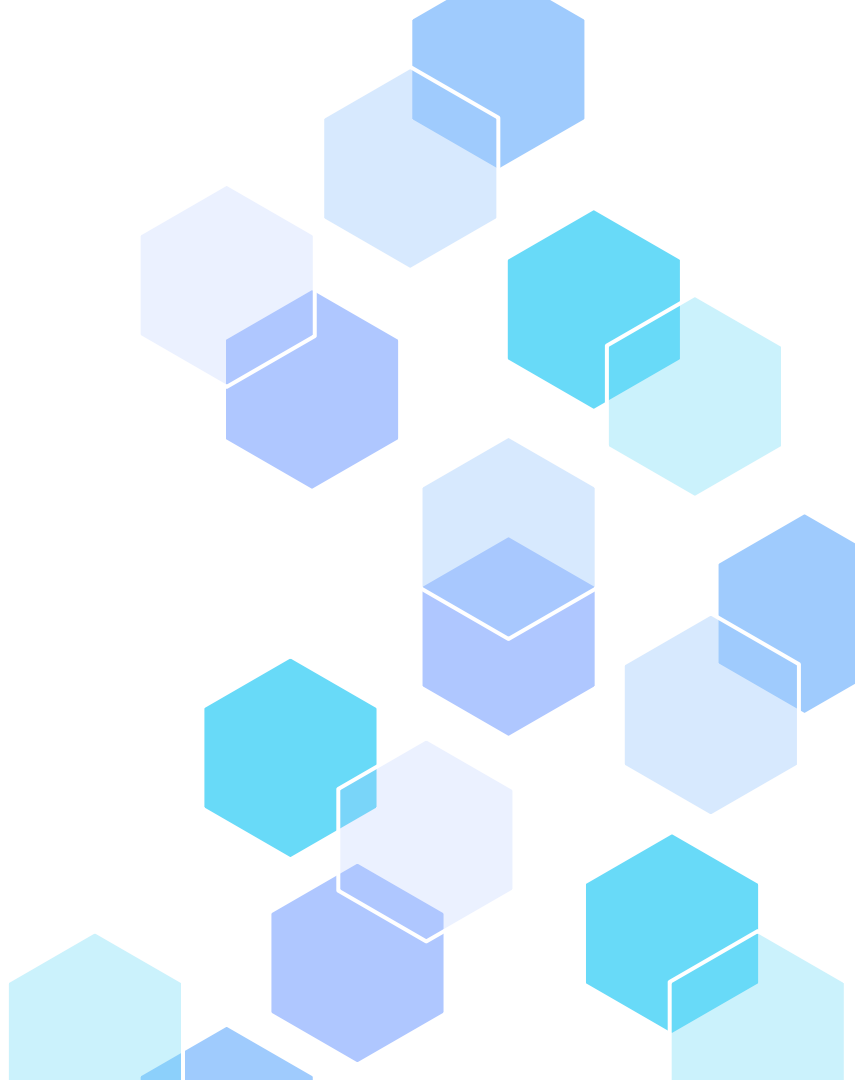


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# 03

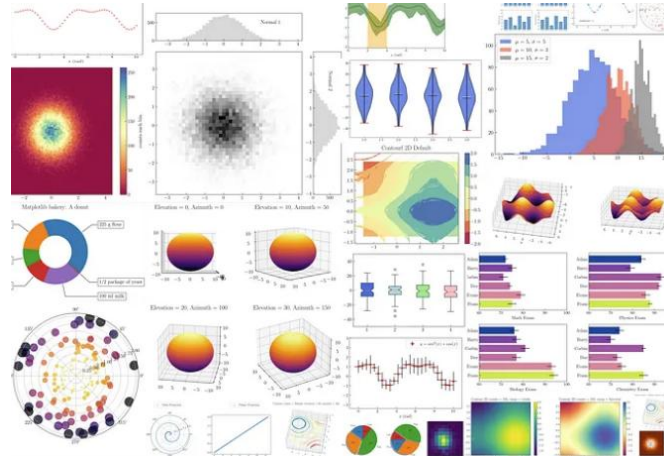
# Data Analysis

What is Data analysis ?



# Data analysis

- **Definition:** The systematic process of inspecting, cleaning, transforming, and modeling data to discover useful information.
- **Purpose:** To support decision-making by identifying patterns, trends, and relationships in the data.



# Data Analysis



**Collection**



**Cleaning**



**Exploratory**



**Statistical**



**Visualization**



**Usage**

# Data Analysis

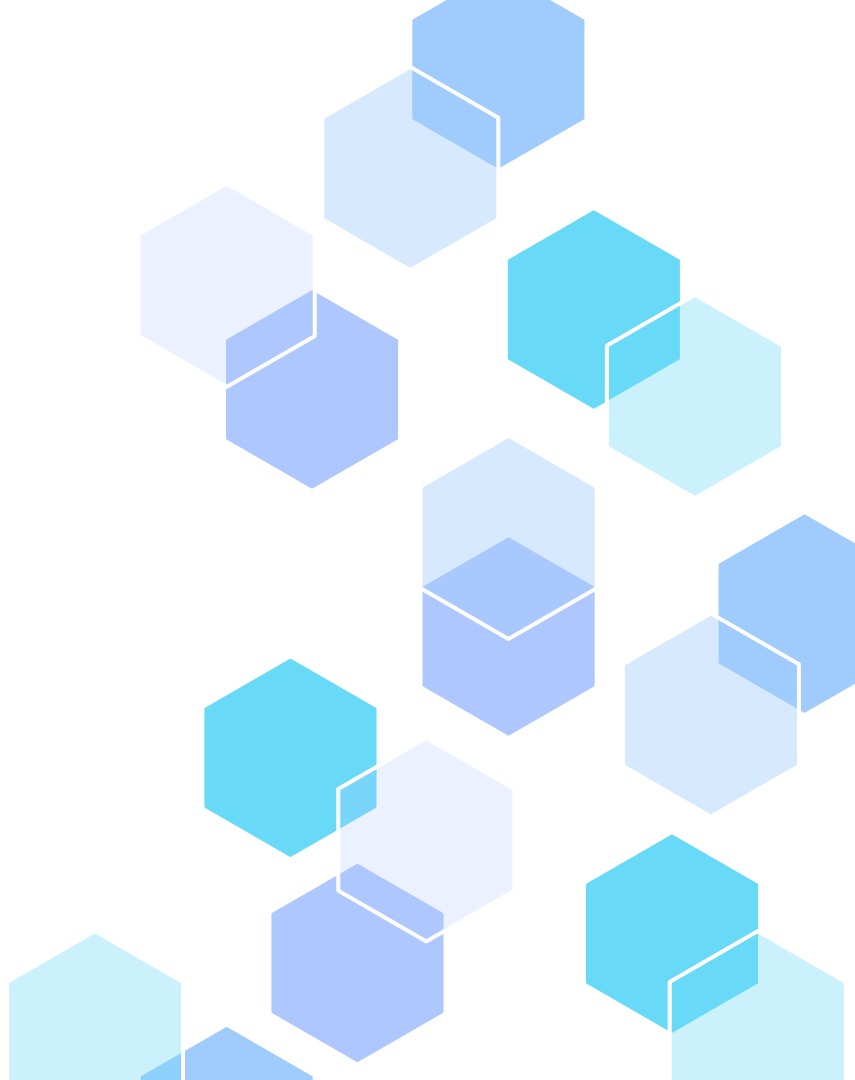


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# 04

# Data Visualization

Why is Data Visualization ?



# Data Analysis

- Definition:** The practice of translating complex data sets into visual formats such as charts, graphs, and dashboards.
- Goal:** To make data more accessible and understandable, facilitating faster and more effective communication of insights.

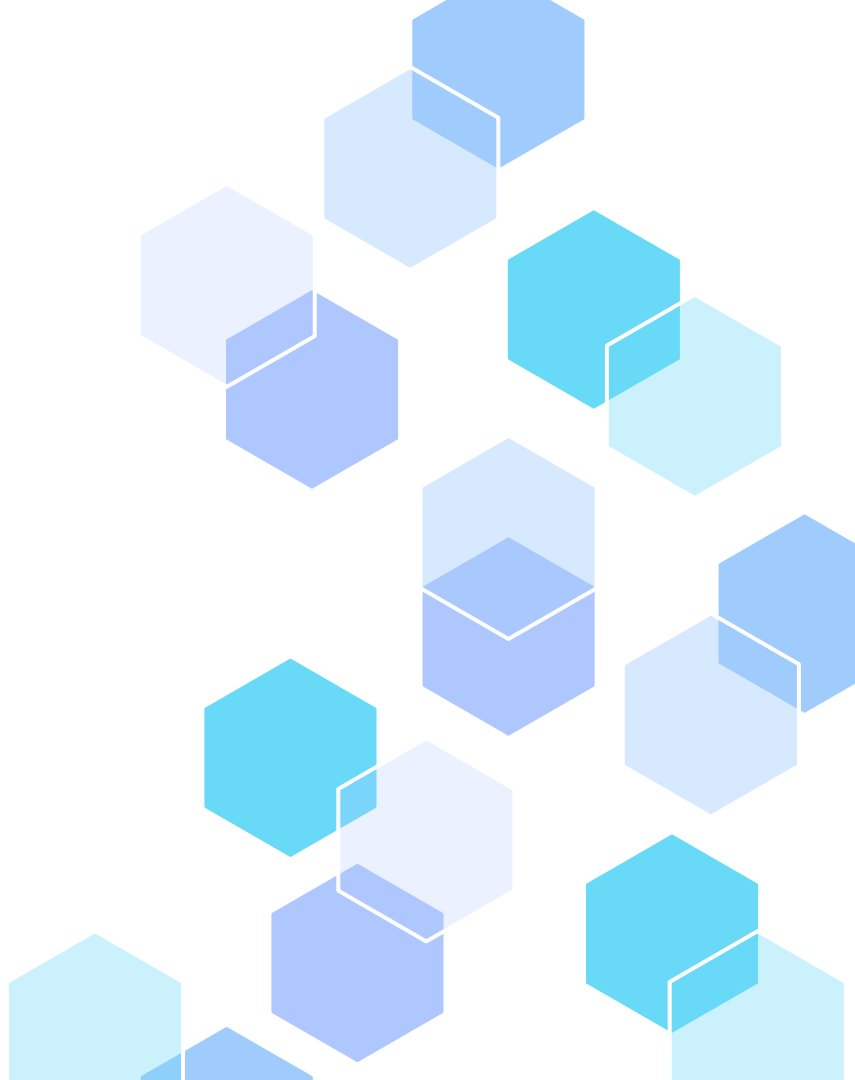


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# 04

# Data Visualization

Why Do We Need Data Visualization?



# Data Visualization

- Purpose:** Simplifies data interpretation, reveals hidden patterns, and helps non-technical stakeholders understand key insights quickly.
- Advantage:** Accelerates decision-making by providing an intuitive visual summary of complex datasets.

