1. The Pearson Correlation is a statistical measure that calculates the strength and direction of the linear relationship between two continuous variables.

2. Pearson Correlation Coefficient (r):

   The Pearson Correlation Coefficient (r) ranges from -1 to 1, where:

- 1 indicates a perfect positive linear relationship
- -1 indicates a perfect negative linear relationship
- 0 indicates no linear relationship

3. A p-value (probability value) is a statistical measure that represents the probability of observing a result at least as extreme as the one you obtained, assuming that the null hypothesis is true.

   Null Hypothesis (H0): A statement of no effect or no difference.
   Alternative Hypothesis (H1): A statement of an effect or difference.

- Small p-value (typically ≤ 0.05): Indicates strong evidence against the null hypothesis, suggesting that the observed effect is statistically significant.
- Large p-value (> 0.05): Indicates weak evidence against the null hypothesis, suggesting that the observed effect may be due to chance.

  While p-values provide evidence for or against a hypothesis, they do not provide absolute certainty. Instead, they offer a probability-based assessment of the evidence.

4. Predictor Variable (Independent Variable):

- - Also known as features or independent variables.
- - These variables are used to predict or explain the value of the target variable.
- - Typically plotted on the x-axis.
- - Example: Hours studied.

  Target Variable (Dependent Variable):

- - Also known as outcome or response variables.
- - The variable being predicted or explained.
- - Typically plotted on the y-axis.
- - Example: Exam score.