



INTRODUCTION TO BUSINESS ANALYTICS AND STATISTICS

Data Analysis	Data vs Information	Characteristics of a Good Sample	Types of Data 1
<p>The success or failure of every business depends on the decisions made by the people within that business.</p> <p>The quality of decisions depends significantly on the quality of information available to the decision-maker.</p> <p>Information in a business is often the outcome of data collection, analysis, interpretation and reporting.</p>	<ul style="list-style-type: none"> Data is part of the information, but data is NOT information. To be useful, data must be gathered, processed, stored, manipulated, analysed and tested using valid statistical methods. The outcome of data analysis is reported as information or business intelligence that decision-makers can use. 	<p>A sample should be:</p> <ul style="list-style-type: none"> Unbiased Representative <p>The observations in the sample should be:</p> <ul style="list-style-type: none"> Randomly chosen Independent of each other 	<p>QUALITATIVE VS QUANTITATIVE DATA</p> <p>Qualitative/Categorical/Non-Numerical Data</p> <p>Nominal Types of products, customer segments</p> <p>Ordinal Customer satisfaction ratings, employee performance levels</p>
<p>Statistics</p> <p>It is a mathematical science concerned with data:</p> <p>It is the foundation of business analytics</p>	<p>Business Analytics</p> <ul style="list-style-type: none"> Data-driven approach to decision-making Uses quantitative analysis Cost-Benefit Principle: Every proposed exercise in data gathering and analysis should first be assessed to ensure its potential benefits outweigh its potential costs. Business intelligence: an outcome of data analysis. 	<p>Descriptive Statistics Explore what is contained in a data set by drawing graphs, creating tables of data summaries.</p> <p>Inferential Statistics drawing conclusions about the population based on a data sample taken from the population.</p> <p>Data Analytics examines data sets to uncover hidden patterns and trends. For example, this can then be used to discover sales trends, predict customer loyalty, and develop smarter marketing campaigns.</p>	<p>Discrete Number of units sold, number of employees</p> <p>Continuous Sales revenue, temperature, or time taken to complete a task</p>
<p>Data vs Variable</p> <ul style="list-style-type: none"> Data: Raw facts and figures gathered for analysis, forming the foundation for insights and decision-making. Variable: A measurable characteristic that can change, such as age, height, or grade level in a student's study 	<p>Population vs Sample</p> <ul style="list-style-type: none"> Population: The complete set of individuals or instances that meet specific criteria and are the focus of a study. Sample: A smaller, representative subset of the population chosen for analysis, used to draw meaningful conclusions about the whole group 	<p>Census</p> <ul style="list-style-type: none"> A census is a systematic collection of data from every member of a population, providing comprehensive information for complete coverage. It is commonly conducted by governments or organisations to inform policy, planning, and decision-making. 	<p>CROSS-SECTIONAL DATA VS TIME SERIES</p> <p>Cross-Sectional Data Data collected at a fixed point in time across a section. Businesses often conduct surveys to gauge consumer sentiment about a new product. This captures data at a single point in time.</p> <p>Time-Series Data Data collected over time. Businesses collect and track their sales data on a daily, weekly, monthly or quarterly basis, allowing them to see patterns over time.</p>