

# The Scientific Method



## PROBLEM STATEMENT:

**Definition:** A description of the commonly known facts with one or more questions.

**Application:** Research the currently known quantitative and qualitative facts; apply best analysis procedures and formulate ideas and conclusions about what is known.

## PURPOSE STATEMENT:

**Definition:** A description of the goals of a scientific investigation.

**Application:** Determine what new specific knowledge could be known through data science.

## RESEARCH QUESTION:

**Definition:** Statements about what facts are known could be known through data collection and analysis.

**Application:** Ask questions about what is known or could be known.

## HYPOTHESIS

**Definition:** Provide null and alternative hypothesis statements for statistical testing.

**Application:** List specific statements that could be tested through statistical analysis.

## RESEARCH DESIGN:

**Definition:** A description of the methods and procedures for collecting and cleaning data.

**Application:** Develop a plan based on similarly designed plans from the past.

## ANALYSIS:

**Definition:** The process of taking empirical data and applying ML through automated and semiautomated means.

**Application:** Use statistical techniques, EDA, or ML algorithms to determine patterns in data

**CONCLUSION:** The process of documenting actionable insights based on the data analysis, provide applications of the insights