

UNIT-III -DESCRIPTIVE ANALYTICS

Descriptive Analytics?

Descriptive analytics is the process of identifying trends and correlations in current and historical data. It is frequently referred to as the most basic kind of data analysis since it highlights patterns and associations but does not delve deeper.

Descriptive analytics is inexpensive and presumably used on a regular basis in any firm. Basic statistical software, such as Microsoft Excel, or data visualization tools, such as Google Charts and Tableau, can aid in the parsing of data, the identification of patterns and correlations between variables, and the visual display of information.

As a result, corporations and small enterprises are rethinking their hiring procedures, resulting in significantly decreased employee turnover. Companies might shift newly available resources to activities that benefit the business and improve their service levels. By exploiting their long-term skills, retaining an experienced pool of workers may significantly assist a commercial organization outperform its rivals.

Descriptive analytics is particularly beneficial for describing change over time and for using patterns as a jumping off point for further research to drive decision-making. Descriptive analytics is especially useful for communicating change over time and uses trends as a springboard for further analysis to drive decision making .

Descriptive statistics are short informative coefficients that describe a specific data collection, which might represent the complete population or a subset of a population.

measurements of central tendency and measurements of variability (spread) are two types of descriptive statistics. The mean, median, and mode are examples of measurements of central tendency, whereas standard deviation, variance, minimum and maximum variables, kurtosis, and skewness are examples of measures of variability.

Descriptive Analytics in Business analytics

There are four distinct kinds of business analytics: diagnostic, descriptive, predictive, and prescriptive analytics. Each one asks a different question:

- Descriptive analytics. What happened?
- Diagnostic analytics. Why did this happen?
- Predictive analytics. Based on past data, what could happen?
- Prescriptive analytics. Taking the other three analytics together as an aggregate, what can we do about it?

EXAMPLES OF DESCRIPTIVE ANALYTICS

1. Traffic and Engagement Reports

Reporting is an example of descriptive analytics. An organization may be utilizing descriptive analytics if the company measures interaction through social media analytics or online traffic. These reports are developed by comparing current metrics to previous metrics and

visualizing trends utilizing raw data generated when consumers engage with your website, adverts, or social media content.

For example, data analyst may be in charge of reporting on which media outlets send the most traffic to the company's website's product page. Data Analyst may use descriptive analytics to identify the amount of users from each source by analyzing the page's traffic statistics. He may go a step further and compare traffic source data against historical data from the same sources. This allows him to keep your staff up to speed on developments, such as emphasizing that traffic from sponsored adverts climbed 20 percent year over year.

The three other analytics types can then be used to determine why traffic from each source increased or decreased over time, if trends are predicted to continue, and what your team's best course of action is moving forward.

2. Financial Statement Analysis

Financial statement analysis is another kind of descriptive analytics that you may be familiar with. Financial statements are quarterly reports that contain financial information about a firm and, when combined, provide a comprehensive picture of the company's financial health. The balance sheet, income statement, cash flow statement, and statement of shareholders' equity are all examples of financial statements. Each caters to a certain audience and offers various financial facts about a firm.

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There are three major approaches to financial statement analysis: vertical, horizontal, and ratio. Reading a statement from top to bottom and comparing each component to those

above and below it is what vertical analysis entails. This aids in determining the links between variables. For example, if each line item represents a percentage of the total, comparing them might reveal which are greater and smaller percentages of the whole.

Reading a statement from left to right and comparing each item to itself from a prior era is what horizontal analysis entails. This form of study looks at how things evolve throughout time. Finally, ratio analysis compares one portion of a report to another depending on how they relate to the entire. This analyzes things over time as well as your company's ratios to the industry's to determine if yours is outperforming or underperforming. Each of these approaches of financial statement analysis is an example of descriptive analytics since it provides information about trends and correlations between variables based on current and historical data.

3. Demand Trends

Descriptive analytics may also be used to uncover trends in client preferences and behavior, as well as establish assumptions about demand for certain items or services. Netflix's trend detection service is an outstanding use case for descriptive analytics. Netflix's crew, which is known for being data-driven, collects information on users' in-platform activities. This data is analyzed to identify which TV shows and movies are trending at any given time, and trending titles are included in a part of the platform's home screen.

This data not only helps Netflix customers to see what's popular—and hence what they might like watching—but it also allows the Netflix team to know which sorts of media, topics, and performers are particularly popular at a given moment. This might influence future decisions about original content development, contracts with current production businesses, marketing, and retargeting initiatives.

Not only does this data allow Netflix users to see what's popular—and thus, what they might enjoy watching—but it allows the Netflix team to know which types of media, themes,

and actors are especially favored at a certain time. This can drive decision-making about future original content creation, contracts with existing production companies, marketing, and retargeting campaigns.

4. Aggregated Survey Results

Descriptive analytics may also be used for market research. When gaining insights from survey and focus group data, descriptive analytics may assist in identifying links between variables and patterns. For example, you may run a poll and discover that as respondents' ages grow, so does their probability to buy your goods. Whether you've taken this poll numerous times over the years, descriptive analytics can tell you if this age-purchase association has always existed or whether it's something that happened this year. These kinds of discoveries can pave the way for diagnostic analytics to explain why particular elements are associated. Based on those tendencies, you may use predictive and prescriptive analytics to design future product upgrades or marketing initiatives.

5. Progress to Goals

Finally, descriptive analytics may be used to track progress toward targets. Reporting on progress toward key performance indicators (KPIs) can assist your team determine if initiatives are on track or if changes are needed. For example, if your organization wants to attain 500,000 monthly unique page views, you may utilize traffic statistics to show how you're doing. Perhaps halfway through the month, you've reached 200,000 unique page visits. This would be underperformance because you'd prefer to be halfway to your objective at that point—at 250,000 unique page views. This descriptive study of your team's success might enable for additional investigation into what can be done differently to boost traffic statistics and get back on track to meet your KPI.

Types of Descriptive Statistics

All descriptive statistics are either measures of central tendency or measures of variability, also known as measures of dispersion.

Central Tendency

Measures of central tendency focus on the average or middle values of data sets, whereas measures of variability focus on the dispersion of data. These two measures use graphs, tables and general discussions to help people understand the meaning of the analyzed data.

Measures of central tendency describe the center position of a distribution for a data set. A person analyzes the frequency of each data point in the distribution and describes it using the mean, median, or mode, which measures the most common patterns of the analyzed data set.

Measures of Variability

Measures of variability (or spread) serve in determining how widespread a collection of data's distribution is. While measurements of central tendency may provide a person with the average of a data collection, they do not reflect how the data is distributed within the set.

So, while the average of the data may be 55 out of 100, there may be data points ranging from 1 to 100. Variability measures aid in communicating this by characterizing the shape and distribution of the data set. Measures of variability include range, quartiles, absolute deviation, and variance.

Consider the numbers 6, 20, 25, 63, 92, and 100. The computed range of the data set is 94 calculated by subtracting lowest number 6 from 100.

Distribution

The number of times a data point occurs is referred to as its distribution (or frequency distribution). Alternatively, it is the failure to measure a data point. Consider the following data set: male, male, female, female, female, female, other. This data's distribution may be classed as follows:

- There are two males in the data set.
- There are four females in the data set.
- The number of people who identify as other is one.
- There are four non-males in the group.

Univariate vs. Bivariate

Univariate data in descriptive statistics examines only one variable. It is used to identify qualities of a particular attribute and not to investigate links or causes.

Consider a classroom full of high school pupils. Assume you wanted to know the average age of the people in the room. This univariate data is solely affected by one variable: each person's age. You may get the average age by collecting this one piece of information from each person and dividing it by the total number of persons.

Bivariate data, on the other hand, seeks correlation to connect two variables. Two types of data are gathered, and the link between the two pieces of information is examined together. Because there are several variables analysed it is also known as multivariate. Assume that each high school student in the above example takes a college assessment test, and we want to know if older students outperform younger pupils. In addition to collecting the kids' ages, we must also collect each student's exam result. Then, utilizing

We use data analytics to determine whether there is a link between student age and test scores.

To give a more detailed explanation, descriptive analytics as the most popular, fundamental type of business analytics used to assess operational performance and keep an eye on trends by summarizing and emphasizing patterns in historical and current data.

To assist firms in tracking their performance and various trends, descriptive analytics is a method that generates business measurements, reports, and KPIs (Key Performance Indicators). As a consequence, businesses are better able to comprehend what has already occurred and, when paired with other forms of business analytics, develop an understanding of why certain events occurred, what could happen in the future, and how to prepare for them. Here is an example of descriptive analytics that is relevant to the modern digital age: social media participation. Metrics provided by descriptive analytics enable firms to calculate the ROI of various social media operations. Included in these projects are engagement rates, follower counts, whether they are increasing or decreasing, and money made on social media sites.

Marketing experts may determine which campaigns are successful and which ones should be eliminated using descriptive analytics with social media interaction. Businesses may prioritize their social media outreach operations with the use of social media data. Examples of descriptive analytics may include financial measures that measure the health of an organization. Reports displaying costs and revenues, production and inventory logs, cash flow, supply chain activity, internal and external surveys, accounts receivable and payable data.