2. Descriptive Analytics

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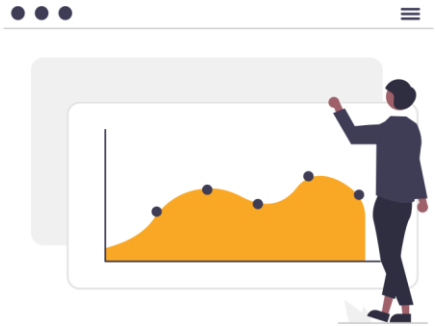
WHAT IS DESCRIPTIVE ANALYTICS?

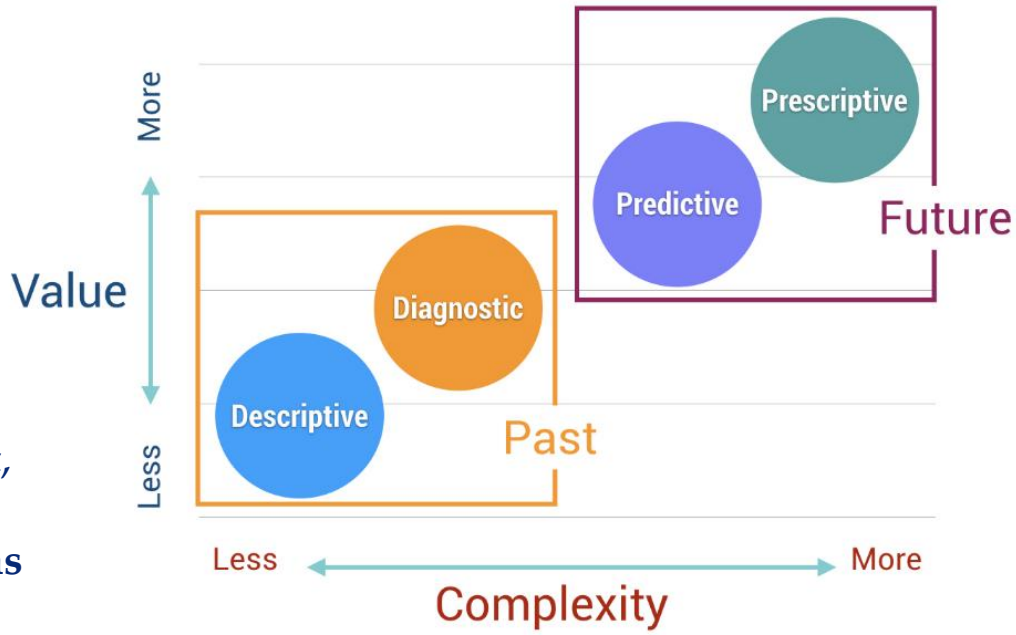
Descriptive analytics is the process of using current and historical data to identify trends and relationships. It's sometimes called the simplest form of data analysis because it describes trends and relationships but doesn't dig deeper.



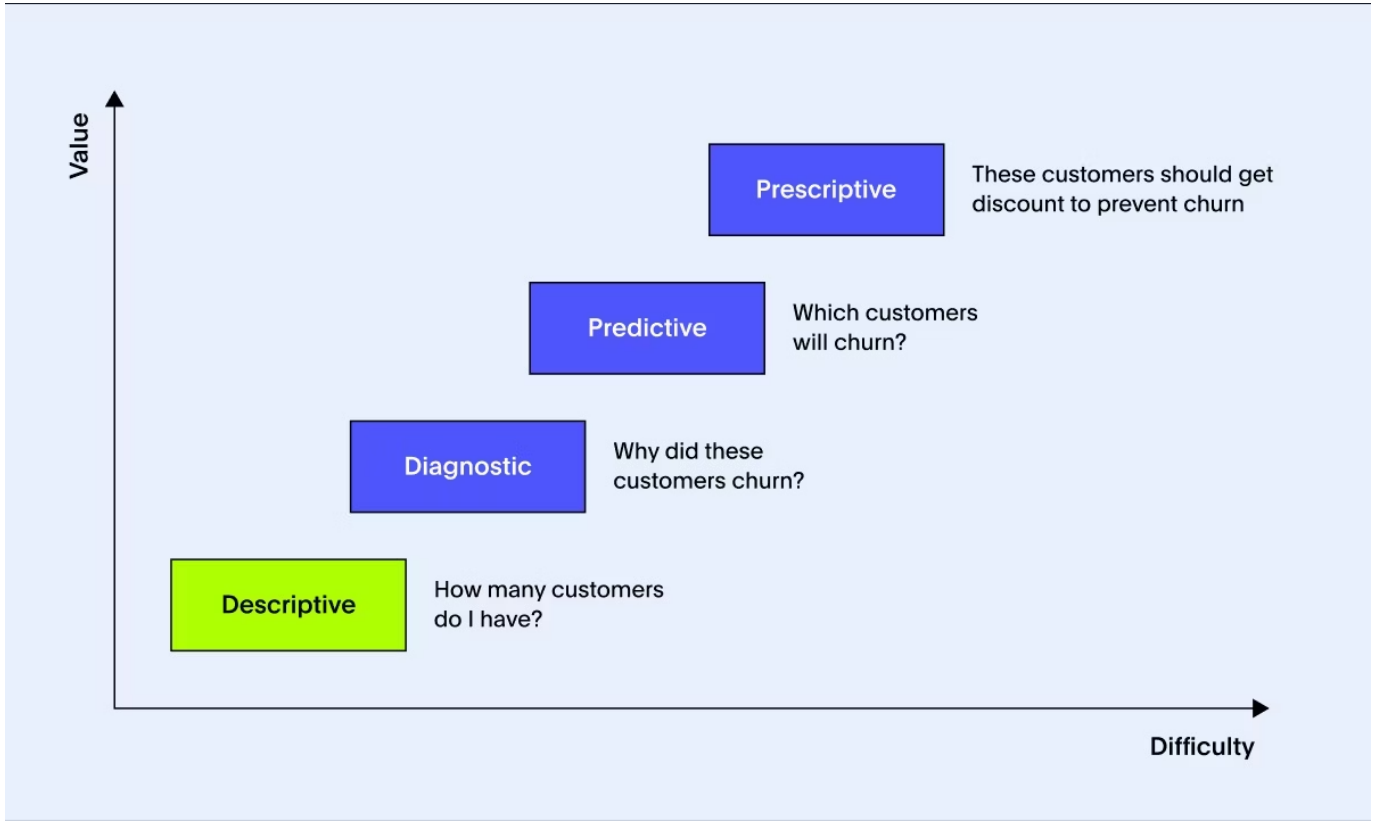
1. How much revenue did we generate last quarter?
2. Are the revenue numbers growing or falling?
3. How many new customers did we acquire?
4. How many existing customers did we lose? Etc.

Breaking it Down, Categorizing Analytics

The first two types concern themselves with analyzing **past events**. In contrast, the **latter two types are forward-looking**, focusing on **future predictions and prescriptions**

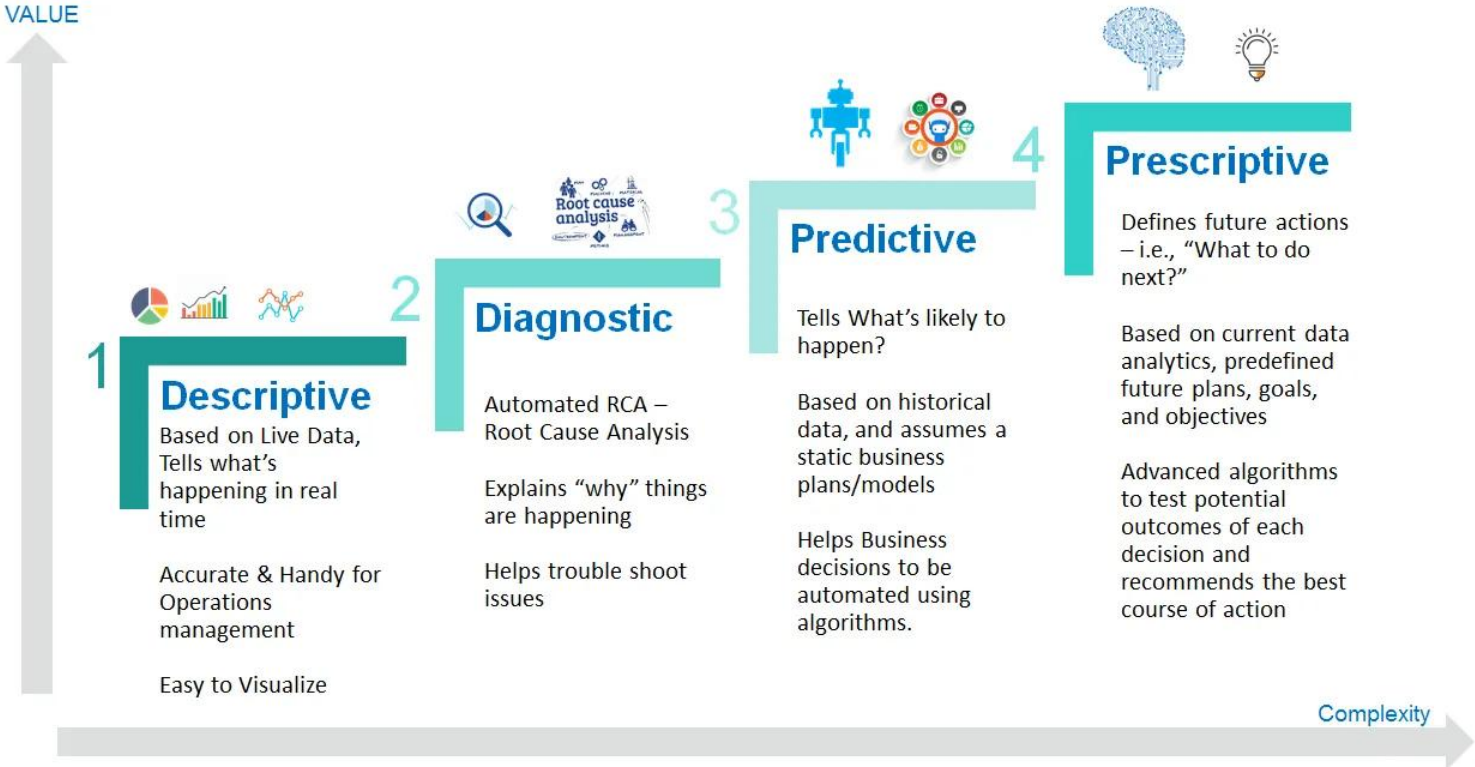


DESCRIPTIVE ANALYTICS?



DESCRIPTIVE ANALYTICS?

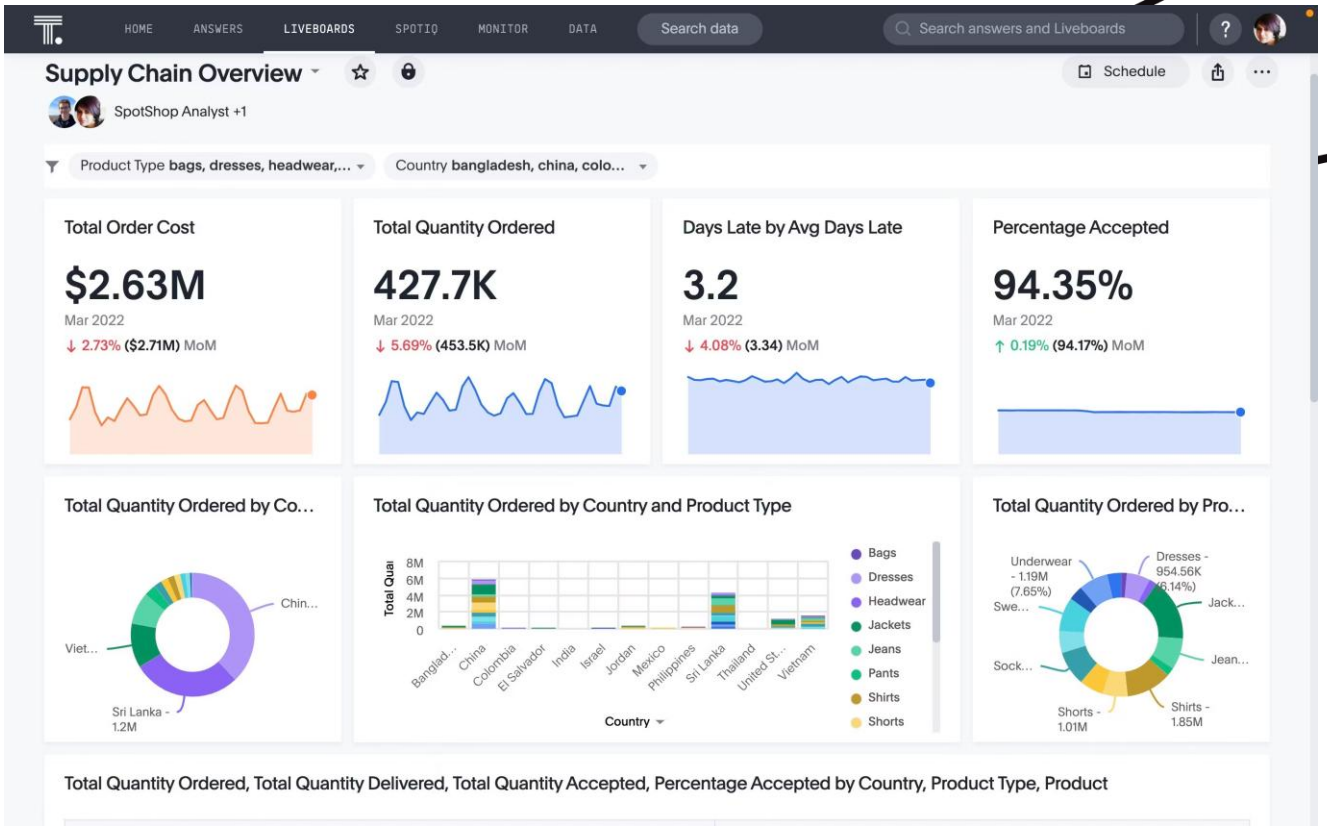
Usually, descriptive analytics is the foundation upon which all other analytic branches are built. **Descriptive analytics has a very long historical foundation**.



Descriptive analytics examples

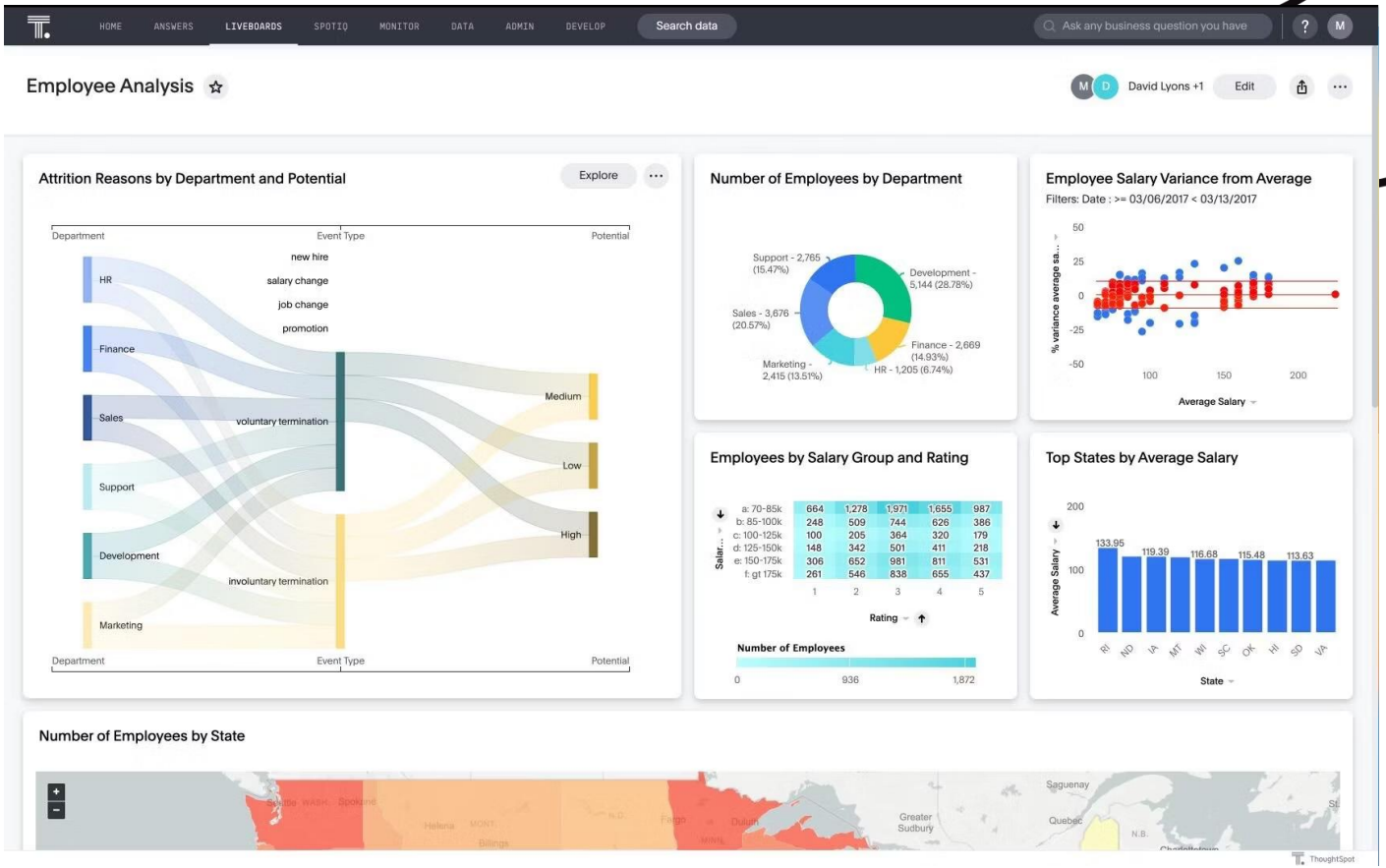
Although digital marketing is well known for providing advertisers with a huge volume of reporting data, it can often be difficult to determine (and easily access) the metrics that are most important to you. A digital marketing dashboard provides a single view of the KPIs Digital Marketing Managers need to see, in order to understand their digital marketing campaigns, and take action to optimize performance.

Descriptive analytics examples



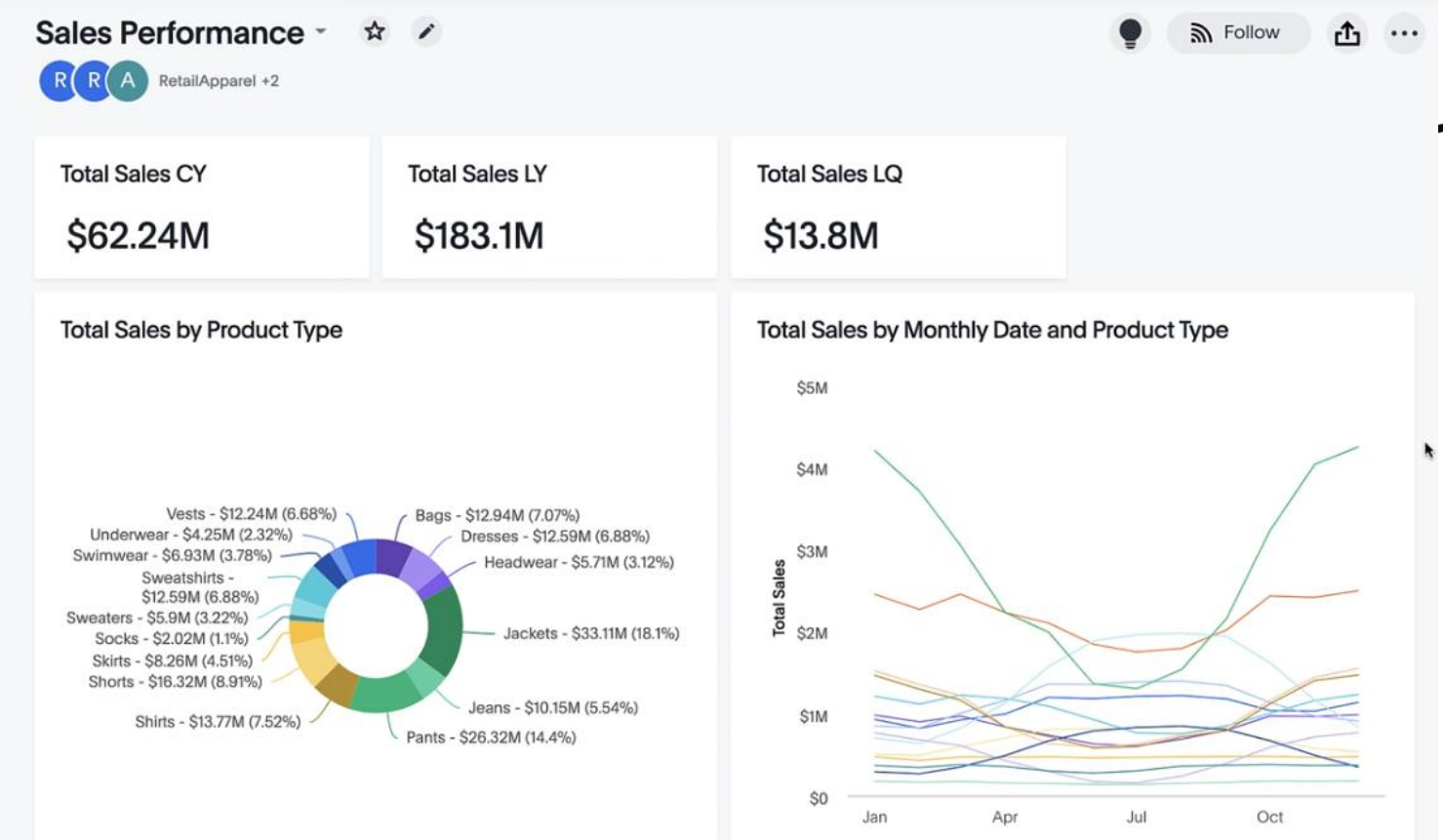
Companies lose millions due to poor inventory planning. In fact, research by Oracle shows that holding or carrying costs related to inventory planning can add up to 20–30% of your overall business cost. This creates an immense need for operational leaders to drill into data, keep track of what products or services are in stock, and see where they have shortages or overstock.

Descriptive analytics examples



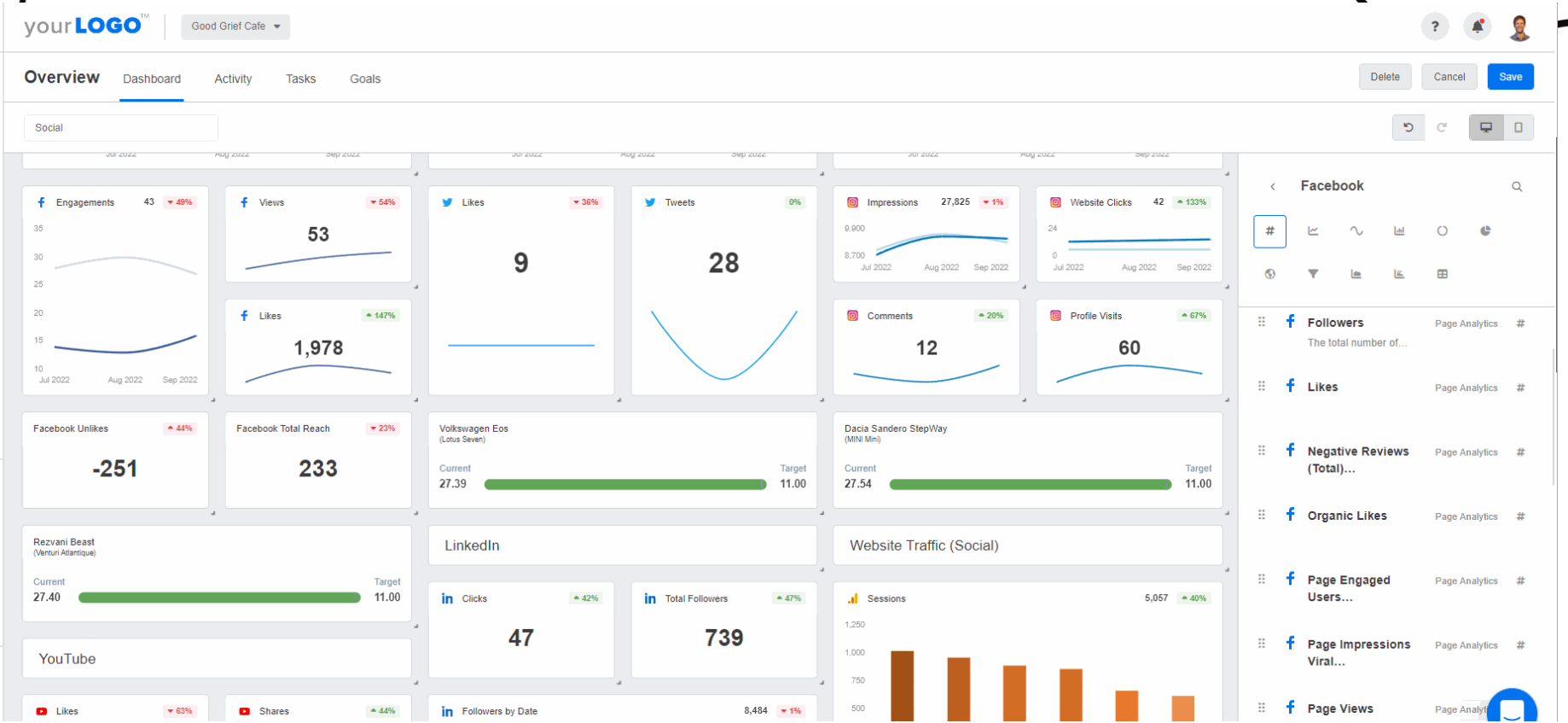
With descriptive analytics, you can dig deep into HR metrics and past workforce data to understand what's affecting employee performance. Depending on the insights you find, you can create targeted retention strategies, identify departments with the highest attrition rate, or take measures to improve overall employee satisfaction.

Descriptive analytics examples



When used strategically, descriptive analytics helps sales managers gain visibility into their pipeline. You can unlock valuable trends in your sales data, including revenue, conversion rates, and sales growth over time.

Descriptive analytics examples



Importance of Descriptive Analytics

- Helps evaluate performance, understand customers, and guide decisions
- Three key roles:
  1. Understanding past performance
  2. Identifying customer patterns
  3. Supporting decisions

Importance of Descriptive Analytics

➢ Understanding Past Performance in Marketing

- ❑ Provides a clear view of past outcomes
- ❑ Evaluates ROI & KPIs in campaigns
- ❑ Key uses:
  - **Channel Performance** → Which platforms work best
  - **Campaign Analysis** → CTR, engagement, conversion
  - **Website Insights** → Page views, bounce rates, user flow

Importance of Descriptive Analytics

➢ Understanding Past Performance in Sales & Commerce

- Converts transactions into meaningful reports
- Key uses:
  - **Financial Reporting** → Revenue, margins, AOV
  - **Product Performance** → Top-sellers vs. weak products
  - **Regional & Demographic Trends** → Growth areas & market penetration

Importance of Descriptive Analytics

➢ Identifying Customer Patterns & Trends

- Transforms raw data into meaningful insights
- Key uses:
  - **Seasonality** → Demand spikes (e.g., fitness in January)
  - **Associative Patterns** → Products bought together (cross-sell)
  - **Behavioural Segmentation** → High-value, discount seekers, dormant users
- Enables **anticipation, personalization, and optimization**

Importance of Descriptive Analytics

➢ Supporting Strategic and Operational Decisions

❑ Supporting Strategic Decisions

- **Long-term, high-impact choices**
- Example: Expansion into new markets → Use data from traffic, inquiries, early sales
- Descriptive analytics reduces risks by showing real demand

❑ Supporting Operational Decisions

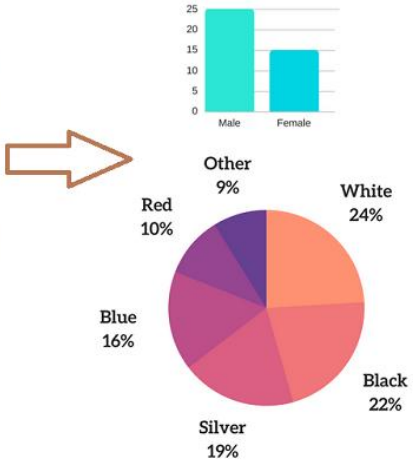
- **Day-to-day, short-term choices**
- Example: Retail store forecasting holiday traffic → Staffing, inventory, cashier allocation
- Moves companies from **data-rich → data-driven**

Descriptive Statistics and Inferential Statistics

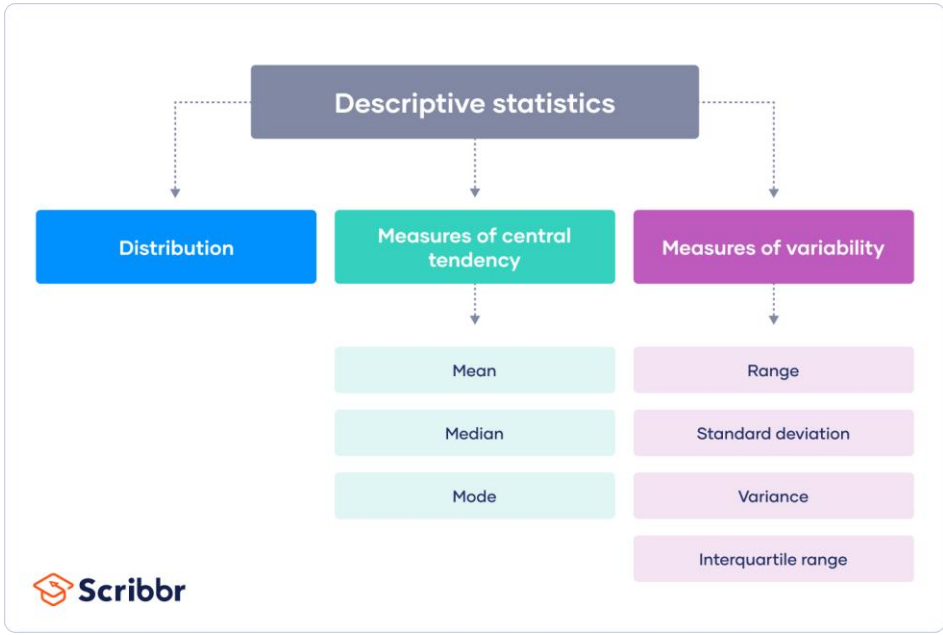
Descriptive Statistics is a branch of statistics concerned with describing characteristics of the population under study. Thus, descriptive statistics supports and is part of analytics. These characteristics / descriptive statistics are retrospective in nature. Most people are familiar with averages, minimums, maximums, etc., which people refer to as "statistics."

	A	B	C	D
1	Respondent Number	Age	Gender	Favorite Car Color
2	1	22	M	White
3	2	37	F	Silver
4	3	45	F	Black
5	4	62	F	Gray
6	5	28	M	Red
7	6	45	M	Green
8	7	88	F	Brown
9	8	61	M	White
10	9	95	M	Black
11	10	27	M	White
12	11	39	F	Green
13	12	43	M	Brown
14	13	55	F	Black
15	14	59	F	White

RAW DATA

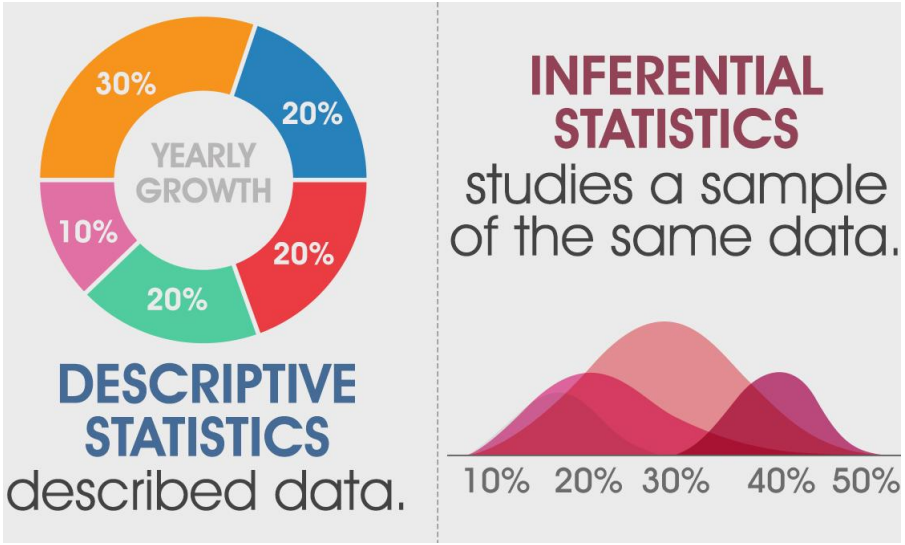


Descriptive Statistics



Descriptive Statistics and Inferential Statistics

Inferential Statistics is a type of statistics that focuses on drawing conclusions about the population, based on sample analysis. This conclusion about the population may extend beyond the data currently available, meaning processes drive (future) data such that the entire population is not currently available to sample. *Inferential statistics typically requires assumptions*.



What techniques are used in descriptive analytics?

1. Data Aggregation

1. **Summation**: The simplest form of aggregation is summation, where you're adding up specific metrics, such as the total number of sales, total revenue, or total customers.
2. **Averages**: Aggregated data can be averaged to provide a more balanced view of a particular metric over a certain time period.
3. **Grouping or Segmentation**: Data can be grouped by various categories like geographical locations, age groups, time periods, or product types to provide segmented views. This is often done using SQL queries or pivot tables in spreadsheet programs.
4. **Time-series Analysis**: Aggregating data over time intervals (hour, day, month, etc.) can help in identifying trends and seasonal variations.

What techniques are used in descriptive analytics?

2. Descriptive Statistics

1. **Measures of Central Tendency**: Includes the mean, median, and mode. These provide a central point for the data distribution.
2. **Measures of Dispersion**: Range, variance, and standard deviation help in understanding how spread out the data is.
3. **Percentiles and Quartiles**: These offer more granular insights into data distribution.
4. **Correlation Coefficients**: Though not always classified under descriptive analytics, understanding the relationship between two variables can be helpful.
5. **Frequency and Relative Frequency**: Particularly useful for categorical data.
6. **Cross-tabulation**: Often used for understanding the relationship between two or more categorical variables.

What techniques are used in descriptive analytics?

3. Data Visualization

Importance of Process

Understanding the basics of descriptive analytics seems simple enough, but applying it in real life can be challenging. There are several steps that an organization needs to follow to apply descriptive analytics to their business.

Data Collection

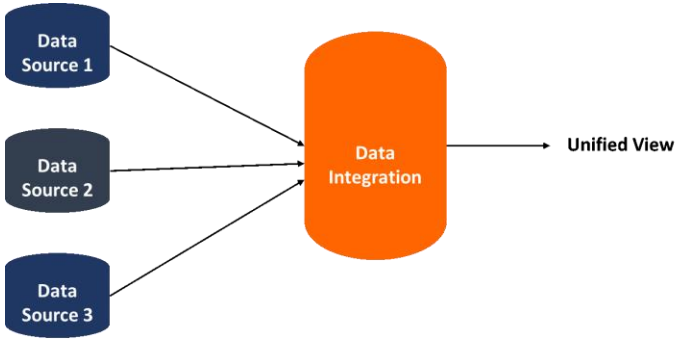
1. **Reliability**
2. **Timeliness**
3. **Scope**

Importance of Process

Data Cleaning

1. Identify Missing Values
2. Noise Reduction
3. Data Transformation

Data Cleaning



Data Integration

1. Normalization
2. De-duplication
3. Enrichment

Importance of Process

Analysis

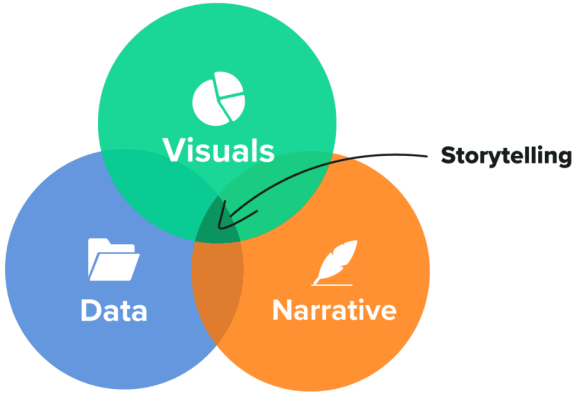
1. Choosing Metrics
2. Method Selection
3. Iterative Approach

KPIs	Metrics
All KPIs are Metrics	All Metrics are not KPIs
KPIs give a holistic view of the performance of different functions in your organization	Metrics give you a picture of how different individual activities rolled out within the functions are progressing
KPIs tell you where exactly your teams stand with respect to the overall business goals	Individual Metrics do not give any insights on their own
Examples: Pre-sales KPIs, Email Marketing KPIs, Customer Success KPIs	Examples: Open Rate, Conversations in the last 2 weeks, Deals lost last quarter

Importance of Process

Interpretation

1. Contextual Understanding
2. Critical Evaluation



Communication

1. Simplification
2. Visualization
3. Storytelling

Advantages of Descriptive Analytics

1. Simplicity and Ease of Interpretation
2. Basis for Further Analysis
3. Cost-effective
4. Real-time Insights
5. Broad Applications

Disadvantages of Descriptive Analytics

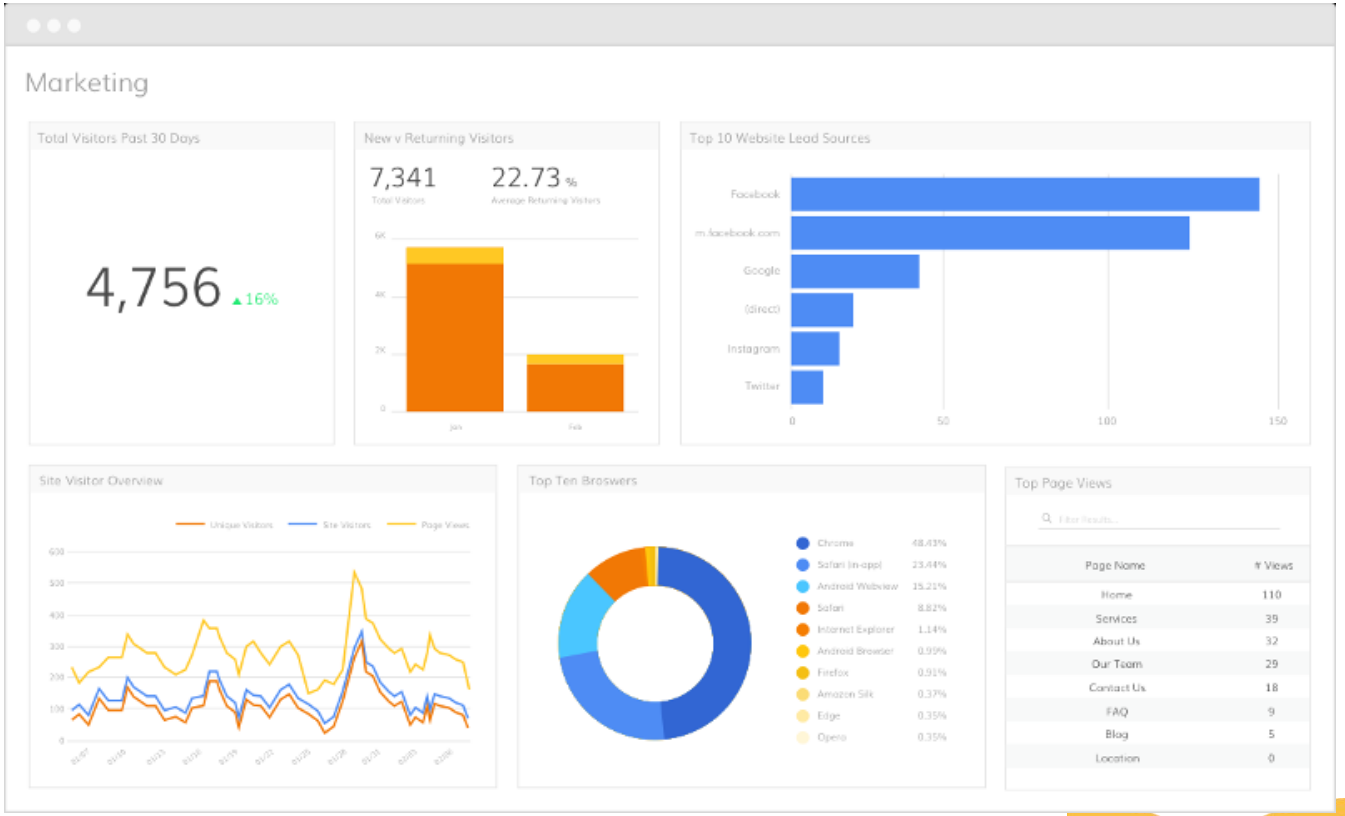
1. Limited Depth
2. Potential for Misinterpretation
3. Data Quality Dependency
4. Not Forward-Looking
5. Lack of Competitive Advantage

Use cases of descriptive analytics

- Healthcare
- Retail
- Manufacturing
- Banking and Finance
- Sports
- Government and Public Policy
- Media and Entertainment
- Education

What is Descriptive Analytics in Marketing?

- Campaign Performance.
- Customer Segmentation.
- Market Share and Competitor Analysis.
- Sales Trends.
- Customer Behavior.
- Budget Utilization



The Role of Descriptive Analytics in Future Data Analysis

In summary, the future of analytics is indeed a blend of descriptive, predictive, and prescriptive analytics, each feeding into and enhancing the other. Descriptive analytics serves not merely as a starting point but continues to play a role in refining, validating, and enhancing more advanced analytics endeavors.

The Bottom Line. Descriptive analytics can be a great way for companies to begin analyzing their performance metrics. That's because it's one of the easiest forms of data analysis. It's a straightforward approach to provide management, investors, and analysts with a direct comparison to similar metrics, such as quarter-over-quarter revenue. Using past performance can help key stakeholders better understand what happened so they make better, more informed decisions for the future.

ANY QUESTIONS?