

Professional Certificate in UK-Based HR Analytics

Statistical Analysis Techniques

Statistical Analysis Techniques in HR Analytics

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In this resource, we will explore key terms and vocabulary related to statistical analysis techniques used in the Professional Certificate in UK-Based HR Analytics. We will discuss descriptive statistics, inferential statistics, hypothesis testing, regression analysis, and correlation analysis.

Descriptive Statistics

Descriptive statistics are used to summarize and describe data in a meaningful way. It provides a clear picture of the data set's central tendency, variability, and distribution.

Measures of Central Tendency

* Mean: The average value of a data set, calculated by summing all data points and dividing by the number of data points. * Median: The middle value in a data set when arranged in ascending or descending order. * Mode: The most frequently occurring value in a data set.

Measures of Variability

* Range: The difference between the highest and lowest values in a data set. * Variance: The average of the squared differences between each data point and the mean. * Standard Deviation: The square root of the variance, representing the average distance of data points from the mean.

Inferential Statistics

Inferential statistics are used to make inferences or predictions about a population based on a sample. It allows us to make generalizations and test hypotheses.

Hypothesis Testing

Hypothesis testing is a statistical method used to evaluate whether a hypothesis about a population is supported by sample data. It involves setting up a null hypothesis and an alternative hypothesis and determining the probability of observing the sample data if the null hypothesis is true.

Types of Hypothesis Tests

* One-sample t-test: Compares the mean of a sample to a known population mean. * Two-sample t-test: Compares the means of two independent samples. * Paired t-test: Compares the means of two related samples. * Analysis of Variance (ANOVA): Compares the means of more than two groups.

Regression Analysis

Regression analysis is a statistical method used to examine the relationship between a dependent variable and one or more independent variables. It allows us to determine the strength and direction of the relationship and make predictions about the dependent variable based on the independent variables.

Simple Linear Regression

Simple linear regression is a type of regression analysis that examines the relationship between a dependent variable and a single independent variable. The equation for simple linear regression is:

$$y = b_0 + b_1x + e$$

Where y is the dependent variable, x is the independent variable, b₀ is the intercept, b₁ is the slope, and e is the error term.

Multiple Linear Regression

Multiple linear regression is a type of regression analysis that examines the relationship between a dependent variable and multiple independent variables. The equation for multiple linear regression is:

$$y = b_0 + b_1x_1 + b_2x_2 + \dots + b_nx_n + e$$

Where y is the dependent variable, x₁, x₂, ..., x_n are the independent variables, b₀ is the intercept, b₁, b₂, ..., b_n are the slopes, and e is the error term.

Correlation Analysis

Correlation analysis is a statistical method used to examine the relationship between two variables. It measures the strength and direction of the relationship between the variables.

Pearson Correlation Coefficient

The Pearson correlation coefficient (r) is a measure of the linear relationship between two variables. It ranges from -1 to 1, where -1 indicates a perfect negative correlation, 0 indicates no correlation, and 1 indicates a perfect positive correlation.

Challenges in Correlation Analysis

* Spurious correlations: Correlations that exist due to chance or a third variable. * Non-linear relationships: Correlation analysis assumes a linear relationship between variables. Non-linear relationships may not be detected. * Outliers: Outliers can significantly impact the correlation coefficient.

Conclusion

Understanding key terms and vocabulary related to statistical analysis techniques is crucial for success in the Professional Certificate in UK-Based HR Analytics. By mastering descriptive statistics, inferential statistics, hypothesis testing, regression analysis, and correlation analysis, learners will be able to analyze and interpret HR data effectively. It is important to remember the challenges and limitations of these techniques and approach data analysis with a critical and curious mindset.